THE JOURNAL OF ACUPUNCTURE AND INTEGRATIVE MEDICINE
KAMPO, Research on Theory, Practice and Integration

Special Edition

KAIM

Current Japanese Acupuncture &Moxibustion

INTERNATIONAL INSTITUTE OF HEALTH AND HUMAN SERVICES, BERKELEY

Volume 1, Special Edition · February 2010

www.kaim.us

US$30.00 per copy

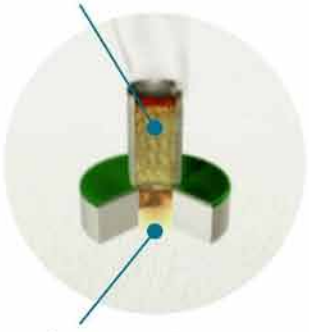
The Modern Moxibustion "SENNENKYU"

MMoxibustion, the medical treatment of burning Moxa at effective points on your body, originated as an oriental medicinal therapy to "maintain the overall balance of the body". Moxa prepared from the medicinal herb mugwort is burned

during moxibustion. (Mugwort means well-flushed grass. It grows wild and is used in herbal medicine throughout much of Asia.) We have created low-heat SENNENKYU for the well-being of people who wish to continue and cherish moxibustion.

SENNENKYU Moxa

Long lasting, quality Moxa is easy to light. With SENNENKYU, you can benefit from gentle moxibustion without direct contact of Moxa with the skin.



Essence of Mugwort

Heat-activated components contained in Moxa from mugwort penetrate the skin at moxibustion points through aeration pores.

せんねんきゅ

やさしい自然を人に、暮らしに。

SENEFA

http://www.sennenq.co.jp/

SENEFA CORPORATION

77, UCHIBO-CHO, NAGAHAMA-SHI
SHIGA 526-0244, JAPAN
TEL. 81 749 74 0556
FAX. 81 749 74 0336

The Journal of
Kampo, Acupuncture and
Integrative Medicine
(KAIM)

Research on Theory, Practice and Integration

PUBLISHER
Shuji Goto
International Institute of Health and
Human Services, Berkeley
2550 Shattuck Avenue, Berkeley
California 94704-2724, U.S.A.

Website: www.kaim.us
E-mail: info@kaim.us

CURRENT JAPANESE ACUPUNCUTURE & MOXIBUSTION

Volume 1, Special Edition · February 2010

TABLE OF CONTENTS

MISSION

To disseminate peer-reviewed information on the use of acupuncture and herbs, and integration with western medicine, based on research from an international perspective; thereby stimulating further research, application of documented therapeutic measures; and facilitating dialogue among health care practitioners worldwide.

For subscriptions, please contact our Subscription Customer Service representative at
Address: 2550 Shattuck Avenue, Berkeley, California 94704-2724, U.S.A. **E-mail: info@kaim.us**

Foreword
Current Japanese Acupuncture and Moxibustion

This special issue on *Current Japanese Acupuncture and Moxibustion* follows our earlier publication of *Current Kampo Medicine*.

Since the 1990s, the popularity of Complementary and Alternative Medicine (CAM) has been growing in Europe and in North America. CAM is practiced primarily in the form of acupuncture and Kampo medicine in Japan today, although acupuncture and related traditional therapies such as moxa and traditional amma massage are at present less commonly used than Western medicine.

We who are involved with acupuncture are confident that these forms of Asian medicine which have been contributing to better health in Japan since they were first introduced from China 1300 years ago, have an important role to play in Japanese medicine today. We also believe that the introduction and popularization of acupuncture and related forms of healthcare can help to improve and sustain health in countries and cultures where these methods of treatment are not well known or widely practiced.

Through these publications our editorial staff intends to provide information on the results of research in Eastern medicine, including acupuncture and Kampo medicine. We hope that this information will be of use internationally, and that the traditions of acupuncture that have been nourished in Japan, will spread and flourish in countries throughout the world.

In Japan today there are two major approaches to acupuncture. First, is traditional acupuncture, which arrived from China 3,000 years ago and modified over time so that it is now uniquely Japanese. Secondly, it is an approach strongly influenced by Western medicine and scientific thinking, which during the 60 years following World War II has made tremendous progress in the scientific study of acupuncture and its effects. Each of these approaches has its strengths and weaknesses.

The former is based on subtle therapeutic stimulation and care. This form of acupuncture integrates readily into the patient's activities, and can have a profoundly positive effect on daily life. The latter was developed to promote the use of acupuncture within the context of modern Western medicine. Research in this area is intended to provide a clear scientific basis for the use of acupuncture in conjunction with Western medical treatment in hospitals and clinics. In countries where Western medicine is firmly established as "the" medical system, this scientific approach to acupuncture is particularly useful, and the painstaking clinical research to clarify the relationship between acupuncture and Western medicine is bearing fruit.

Today we face medical conditions such as lifestyle diseases and end-of-life issues that will be extremely difficult to resolve if we rely solely on modern living and Western medicine. In this context, therapeutic methods that recognaize the value and significance of acupuncture can be of great service to the medical community worldwide. It is our hope that acupuncture from Japan, on the eastern edge of Asia, will continue to contribute to good health and vibrant life for all people.

Shuji Goto, Ph.D.
Executive Editor
Chairman, Acupuncture and Integrative Medicine College, Berkeley, U.S.A.
Chairman, International Institute of Health and Human Services, Berkeley, U.S.A.
Chairman, GOTO College of Medical Arts & Sciences, Tokyo, Japan
President, The Japan Society of Acupuncture and Moxibustion (JSAM), Tokyo, Japan

History of Japanese Acupuncture and Moxibustion

Hiromichi Yasui
Japan Institute of TCM Research

Acupuncture is a traditional form of medicine originating in ancient China and introduced to Japan about 1500 years ago. The historical development of this medical technology was quite different in Japan than in its "home" country of China. The island civilization of Japan added unique theories and treatment methods to the practice of acupuncture. This article will explore the history and some of the unique characteristics of acupuncture in Japan.

Introduction and acupuncture to Japan

It is believed that acupuncture had been introduced into Japan by the 5th Century AD, during the waves of migration into Japan from the Korean Peninsula. The immigrants brought with them Chinese technology and writings, and it was through them that the native Japanese first learned about Chinese medicine, including acupuncture. In 562, the Chinese monk, Zhi Cong, traveled eastward by sea, carrying with him medical treatises on herbal medicine and acupuncture meridians, including the *Ming Tang Tu* (*Illustrated Manual of Channels, Collaterals and Acupuncture Points*). This is the first formally recorded introduction of acupuncture to Japan. In the 7th Century, in addition to sending ambassadors to the courts of the Sui Dynasty and the Tang Dynasty, the Japanese government also sent students to study various facets of Chinese culture. A number of those students studied Chinese medicine before returning home to Japan.

In 701, the Japanese government implemented formal legislation (including the medical system) that emulated the system being used at that time in Tang, China. They established a curriculum for medical education, with textbooks including such classics as the *Huang Di Nei Jing*, as well as the *Jia Yi Jing*, which was the first book devoted entirely to acupuncture and moxibustion; and also included charts and graphs of the acupuncture meridians. Students studied acupuncture and moxibustion theory in the *Huang Di Nei Jing*, becoming familiar with the acupuncture points from the annotated charts and graphs of the meridians, and learned the practical applications of moxibustion and acupuncture in the *Jia Yi Jing*. The acupuncture curriculum required six years of study.

Because this medical system was government-controlled, its administration rested in the hands of the nobility who were in charge of the national government until the end of the 12th Century. At that point, control was seized by the samurai class, and the capitol was shifted from Kyoto to Kamakura, although the form of the medical system continued unchanged. Around that time, acupuncture and moxibustion entered a slow decline and little information remains about the techniques practiced during that period. The great physician priest Shozen Kajiwara (1266-1337), in his massive two volume medical encyclopedia compiled from 1302 through 1327, made almost no mention of meridians, acupuncture points, or moxibustion; although the encyclopedia includes detailed illustrations of human anatomy from Sung China. That situation remained unchanged until the 16th Century when acupuncture began to return to favor.

Early flowering

In the 15th Century, the second military government of Japan (the Ashikaga Shogunate) placed great importance on trade with Ming China. The government dispatched numerous trading ships, and there was also considerable private shipping back and forth between Japan and China. This resulted not only in a remarkable increase in Chinese goods entering Japan, but also an increase in the number of people traveling between the two countries. Many Japanese crossed the sea to China in order to study medicine, including some who learned acupuncture and then returned home to become famous acupuncturists in Japan.

At the end of the 16th Century there were several developments that had never occurred before in Japan's relations with the Asian continent. First was the Japanese invasion of the Korean peninsula, led by Toyotomi Hideyoshi. While in Korea, the invaders were exposed to unfamiliar elements of East Asian

culture (including medical writings). They also encountered a wide range of technological skills and met the practitioners of those skills, including physicians. The imported technology of wood block movable type, which contributed greatly to the printing industry that subsequently developed in Japan, also permitted the publication of more medical literature.

Another contributing factor was the gradual decline of the Ming Dynasty in China. Invasion by the Manchu forces (who subsequently founded the Qing Dynasty in China) caused a flood of refugees to the south. A few of these refugees (20,000 to 30,000) traveled as far as Japan where they were welcomed by the newly established Tokugawa Shogunate (1603). Those refugees included a number of highly skilled physicians who commenced to teach the latest developments in Chinese medicine to their Japanese contemporaries.

Those teachings had a major impact on acupuncture in Japan in the late 16th and early 17th Century and led to numerous splits and divisions. Soon more than ten competing "schools" of acupuncture treatment had appeared. These divisions developed in part because teachings from China arrived piecemeal. Each school kept its own techniques secret from all others.

The schools of acupuncture at this time were strongly influenced by the classical medical text *Nan Jing* (*Classic of Difficult Issues*). There were those who gave particular weight to abdominal diagnosis and therapy, those who focused on worms within the body as a source of disease; those influenced by Buddhist medicine; those that emphasize treatment at specific acupuncture points; those who notated the acupuncture points by symbology, and those who expressed the indications of disease in Japanese traditional verse (waka).

In 1536, the *Nan Jing* became available as Japan's second medical publication. Soon after this, schools strongly influenced by this text, began to appear. The content of the *Nan Jing* with regard to the concept of "reinforcing" and "reducing" was particularly well-received by Japanese at that time. The concepts focusing on abdominal diagnosis and therapy are not well understood, but may have been popular for two reasons. One, was that techniques for abdominal massage were already known at the time, particularly among Buddhist monks, and were understood to provide definite effects. Second, was that the anatomical diagrams in all of the Shozen medical treatises were connected to the anatomical notations in the *Nan Jing*, and these points were projected onto the surface of the abdomen, leading to the idea that treatment could be directly applied to the pictured sites. Fig. 1 shows a chart from this period for abdominal examination.

(Each organ was assigned to a specific region of the abdomen. bnormalities were detected by palpation, and treatment was performed by driving in needles with a small mallet.) The schools that focused on the abdomen continued to exist for several centuries. The other schools apparently persisted into the mid-17th Century.

Independent development

In the first half of the 17th Century, exiles from the Chinese mainland brought current developments in Chinese-style acupuncture to Japan. At the same time there was increased study of classic medical texts such as the *Huang Di Nei Jing*. That interest was further spurred by the introduction of Chang Jing Yue's classic text, the *Lei-Jing*, in Japan in 1624. From that point onward, study of the classic texts made up a major stream of traditional Chinese medicine (TCM) research in Japan.

In the middle of the 17th Century, a man of genius appeared who changed the course of acupuncture history in Japan. That man was Waichi Sugiyama (1610-1694). Sugiyama, who was samurai by birth, contracted smallpox when he was a small child and lost his sight. As a young man he gave up his samurai status and began the study of acupuncture. His experiences during his search to become a skilled acupuncturist are legendary. For example, it is said that his prayers to the goddess Benten were rewarded

by the goddess, who gave him the gift of superior acupuncture technique.

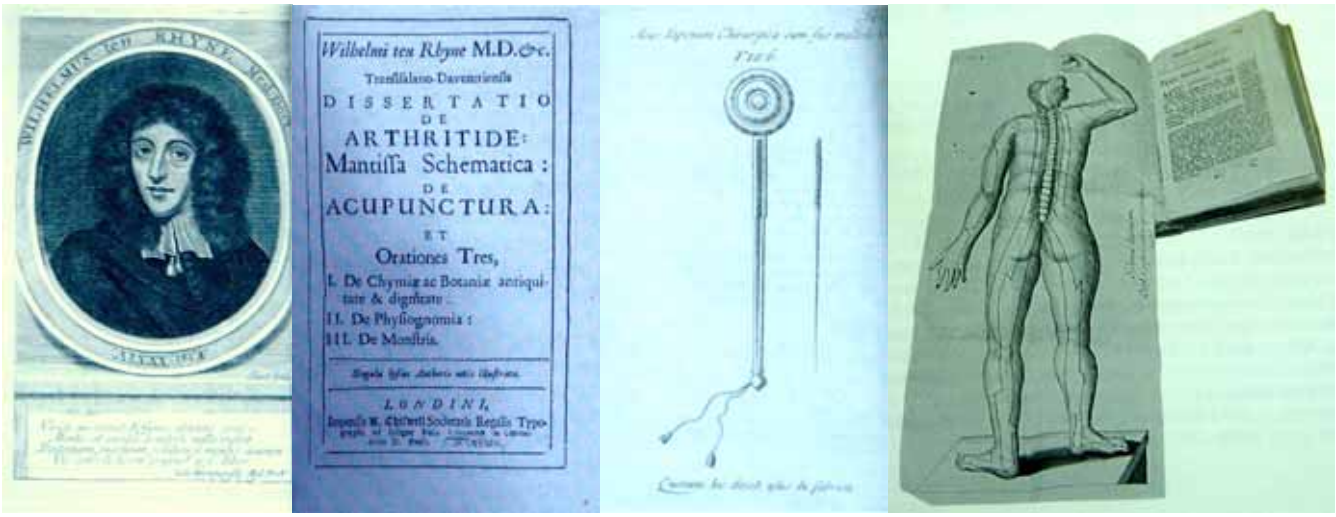
Sugiyama took the massive system of Chinese acupuncture and summarized it in concepts that were easily understandable in Japan. Based on his own experience, he simplified and clarified therapeutics. He also introduced two techniques that reduced the pain of acupuncture: the use of the kudabari, a guide tube that simplified needle insertion, and the use of pine needles as acupuncture needles. He taught all of those techniques at his acupuncture schools. He also succeeded in broadening the occupations available to the blind and visually impaired. Subsequently, acupuncture, moxibustion, and massage became important occupations for the blind in Japan; a tradition which has continued into the present. Sugiyama's work won the support of the Tokugawa Shogunate, support which was continued for the next 200 years.

We also have documents from a few European travelers of the time, recording their impressions of contemporary Japanese acupuncture. From 1674 to 1676, the Dutch trader Willem ten Rhijne served as the physician to the Dutch trading post outside of Nagasaki. (At that time, Nagasaki was Japan's primary international trading port, and the Netherlands was the only Western country permitted to trade in Japan.) In his subsequent treatise, *Dissertatio de Arthritide*, he devoted many pages to acupuncture and moxibustion, providing Europe's first introduction to these forms of medical treatment (Fig. 2, 3, 4, 5).

The year 1690 marked the arrival in Japan of Engelbert Kaempfer (1651-1716), who studied multiple aspects of Japanese culture, including medicine, and later wrote a book titled *Amoenitatum Exoticarum* (1712). This was his only work published during his lifetime. After his death it was translated into English, edited, and included in the larger volume *The History of Japan*, published in London in 1727. The text contained a discussion of acupuncture.

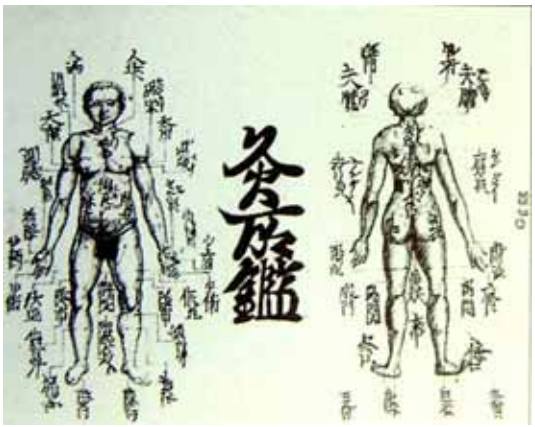
Kaempfer described acupuncture treatment for the specific condition of "senki" which involved abdominal pain of unknown cause.His work included illustrations of three types of Japanese acupuncture needles (Fig. 6). He also provided a detailed description of moxibustion in the treatise *Moxa in China and Japan*.

That description gives us information on how moxa was used at the time. (Moxa powder approximately the same volume as half a grain of rice was burned directly on the skin. This was the origin of moxa as it is practiced in Japan today.) Kaempfer was surprised to find that the area treated was often considerably removed from the afflicted area. He described a situation in which an upset stomach and loss of appetite was treated by moxibustion on both shoulders, after which the condition was relieved and the patient's appetite returned.



Portrait of Willem ten Rhijne "Article about Arthritis" by Rhijne Acupucture needle used then Chart of Meridian points

He also witnessed moxibustion along the spine as an effective treatment for pain in the side, and the application of moxa between the thumb and index finger to treat toothache. He found all of these treatments astonishing, although from our present-day perspective, they do not seem particularly strange. As an aside, the English term "moxibustion" was derived from the Japanese "mogusa" (moxa). Kaempfer's book was widely distributed at the time of its publication as an introduction to moxibustion (Fig. 7).



The use of moxa began to increase at the end of the 16th century. Because it was simpler than acupuncture, which required specialized knowledge and technical skill, moxibustion became widespread as a form of folk medicine, and numerous volumes were written on its use in the home. In his book, Kaempfer commented that it was impossible to find a Japanese person who did not show some scarring from moxibustion.

This form of folk medicine, which was widespread but not practiced to a particularly high standard, was again returned to professional hands by a movement initiated in the late 17th Century and extending into the middle of the 18th Century under the leadership of Konzan Goto (1659-1733). Goto was a highly knowledgeable physician who primarily used traditional Chinese medicine therapy, but frequently relied on folk medicine, now referred to as complementary and alternative medicine, (CAM). He placed particular importance on diagnosing abnormalities in the flow of qi energy within the body and frequently prescribed a course of hot springs and moxibustion therapy to improve this qi energy flow. As a result of his work, even doctors who specialized in drug treatment began to occasionally use moxibustion. This led to even greater use of moxibustion among the common people, and different regions developed their own characteristic forms of moxa therapy (usually associated with a specific Shinto shrine or Buddhist temple). Those methods, which were based on the experience of the people of each local region, were later collected for publication by several different scholars.

The Chinese acupuncture system was vast and complex, which made it very difficult for Japanese students of that time to fully understand its potential. This problem was addressed with skill and determination by a number of Japanese specialists who succeeded in reforming and simplifying the massive Chinese system for Japanese use. This ability to codify a vast and complicated system into something smaller and more easily understandable, which historically has characterized the Japanese people, resulted during the late 17th and early 18th centuries in the authorship of numerous small and practical texts on moxibustion and acupuncture. Fig. 6 shows one of those, *The Handy Book of Acupuncture*, published in 1718 (Fig. 8).

The popularization of these simple texts in Japan was paralleled by a movement to publish more difficult Chinese medical materials (the classics as well as numerous treatises on medical theory and texts on moxibustion and acupuncture) accompanied by notations and commentary in the Japanese vernacular. An industry even developed around this specialized work. This approach to the explication of foreign texts was in itself uniquely Japanese.

Research on the meridians and acupuncture points also flourished. Such research was particularly in

demand because of the difficulty of identifying meridians and acupuncture points on the human body. In the final analysis, however, progress in this field came when the notations and commentaries on classic Chinese texts of moxibustion and acupuncture were actually confirmed by investigation through practical use. Such research continued uninterrupted from the 16th to the 19th centuries. Much of it was documented in writing.

In the 18th Century a man by the name of Todo Yoshimasu developed a revolutionary idea in the field of traditional Chinese medicine therapy; he proposed that patients be treated without reference to the traditional medical theories of yin, yang, and the five agents. From that point onward, Japanese TCM diverged considerably from traditional medicine as practiced in China.

Stimulated by Yoshimasu's thinking, the acupuncturist Shukei Suganuma (1706-1764) developed and began to practice an acupuncture methodology that was not based on traditional medical theories. Suganuma's techniques did not depend on the meridians or on the concepts of reinforcing and reducing. Instead, he treated patients using only 70 acupuncture points. Although his ideas did not become widespread, they had considerable impact on his contemporaries in the world of moxibustion and acupuncture.

At the same time that Yoshimasu was propounding his ideas, Dutch physicians were beginning to visit Japan, bringing with them a few high-quality Dutch medical texts that were read and translated by progressive Japanese physicians. The first of these works to be translated and published was Johann Adam Kulmus' anatomy text which had been translated from the original German into Dutch under the title *Ontleedkundige Tafelen*. The publication of this book in Japanese provided a view of medicine very different from traditional TCM-based understanding, and focused attention on Europe. Japanese physicians began with the study of anatomy and surgery, and later extended their interest to Dutch medical treatises on internal medicine and other areas of clinical therapeutics.

At about this time, bloodletting, which was being hailed in Europe as an important treatment technique, was introduced to Japan by the Dutch translators at Nagasaki, and was of considerable interest to Japanese physicians.

The year 1776 in Japan marked the arrival of Dr. Carl Peter Thunberg (1743-1828) (Fig. 9), who accompanied the Dutch director of the Nagasaki trading post on his visit to the capital in Edo (now Tokyo), one of the world's great cities at that time. Thunberg spent some time in Edo, where he met with a number of the best physicians in Japan, taught them the techniques of bloodletting, and trained them for a short time in the implementation of this therapy.

Meanwhile, a book written in China on the treatment of acute filthy disease "Sha zhang", a cholera-like disease reached Japan in the mid-17th Century. It also contained a description of bloodletting. Some Japanese medical practitioners became interested in this Chinese approach to bloodletting and began to use it in treating a variety of diseases. This led to modification of the European techniques in Japan, soon resulting in the development of a unique form of bloodletting that came into widespread use in Japan during the 17th and 18th Centuries.

Neo-Confucianism was first introduced in Japan toward the end of the 16th Century. The Tokugawa Shogunate considered this philosophy as a pillar of its own existence. However, the philosophy had many detractors, and around the turn of the 18th Century there was a popular movement to return to the essentials of traditional Confucian thought. The activities of Yoshimasu and his colleagues were one result of these changes.

At the end of that century, a popular text on critical investigation from the Qing Dynasty in China was introduced to Japan. Medicine was among the fields influenced by this book, and as a result a critical investigative approach to research became popular. Textual criticism was widely applied to classics such as the *Huang Di Nei Jing* and the *Shang Han Lun*, and in some cases corrected texts were prepared and

published. This movement was sparked by individuals of the time and later received government approval. Government-sponsored medical research laboratories were established and became centers of both research and teaching. Meanwhile, a copy of the *Tai Su Jing*, a portion of the *Huang Di Nei Jing* that was no longer available in China and believed lost, was found in an old Buddhist temple in Kyoto. This discovery further encouraged research in the classic texts.

Worthy of mention in the context of moxibustion and acupuncture education during this period was a human figure cast in copper showing the meridians and acupuncture points. (The original prototype, made in China in 1026, was subsequently lost.) Such models were enthusiastically welcomed by medical scholars of the time, and in the 17th Century, a new mold was made and additional figurines were cast (Fig. 10).

With the advent of the 19th Century, the Japanese study of Dutch medicine intensified, and numerous specialized texts were translated into Japanese. More doctors began to rely increasingly on their own experience, and some even began to question the concepts of Chinese medicine. It was in this context that Sotetsu Ishizaka (1770-1841) devised a system that was centered around the traditional theories of moxibustion and acupuncture but that also incorporated Western medical thought in a subordinate role.

In 1823, Dr. Philipp Franz von Siebold (1796-1866) came to Nagasaki as physician to the Dutch trading post there (Fig. 11). Dr. Siebold trained numerous Japanese students in Western medicine, while at the same time studying Japanese traditional medicine himself. His method was to have his disciples translate outstanding Japanese medical treatises for him, so in the field of moxibustion and acupuncture, he read Ishizaka's *Concise Discourse on Acupuncture and Moxibustion* as translated by Junzo Mima. Subsequently, on a visit to Edo with the Dutch director of the Nagasaki trading post, Dr. Siebold had the opportunity to meet and exchange experiences with Dr. Ishizaka.

Decline and restoration

Until the middle of the 19th Century, moxibustion and acupuncture played a consistently unchanged role in the practice of Japanese physicians, while technological advances and academic developments contributed to better health for the common people. With the Meiji Restoration in 1868, the reins of government were transferred from the Tokugawa Shogunate to a new imperial government headed by the Emperor Meiji. This also brought changes to the medical world, since all of the medical institutions that had operated under the Tokugawa Shogunate were taken over by the new government. The German medical system was adopted, and schools of medicine were established along German lines. This left only one generation of physicians practicing traditional medicine. Their occupation was effectively brought to an end since most traditional physicians passed on their knowledge and their practice to younger family members. Under the new system their children and grandchildren could not become certified physicians regardless of how well they were trained in traditional medicine. Those who wished to become doctors were required first to study Western medicine and then pass an examination in order to become a medical practitioner.

The various forms of traditional medicine both Kampo (herbal medicine) and acupuncture, were considered to be "non-mainstream" and were removed from public view. However, the practices of moxibustion and acupuncture were allowed to continue as long as the practitioner was licensed by the local government. These occupations also continued to provide employment for the blind. The

subjects of moxibustion and acupuncture were considered of high importance at schools for the visually impaired.

After being so severely restricted by the government and completely excluded from mainstream medicine, acupuncture took more than half a century to recover. During that period, however, a small number of highly gifted acupuncturists continued to practice away from public notice.

One of these was Ken Sawada (1877-1938), whose work was discovered and brought to the attention of the world by a journalist investigating traditional medicine. Dr. Sawada's method, called "Tai Chi Therapy", depended primarily on observation and palpation to diagnose abnormalities of the organs and medians, which were then treated with moxibustion. Sawada focused primarily on acupuncture points in the back, but emphasized that for every disease there was a characteristic acupuncture point that could be used. Sawada's methodology was widely disseminated by his gifted disciples, a group of practitioners who became central to Japanese acupuncture. They included the highly successful Bunshi Shirota (1900-1974), who systemized and popularized Sawada's therapeutic techniques.

The 1930s saw the formation of another large group of acupuncturists. Working mostly from notations on the classic texts, this group developed a system that placed primary emphasis on meridian "kyo-jitsu" (deficiency and excess) diagnosis. Treatment was performed by supplementing the deficiency or eliminating the excess so that balance could be restored. They named this methodology "Meridian Therapy". The central members of this group, who provided guidance for the others and established the Meridian Therapy system, were several young acupuncturists in their 20s and 30s. In particular, Sodo Okabe (1907-1984) possessed brilliant technical skill and contributed greatly to the perfection of the technical side of this system. In 1973 Dr. Okabe was invited to visit what was then the Soviet Union, where he received grateful thanks after successfully treating General Zhukov (formerly of the USSR military and General of Minister of Defense) for trigeminal neuralgia.

These two schools of thought are the central forces in Japanese acupuncture today, although there are numerous small unaffiliated groups as well.

Their activities were temporarily curtailed by World War II. After the war, the defeated Japanese nation was given democracy by the occupying Allied Powers (GHQ). However, the GHQ was not sympathetic to acupuncture. The department that was charged with reforming the Japanese medical system was the Public Health and Welfare Section (PHW) under the command of Brigadier General C. F. Sams. General Sams attempted to obliterate the historic and uniquely Japanese treatment method of acupuncture from within the world of Japanese medicine, recommending to the Japanese Ministry of Health and Welfare that "Medical treatment should be performed primarily by physicians, and other occupations such as acupuncturist and massage therapist should be unreservedly prohibited." This recommendation came as a great shock to the acupuncture world, and a coalition of acupuncturists, physicians, physiologists, members of the National Diet, and those involved with schools for the blind began to work together to oppose the GHQ recommendation and to find a better solution. In the end General Sams was convinced of the importance of acupuncture in Japan and this traditional form of medical treatment was allowed to continue.

After the war a number of new movements began to develop within Japanese acupuncture. The Ministry of Health and Welfare established a system of formal education for the purpose of becoming a credentialed acupuncturist, stipulating a specific amount of schooling (3 years) in a specialized educational institution, to be followed by a certification test administered by the local government (later changed to a national certification examination). Candidates who passed the examination were credentialed as acupuncturists.

There were also new developments in clinical practice and in research. Some groups of acupuncturists, in response to the GHQ statement that acupuncture was "an unscientific and barbaric form of treatment," chose to focus primarily on scientific methodology. Dr. Shirota, as mentioned above, denied the absolute authority of traditional medical theory. He proposed that the measurement of electrical resistance could be used to detect the acupuncture points that were responsive in a specific disease, after which the disease could be treated by stimulating those points with acupuncture and moxibustion. Advances in electrophysiology contributed to this theory, but applications to the meridians had to wait until a discovery by Yoshio Nakatani in 1950 that resulted in the development of Ryodoraku Acupuncture. Paralleling these new developments, groups of acupuncturists who were interested in meridian therapy, continued their research, producing large volumes of results to prove the existence of the meridians.

In the 1970s, information on a newly systematized approach to TCM arrived in Japan from China. Since some Japanese practitioners wished to pursue this methodology in Japan, formal schooling in TCM was established. Active communication with Chinese specialists is ongoing, excellent Japanese educators have emerged, and this system is currently gaining in popularity.

At present there are a number of different acupuncture systems in practice in Japan, each with its own special characteristics. Any attempt to use these systems without understanding their historical context invites erroneous and unreliable results, since while closely related in some ways, these systems also have points on which they differ profoundly.

The current situation of Japanese acupuncture cannot be explained through one-dimensional thinking. However, this multiplicity is in itself one of the characteristics of acupuncture in Japan. While future development of acupuncture throughout the world will be greatly influenced by changes in Chinese TCM, it seems likely that the unique characteristics of moxibustion and acupuncture in Japan will also play a significant contribution in the international development of this traditional approach to better health.

Characteristics of Japanese Acupuncture and Moxibustion

Shuichi Katai
Department of Acupuncture and Moxibustion
Tsukuba University of Techonology

1. Japanese Acupuncture and Moxibustion - Definition

When talking about Japanese acupuncture and moxibustion, several perspectives have to be taken into consideration. For example, the most easily understood aspect would be a classification based on differences in therapy. Also, classifications based on differences in theory, misperceptions or conceptual differences are also conceivable classification criteria. It might also be possible to discuss the subject as viewed from differences in the tools used for acupuncture and moxibustion. Moreover, it should also be possible to differentiate Japanese acupuncture and moxibustion as compared to Chinese and Korean medicine.

The English designation for needles used as tools is generally "needle", but when the notion of a treatment performed with these needles is included, a number of incoherent terms like acupuncture, acupuncture therapy, acupuncture treatment, needling, needle therapy, and needling method are used. Here, the English term acupuncture in the sense of therapy is used.

Again, the term "oriental medicine" is frequently used in Japan in the sense of comparing oriental medicine to western medicine, but its meaning remains in fact, rather unclear. Usually the use of oriental medicine implies the medical system developed 2,000 years ago by the Han people native to the Yellow River basin in China. It later spread throughout the various Asian regions, where it was under the influence of the culture of the countries it had been propagated to. It underwent modifications specific to that particular country and thus developed to the present day. This system was introduced to Japan in the 6th century. *The Yellow Emperor's Classic of Internal Medicine* comprising the sections Su Wen (Plain Questions) and Ling Shu (Spiritual Pivot) have been the original texts on which this system was based.

The term "Orient" as it is perceived in the West, suggests a very extensive area including the Near East and the entire Asian region. If that is so, the oriental medical system should also comprise such various Asian medical systems as Ibn Sina, Ayurvedic medicine, Mongolian medicine, Tibetan medicine and Chinese medicine.

Otherwise it could be asked why the term traditional Chinese medicine is not used. While today's Chinese medicine is based on the classics Su Wen and Ling Shu, it can also be comprehended as a reorganized system formed following the foundation of the People's Republic of China in 1949. The influences of this system later propagated through East Asia and again modified in the various regions just as it happened after the emergence of its original form in China. Thus, during the transitions in Chinese history, in the process of the propagation from the old China to modern China, this medical system can be viewed as having emerged, changing under the influence of modern Chinese culture. In other words, the term Chinese medicine today must be said to designate a medical system that is different from the oriental medicine developed 2,000 years ago in China. In this sense, Chinese medicine can be comprehended as a form of Asian medicine. And, when speaking of oriental medicine, the term should implicate East Asian medicine. Accordingly, if the term is to be used in the above mentioned context, East Asian Medicine would probably be appropriate.

2. Acupuncture practice in modern Japan

The acupuncture of East Asian medicine was first mentioned in the "Nine Needle Twelve Sources Chapter" of the "Ling Shu" (Spiritual Pivot), where nine different types of needles and the basics of their clinical application were described. This has undergone a multitude of changes over the past 2,000 years. In particular, the changes that occurred under

the influence of western science in the 19th century, define what is today called acupuncture. Thus, acupuncture has to be defined in such a way that it cannot mean only the needling techniques handed down from ancient times, but also has to indicate physical stimulation in general that is administered in order to elicit effective body responses in order to promote healing of diseases.

The acupuncture performed in Japan based on this definition can be classified variously. For example: according to the stimulation site (scalp acupuncture, ear acupuncture, hand acupuncture, intradermal acupuncture), the type of stimulation (contact acupuncture, needle retaining, single insertions, thrusting and lifting, electrical pulse stimulation, tapping needling, fire needling, SSP therapy), differences in therapeutic concepts (tender point therapy, ashi point therapy, blood letting, Ryodoraku, trigger point therapy, pediatric acupuncture), etc.

3. Characteristics of Japanese acupuncture

As mentioned above, Japanese acupuncture has several classification approaches. Any one of them, however, may have common characteristics.

One of the characteristics of the Japanese acupuncture, as compared to Chinese and Korean acupuncture, may be characterized by its use of very weak stimuli. Generally, factors determining the stimulus quantity of acupuncture and moxibustion include the tools used, the stimulation method and stimulation site (site on the body). Moreover, both quality and amount of applied tools and the stimulation method determine the quantity of the stimulus.

Also, the information obtained through palpation among the four examination methods, are considered particularly significant for the comprehension of the pathological condition, determination of stimulation sites, and stimulation dose etc. may be cited as other characteristics. A brief description pertaining to tools, stimulation method, and stimulation site is presented below.

1) Tools, Stimulation Method and Stimulation Site

(a) Differences in tools

Generally, the needles used in Japan are thinner than those used in Chinese medicine. The most frequently used needles in Japan have a diameter varying between 0.16-0.20 mm, while needles frequently used in China have diameters between 0.32-0.38 mm. This clearly shows that the needles used in Japan are much thinner.

There is not a unanimous view regarding the reason for the use of such thin needles in Japan (or why they have become so thin). Probably, they were made so thin because of the hypersensitive nature of the Japanese people. Acupuncture and moxibustion are considered to have spread among the general population in Japan about 400 years ago. Conceivably, in the process of the popularization, this modality has been adapted to suit the constitution of the Japanese and thus led to the use of weaker stimulation doses as well as the development of thinner needles. When thinner needles were used, they would bend more easily upon insertion, so a twirling insertion method using both hands had to be devised for the insertion of filiform needles. For the Chinese twirling method, both hands are not used. There is no necessity to do so. Thinner needles led to changes in Japan by inevitable consequences. Additionally, to prevent pain upon insertion, approximately 300 years ago, the use of a guide tube was suggested that led to the development of a uniquely Japanese guide tube needling technique.

At that time the head of a pestle-shaped needle was inserted by tapping with a wooden hammer, a technique called tapping needle; or else the purely manual twirling needle technique, not relying on tools, was performed. The needling technique using a guide tube developed later into the mainstream Japanese needling technique. Painless insertion, safety, and ease of insertion of this technique can probably be cited as reasons for this development. It can be assumed the tapping needle technique inspired the development of this guide tube needling technique.

(b) Differences in needling techniques

The stimulation method varies depending on the insertion and stimulation technique after insertion. The acupuncture performed in Japan includes a variety of techniques from contact needling, using only skin contact stimulation but no perforation of the skin, over subcutaneous needling, where the needles are inserted very shallow into the subcutaneous tissues to intramuscular needling techniques. The techniques may employ just stroking of the skin, or a method where the needles are placed and retained in place from several to ten or more minutes, thrusting and lifting stimulation or low-frequency electric stimulation, etc. This means that many different techniques, like the above mentioned contact acupuncture, single insertions, thrusting and lifting, electrical pulse stimulation, tapping needling, fire needling, and SSP therapy are employed.

Among these techniques, contact stimulation of the skin and stimulation at extremely shallow levels appear to be characteristically Japanese stimulation techniques that differ from those employed in China or Korea. The use of these "subtle stimuli" also relates the characteristics of Japanese acupuncture very well. The INSHIN (round needle = yuan zhen) and TEISHIN (spoon needle = chi zhen) included in the "nine needle types" would be the suitable tools for these techniques. These are seldom used in China and Korea. Yet, the practice of acupuncture by groups using minimal stimulation methods in Japan based on traditional concepts, considers them to be of great importance, in particular for tonification as treatment of deficiency conditions. These are considered to be effective methods for patients with emotional problems including stress.

On the international front, although some papers on RCT clinical trials of acupuncture needles show that intervention stimulations when contact acupuncture or shallow needling were used, stimulations differ from the placebo effect and can be viewed as a historical perspective of Japanese acupuncture and moxibustion.

(c) Differences in stimulation sites

Differences in stimulation sites refer to where on the body the stimuli are applied. In other words, it depends on which acupoints are chosen, and at the same time, the depth of the needling. The stimulation dose varies with the insertion depth.

Regarding the amount of stimulation derived from the differences in stimulation site, it is generally understood that local needling stimulates the body very effectively (i.e. the amount of stimulation is greater). Clinical consideration demonstrates that the stimulation intensity decreases with increasing distance from the relevant local area.

However, there is no definite proof that local stimulation of affected areas represents the strongest possible input. On the contrary, the consideration that remote stimulation is required to provide powerful therapeutic effects warrants further investigations.

2) The importance of obtaining information through palpation

The author discussed the subject of palpation an article entitled, “Considering the Therapist’s Hand” published in the Journal of Kampo, Acupuncture and Integrative Medicine, Vol. 1, No. 1, Spring 2006, pp. 25-26. It provides excellent information to support this article.

The second characteristic of Japanese acupuncture and moxibustion is the importance placed on information obtained through palpation during examination, treatment, and finally the evaluation of the results.

(a) Examination

The foundation for an examination are the four basic diagnostic procedures of inspection, listening, smelling, questioning, and palpation; but Japanese acupuncture and moxibustion places particularly great importance on pulse diagnosis and channel palpation. Although I will not discuss pulse diagnosis here, channel palpation is not restricted to palpation of the channels; but should be defined as also including

palpation of the entire body to look for reactions. Since the final purpose of acupuncture and moxibustion is the therapeutic stimulation of the body surface, it is necessary to perform acupuncture and moxibustion treatment empirically. As a result, this is an effective method to determine stimulation sites, stimulation purpose and needling stimulation dose.

(b) Therapy

For the basic treatment the needles are held with the pressing hand which is brought into close contact with the skin. This prevents bending or breakage of the needles and further helps to prevent pain that may otherwise occur due to inadvertent movements. Moreover, the pressing hand is also important in sensing the arrival of the Qi feeling. It helps understand the development of therapeutic effects and allows one to determine the timing for removal of the needles. Also, in case there are any changes occuring in skin or connective tissue reactions, the pressing hand can feel them. These facts indicate the necessity of palpation during the treatment (including the feeling with the pressing hand).

(c) Evaluation of the effects

Therapeutic effects are likewise evaluated after removing the needles through palpation. Although it is not easy to precisely remember the condition prior to the needling, experienced therapists evaluate the therapeutic effects based on differences in the palpatory feeling before and after the treatment. At the end of the treatment, it is possible to determine if further needling is required, if the duration of the stimulation should be extended, or the stimulation method changed. Naturally, through cumulative effects and the attainment of changes finally leading up to the targeted condition, it is also possible to judge when to finish the treatment cycle itself.

Leading this argument even further, cumulative evaluation of therapeutic results will in this way affect the establishment of the treatment plan during the first visit of the next patient.

In other words, the palpatory findings allow one to evaluate the severity of the patient's condition, degree of changes, prognosis and the time of the final stage of the treatment.

4. Why has palpation developed in Japan?

The views regarding why palpation has developed so far in Japan are probably divided. Yet, it is generally possible to say that acupuncture, moxibustion, and massage (Anma) found widespread application among the general population from the Edo period to the early Showa period. Subsequently, in a process of adaptation to the sensitive disposition of the Japanese, the employed needles became thinner, the moxa cones smaller, and the Anma stimulation softer. In other words, the stimulation dose applied during treatment may be said to have been reduced. Yet, naturally, therapeutic effects were not decreased, but rather effects of the same magnitude were expected. The result was, that

* Stimulation sites had to be selected appropriately in order to guarantee that a even a small stimulus dose is effective. For this purpose, palpatory skills to identify suitable sites were demanded.

* This kind of subtle techniques is a representative example for the Japanese treatment. The development was brought about by the culture and climate from the Edo period to the early Showa period that evaluated dexterity of the hands positively.

* And also, a worldwide unparalleled healthcare culture developed, when from the middle of the Edo period, visually impaired persons started to bear the responsibility for acupuncture and moxibustion treatment. For visually impaired persons, palpation is the basis for determining the treatment sites and as mentioned above, as a consequence made it necessary to perform the entire treatment process guided by skillful palpation.

These circumstances led to a unique development of palpation skills in Japan.

Basic Research into Japanese Acupuncture – Mechanisims of action with acupuncture –

KAIM Editorial Department

Over the years, patients have experienced (and acupuncture providers have observed and recorded) the amelioration of physical pain, improvement in a variety of psychosomatic complaints, and recovery of physical condition that can be provided by acupuncture treatment. What accounts for the success of acupuncture in these situations? A variety of theories have been developed over the last 2000 years, and have been described in the historical context of yin-yang five phase metaphysics, ki-ketsu-sui (ki energy, blood, and body fluids) and zang fu organ theory, and meridian system theory.

These inferences regarding disease-related subjective changes as experienced by patients and noted by treatment providers have been explained in detail from an acupuncture perspective, and placed within the context of yin-yang five phase metaphysics and meridian system theory. Unfortunately, acupuncturists' findings have yet not been adequately described from the perspective of scientific mechanisms of action.

However, beginning in the last half of the 20th century and extending into the 21st century, research has begun into the mechanism of the actions of acupuncture. When acupuncture stimulus is applied to percutaneous and subcutaneous receptors (primarily polymodal receptors), and this stimulus is mediated by the nervous system to act on the mechanism of endogenous analgesia, it raise the endogenous opioid level and also activates the autonomic nervous system, the endocrine system, and the immune system. The result is a variety of physiological changes, including analgesia, recovery of organ function, promotion of local and systemic circulation, and the relaxation of muscular tension.

Within the broad field of research into the efficacy of acupuncture in Japan, we focus in particular on work by Dr. Shinjiro Yamaguchi regarding the effects of blood flow of physical sensory stimului as mediated by the autonomic nervous response. We also provide here an in-depth look at the studies being conducted by Dr. Yukihito Sugawara on acupuncture stimulus and nociceptors.

– Somatosensory stimuli including acupuncture modulate blood flow via the autonomic reflexes –

Shinjiro Yamaguchi
Acupuncture & Massage Research Information Center

Introduction

Somatosensory stimuli including acupuncture elicit reflex autonomic responses that affect functions in the cardiovascular system and other organs (Sato et al., 1997). An analysis of the neural mechanisms of somatically induced autonomic reflex responses (somato-autonomic reflex) is essential in developing a scientific understanding of the mechanism underlying the effects of acupuncture therapy.

This article reviews recent studies performed by Japanese researchers regarding vascular reflex responses induced by somatosensory stimuli including acupuncture.

Characteristics of somato-cardiovascular reflex

There has been great progress in research on cardiovascular responses induced by natural somatic stimuli using anesthetized animals in order to eliminate emotional factors. It has been shown that sympathetic rather than parasympathetic nerves play a major role in somato-cardiovascular reflexes. In somato-cardiovascular responses, the brain stem plays an important role as the reflex center. Although spinal segmental stimulation elicits spinal reflex components, such components are usually depressed by descending inhibitory pathways from the brain under a central nervous system (CNS) intact condition. When anesthetized rats are in a CNS-intact condition, somatic afferent stimulation of limbs is particularly effective in producing cardiovascular responses. Limb somatic afferent fibers seem to have specific synaptic connections to the CNS.

Effects of somatosensory stimuli on cerebral blood flow

Background

Recent studies by Sato and colleagues (Sato and Sato, 1992) have shown that cortical cerebral blood flow is regulated by intracranial nerves. Particularly, excitation of the cholinergic nerve fibers originating in the magnocellular nucleus of the basal forebrain (the nucleus basalis of Meynert; NBM) releases extracellular acetylcholine (Ach) in the cortex, resulting in an increase in cortical blood flow, independent of metabolic vasodilation.

Acupuncture-like stimulation

Uchida et al. (2000) demonstrated the effect of acupuncture-like stimulation for 1 min to various skin areas on cortical blood flow measured using a laser Doppler flowmeter in anesthetized rats. The results clearly showed that the increase in cerebral blood flow, independent of systemic blood pressure, elicited by acupuncture stimulation is a reflex response in which the afferent nerve pathway is composed of somatic groups III and IV afferent nerves, and efferent nerve pathway includes intrinsic cholinergic vasodilators originating in the NBM.

As proven by Hotta et al. (2002), ischemia-induced delayed death of rat cortical neurons can be protected by preventing a blood flow decrease in widespread cortices via NBM-originating vasodilative activation. Therefore, it appears that continuous acupuncture stimulation prevents cerebral infarction though its vasodilative effect in the cerebral cortex.

Effects of somatosensory stimuli on peripheral blood flow

Sympathetic reflex

The effect of electro-acupuncture stimulation (EAS) to a hindpaw (0.1-10 mA, 20 Hz, 30 s) on muscle blood flow measured by laser Doppler flowmetry and on mean arterial pressure (MAP) was investigated by Noguchi et al. (1999). EAS to a hindpaw at a strength sufficient to excite group III and IV afferent fibers, can produce a reflex increase and/or decrease in muscle blood flow. They clarified that two types of responses are induced passively by pressor response via a splanchnic sympathetic activity, and/or directly by an activation of muscle sympathetic nerves.

Are small vessels such as arterioles affected by somatic afferent stimulation including EAS? The authors' group (Takagi et al., 2005) investigated the

effects of EAS of the hindpaw and the dorsal Th13-L1 level area on the mesenteric microhemodynamics in anesthetized rats using an intravital microscope system. We observed that the hindpaw EAS evoked intensity-dependent pressor responses and an increase in blood flow velocity, measured by the dual-sensor method developed by the authors, in mesenteric precapillary arterioles, while the dorsal EAS evoked depressor responses and a decrease in blood flow velocity. Occasional but notable reflex vasoconstrictions in the mesenteric terminal arteriole by EAS of both sites were observable on the image under the intravital microscope. These vasoconstrictive responses were not affected by the administration of an alpha-adrenergic blocker. Our study directly demonstrated that hemodynamic changes at the level of precapillary arterioles accompanying EAS either on the hindpaw or the back, mainly depend on the changes of systemic arterial pressure regardless of stimulation current intensities. Moreover, the results in our study suggest some receptors other than alpha-adrenergic receptor might be involved in the mechanism of EAS-induced vasoconstriction in the mesenteric arteriole.

Sato et al. (1996) demonstrated that acupuncture-like simulation induced catecholamine secretion from the adrenal medulla via activation of the adrenal sympathetic nerves in anesthetized rats.

To examine whether such somatically induced catecholamine is effective on microvascular tone, the authors investigated the effects of 10 min (3 mA) of electrical stimulation of the dorsal skin area (Th5-12 level) on the mesenteric arterioles in anesthetized rats using an intravital microscope system (Yamaguchi et al., 2002). Electrical stimulation of the skin for 10 min evoked a decrease in the diameter of arterioles. In the adrenalectomized group, electrical stimulation of the skin for 10 min elicited a slight increase in the diameter (Fig. 1). It is therefore suggested that the constriction of the mesenteric precapillary arterioles induced by the stimulation for 10 min was mediated by humoral adrenaline and noradrenaline released by somato-adrenal medullary reflex.

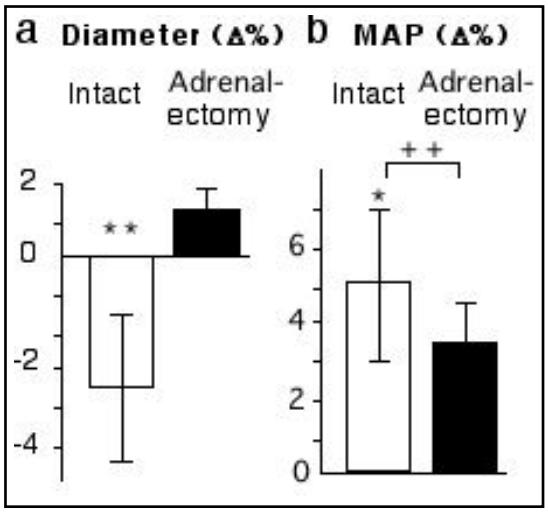


Figure 1: Effects of adrenalectomy on precapillary arteriolar constriction (a) and pressor response (b) induced by electrical stimulation (ES) of the back skin (3 mA, 20 Hz, intermittent, 10 min) in anesthetized rats. The open bar shows the responses to ES in the intact rats. The closed bar shows the responses induced by ES in the bilateral adrenalectomized rats. *p<0.05, **p<0.01; statistical significant is obtained between the pre-stimulus values and the values at 4-5 min (a) and 2-3 min (b) after onset of the stimulus. +p<0.05, ++p<0.01; statistical significance is expressed between responses in two groups. (Modified from Yamaguchi et al. 2002)

Nitric oxide

It is well known that nitric oxide (NO) is a physiologically active substance producing various functions. NO, especially, plays an important role in vasodilation in arterioles.

In the knee joint, blood flow is known to be modulated mainly by sympathetic postganglionic fibers, but recently the release or induction of NO synthesis in response to electrical stimulation has also been suggested. Therefore, direct observation of the microcirculation is needed to further understand the mechanism by which blood flow is regulated by somatic afferent stimulation. The author's group (Loaiza et al., 2002) observed the effects of EAS (5 mA, 0.5 ms, 5 Hz, 30 min) to the vastus medialis muscle on MAP and the knee joint microcirculation using a real-time confocal laser-scanning microscope system.

Significant and persistent increases in arteriolar diameter and MAP, were observed after EAS to the muscle. EAS to the vastus medialis in the presence of N(omega)-nitro-L-arginine methyl ester (L-NAME) produced a strong decrease in diameter of the knee joint arterioles under the baseline with a simultaneous increase in MAP. EAS to the skin did not produce changes in arteriolar diameter while a slight increase in MAP over the baseline occurred after the stimulaitons. EAS to the muscle after neuromuscular blockade did not produce significant changes in diameter, while an increase in MAP was still observed, which suggests that muscle contraction is required to produce vasodilatation (Fig. 2). These responses suggest that a dynamic balance between the autonomic nervous system and the release of NO is the primary mechanism mediating the EAS effects on knee joint microcirculation.

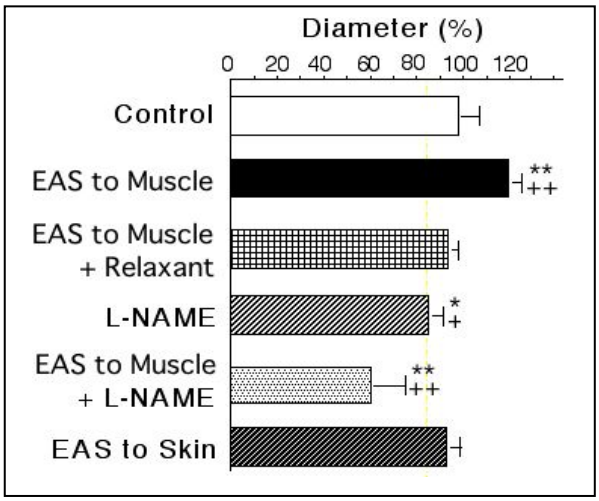


Figure 2: Summarized data on the changes in joint capsule arteriolar diameter in anesthetized rats. The values were registered at 30 min of observation in the control (non-stimulated) and L-NAME group and at the end of the stimulus in the elactro-acupuncture stimulation (EAS) to vastus medialis muscle, EAS to the muscle + L-NAME, EAS to the muscle + relaxant and EAS to skin groups. Statistical significance is indicated as *p<0.05, **p<0.01 when compared to the pre-stimulus values, and +p<0.05, ++p<0.01 when compared to the control group. (Modified from Loaiza et al. 2002)

Axon reflex

When an axon reflex is induced by cutaneous stimulation, the excited afferent terminal releases vasodilative substances, such as calcitonin gene-related peptide (CGRP).

The contribution of CGRP to antidromic vasodilation of skeletal muscle blood flow following electrical stimulation of muscle afferent was investigated by Sato and colleagues using anesthetized rats. They concluded that antidromic vasodilation in skeletal muscles following stimulation of unmyelinated C afferents in dorsal roots is independent of systemic blood pressure and is mediated essentially by CGRP. They described that this CGRP-related antidromic vasodilation is probably important in the clinical improvement of skeletal muscle blood flow caused by physical therapy such as acupuncture.

The authors assessed by measurement of two different hemodynamic parameters: muscle blood flow using a laser Doppler flowmeter; and the changes in diameter of the muscle arterioles observed directly using an intravital microscope system in order to examine the effects of electrical stimulation (5 V, 20 Hz, 30 s) to the saphenous nerve on microcirculation of the gracilis muscle in anesthetized rats (Loaiza et al., 2002). We found that ipsilateral nerve ES produced vasodilative responses in the muscle accompanied by increases in muscle blood flow independently of the sympathetic nerve activity. Furthermore, CGRP was found to be directly involved in the reflex neural regulation of the muscle microcirculation, which suggests the participation of an axon reflex mechanism (Fig.3).

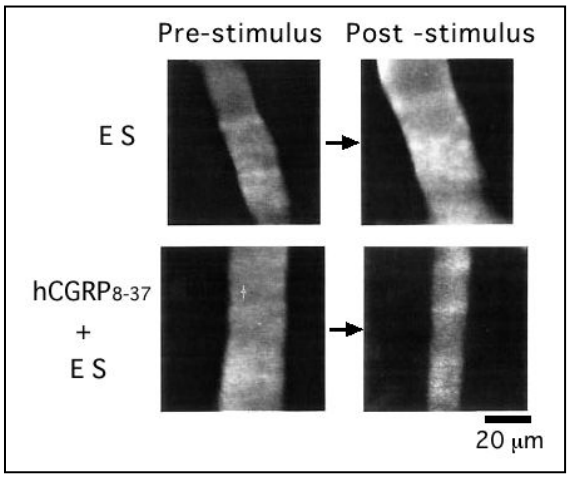


Figure 3: Effect of ipsilateral electrical stimulation (ES) of the saphenous nerve on gracillis muscle arteriolar diameter in the absence and presence of

topical CGRP8-37. Representative photographs of two different arterioles, observed pre- and post-stimulus are illustrated. (Modified from Loaiza et al. 2002)

Conclusions

1. The cerebral blood flow response induced by acupuncture-like stimulation of a forepaw in rats, independent of MAP, is a reflex response whose afferents are group III and IV somatic afferent fibers, and whose efferents are cholinergic fibers originating in the NBM.
2. The somatically induced peripheral circulatory regulation system consists of three types of mechanisms as follows.
   (1) Hemodynamics in the region of interest is affected by systemic circulatory changes induced by the somatic afferent stimulation.
   (2) The observed blood vessels are directly affected by activating the autonomic efferent nerve fibers including nonadrenergic, noncholinergic fiber that can release NO.
   (3) Vasodilative response induced by the CGRP through activating the primary afferent fibers (axon reflex).

These physiological findings may support the effectiveness of acupuncture therapy on patients with circulatory disturbances.

References

1. Sato A, Sato Y, Schmidt RF: The impact of somatosensory input on autonomic functions. Rev Physiol Biochem Pharmacol 130: 1-328, 1997
2. Sato A, Sato Y: Regulation of regional cerebral blood flow by cholinergic fibers originating in the basal forebrain. Neurosci Res 14: 242-274, 1992
3. Uchida S, Kagitani F, Suzuki A, Aikawa Y: Effect of acupuncture-like stimulation on cortical cerebral blood flow in anesthetized rats., Jpn J Physiol 50: 495-507, 2000
4. Hotta H, Uchida S, Kagitani F: Effects of stimulating the nucleus basalis of Meynert on blood flow and delayed neuronal death following transient ischemia in the rat cerebral cortex. Jpn J Physiol 52: 383-393, 2002
5. Noguchi E, Ohsawa H, Kobayashi S, Shimura M, Uchida S, Sato Y: The effect of electro-acupuncture stimulation on the muscle blood flow of the hindlimb in anesthetized rats, J Auton Nerv Syst 75: 78-86, 1999
6. Takagi K, Yamaguchi S, Ito M, Ohshima N: Effects of electroacupuncture stimulation applied to limb and back on mesenteric microvascular hemodynamics. Jpn J Physiol 55: 191-203, 2005. Epub 2005 Sep 7
7. Yamaguchi S, Ito M, Ohshima N: Effects of electrical stimulation of the dorsal skin on systemic and mesenteric microvascular hemodynamics in anesthetized rats. Jpn J Physiol 52: 257-65, 2002
8. Loaiza LA, Yamaguchi S, Ito M, Ohshima N: Electro-acupuncture stimulation to muscle afferents in anesthetized rats modulates the blood flow to the knee joint through autonomic reflexes and nitric oxide. Auton Neurosci. 97: 103-9, 2002
9. Sato A, Sato Y, Shimura M, Uchida S: Calcitonin gene-related peptide produces skeletal muscle vasodilation following antidromic stimulation of unmyelinated afferents in the dorsal root in rats. Neurosci Lett 283: 137-140, 2000.
10. Loaiza LA, Yamaguchi S, Ito M, Ohshima N: Vasodilatation of muscle microvessels induced by somatic afferent stimulation is mediated by calcitonin gene-related peptide release in the rat. Neurosci Lett 333: 136-40, 2002

– Correlation between Nocicepetion and Acupuncture and Moxibustion –

Yukihito Sugawara
Department of Basic Medical Research
Tokyo Eisei Gakuen College

I. Introduction

Acupuncture and moxibustion therapy is a primitive stimulation therapy during which either needles are inserted into the tissue or moxa is burned on the skin, thereby causing minor damage to the tissue and skin. These stimuli can alleviate pain and elicit various reactions from the autonomous nervous system, but at the same time the stimuli themselves also produce a pain sensation and thus excite nociceptors. In a manner of speaking, this would be like "using pain to kill pain", where a basic negative feedback mechanism can be considered to underlie the induction of the effects brought about by the acupuncture and moxibustion stimulation[1,2,3].

Acupuncture and moxibustion is characterized by stimulation of specific sites called acupoints, but its applications are extremely varied. Although this treatment form cannot easily be defined, the stimulus modalities can be classified as mechanical nociceptive and thermal nociceptive stimuli. In the end these stimuli cause some degree of local tissue lesions, the release of various algesic substances or their relevant modulator substances, or else the production and release of neuropeptides. From this point of view it is necessary to consider this modality to act as a chemical stimulus.

Moreover, these stimuli excite nociceptors, activating endogenous analgesic mechanism[4,5,6,7] and lead to the manifestation of various effects on the autonomous nervous and endocrine systems[6], or else they may also influence the immune system[7] and for this reason acupuncture and moxibustion have been used since ancient times to cure all kinds of complaints and symptoms.

On the other hand, in our research department, with Mr. Kazuhiro Goto as the leading figure, we have employed microneurography for the purpose of studying the correlation between the activity of human nociceptors and pain in order to directly record human peripheral nervous activity. Among cutaneous and deep afferent neuronal activities we recorded the activity of C-fiber thermomechanical nociceptors (synonymous with C-fiber polymodal nociceptor, C-fiber mechanical heat nociceptor: CMH) [8,9,10,11] and A-fiber nociceptors [8,12,13] and thereby investigated the correlation between pain and acupuncture and moxibustion stimulation.

In the present paper the correlation between pain and acupuncture or moxibustion stimulation will be discussed, while adding some of the insights pertaining to the activity of human nociceptors obtained through microneurography.

II. Characteristics and application of microneurography

Peripheral nerve activity in non-sedated humans was recorded using microneurography and systematically researched by the Swedish researcher Hagbarth, Vallbo[14] et al. and in Japan by Honno et al.[15].

This method employs percutaneous unanethetized insertion of tungsten microelectrodes that are isolated with the exception of a few μm at their tip to directly record the potential action of nerves. In this way the correlation between the activities of human skin mechanoreceptors[16], sympathetic nerves of muscles[17], muscle spindles, tendon organs and other proprioceptors on the one hand; and pyramidal muscle activity on the other hand[18]; as well as the nerve activity of afferent C-fibers from the skin and sympathetic activity[19,20,21] etc. were analyzed.

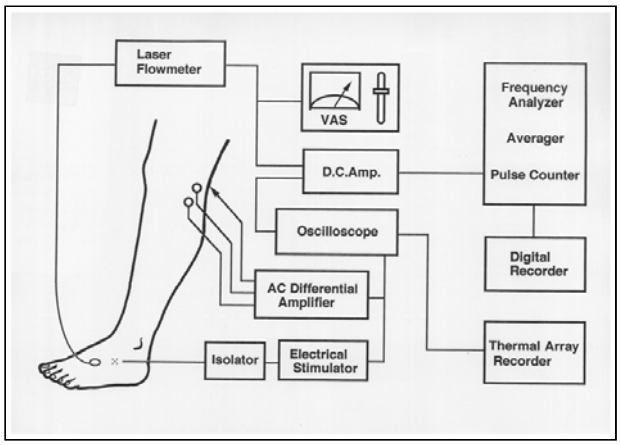


Figure 1

Figure 1 shows a diagram of this method. A tungsten recording microelectrode with an impedance of several MΩ to over ten MΩ is used for the recording of the action potentials, while the indifferent electrode

is attached nearby on the skin as a disk-shaped earth electrode. The signals were amplified using a high-impedance type amplifier and a DC amplifier and then observed on the cathode ray tube of an oscilloscope. The data were recorded at all times during the observation.

The electrode was inserted percutaneously above nerve trunks. To determine a suitable location for the insertion of the electrode, the course of the nerve can be confirmed in advance by applying electric stimuli to it. At this time the motor nerve conduction velocity (MCV) or the sensory nerve conduction velocity (SCV) at the site for the insertion was determined by using the evoked wave forms obtained during the measurement as an index to make the approach of the electrode to the nerve still more reliable.

The electrode was then advanced by hand towards the nerve. The occurrence of a transient unusual sensation confirmed that its tip had reached the nerve trunk. Simultaneously, the output of the characteristic nerve activity via a sound monitor was also possible. When the tip of the electrode had reached a muscular branch, a deep, diffuse, dull pain ran through the depth of the muscle; or in case of reaching a dermal branch a transient feeling of superficial numbness occurred.

In this way, the derived action potentials of the nerves are in the beginning action potentials of several units, but through subtle and very careful manipulation of the inserted electrode the discharge of single units or cluster discharge with a very good S/N ratio are isolated. During this process, first the activity of afferent nerve fibers of the relevant peripheral receptive field is probed and then the nerve conduction velocity measured by applying electrical stimulation to this receptive field. Or alternatively, by applying various stimuli (mechanical stimuli, muscle contraction of stretch stimuli, heat stimuli and chemical stimuli) the activity of the particular unit is qualitatively identified. Moreover, regarding the activity of postganglionic sympathetic fibers or similar efferent nervous activities, a variety of load tests of the autonomic nervous systems are performed, or else the origins of nervous activities related to heart rate, breathing or sweating etc. are determined.

In this way, recorded nerve activity, in particular the activity of primary afferent cutaneous nerve terminals, can be analyzed in direct comparison with the intensity of the sensory responses experienced by the subjects. Through stimulus-response analysis it is possible to measure the intensity of the direct subjective sensory responses. Moreover, during research into acupuncture and moxibustion it is not only possible to analyze what kind of primary afferent terminals the acupuncture or moxibustion stimulation produces analgesic effects and elicits various responses of the autonomous nervous system, but it is also considered possible to examine through analysis of the excitation of peripheral receptors in the skin or muscles at the site of acupoints, what kind of peripheral receptors the so-called "de qi phenomenon" are related. Thus, the application of microelectrodes is a very useful tool for research into human peripheral nerve activity within the field of studies pertaining to acupuncture and moxibustion. In the present paper we have focused in particular on acupuncture or moxibustion stimulation induced activity of primary afferent terminals in the skin and discuss the results, adding the insights we have gained.

III. Input system for acupuncture or moxibustion stimuli (correlation to the nociceptor system)

Assuming that acupuncture and moxibustion stimulation in itself produces some minor lesions of the peripheral tissues, in particular in case of needling stimulation, the insertion or mechanical manipulation of the inserted needle(s) may elicit beside the prick pain a peculiar abnormal sensation called "de qi (tokki)". There are a variety of different patterns associated with this de qi sensation, but in any case its characteristics are close to the sensation of pain. Based on these facts, the likelihood of the possibility increases, that the peripheral receptors excited by the acupuncture or moxibustion stimuli are rather nociceptive receptors than non-nociceptive, proprioceptors. These considerations suggest, and based on considerations of the input system through which the acupuncture or moxibustion stimulation acts, that cutaneous and subcutaneous nociceptors are representative for the polymodal nociceptors playing the most important role here.

1) Polymodal nociceptors

Afferent fibers transmitting nociception include C-fibers and A-fibers. On the other hand, polymodal nociceptors are widely distributed throughout the entire body and serve as the most important nociceptors within the input systems of the bodily defense[22].

One property of polymodal nociceptors is, that morphologically they are free nerve endings and widely distributed throughout the body, spreading antennas that pick up abnormal stimuli applied to the body. Moreover, the modality of the stimuli has a low specificity, so that they may react to mechanical stimuli, heat stimuli, or the chemical stimuli provided by endogenous algesic substances. Thus they are characterized by the advantage that they do not distinguish between the nature of the stimuli as long as it is a nociceptive stimulus. Further, the excitability in response to stimuli has a wide range from the non-nociceptive level to the nociceptive level, throughout which these receptors respond strongly and thus cause the body to sensitively react to abnormal stimuli. This means, that these characteristics are marked by a high input sensitivity of the body's warning system, so that they also encode signals caused by abnormal stimuli, even if those stimuli are not necessarily associated with irreversible tissue damage.

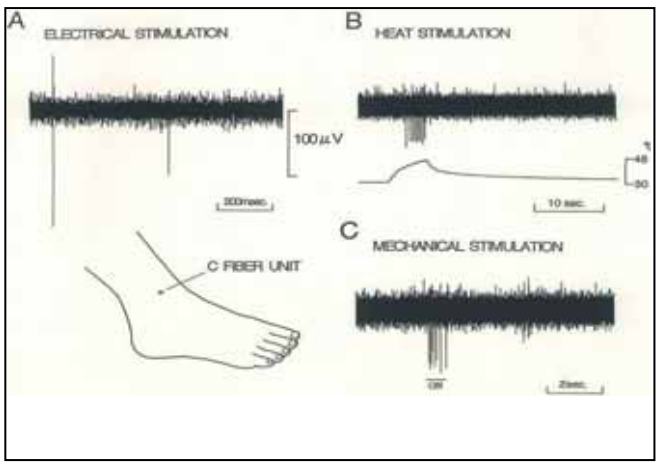


Figure 2

Figure 2 shows the evoked firing of human cutaneous C-fiber thermomechanical nociceptors (CMH) following electrical, mechanical and thermal stimulation[8].

In case of single discharge recordings from CMH, the threshold within the receptive field in response to electrical stimulation is considerably lower than the electrical threshold of C-fibers stimulated via nerve trunks, so that pain sensations are negligible. The threshold for mechanical and heat stimulation has a wide distribution range (Figure 3), so that firing activity is observed even from comparatively low stimulation intensities.

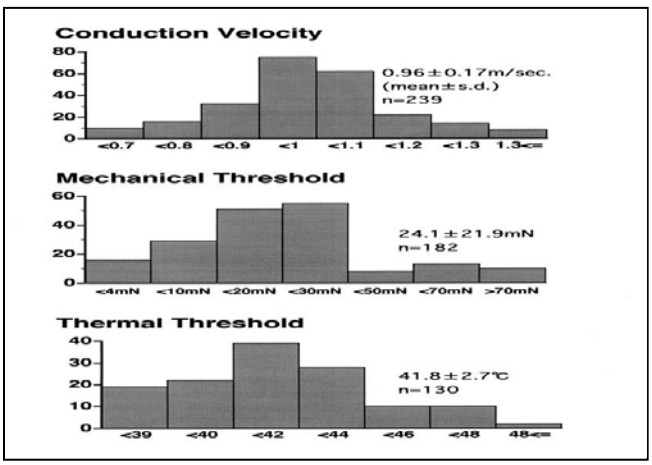


Figure 3

Again, the average temperature in case of thermal stimulation was 41-42°C and the categories corresponding to the subjects subjective sensation of the intensity of the thermal stimulation were at "warm" or "hot" levels. When CMH are in this way classified as nociceptive receptors, the ranges for the individual stimulation types are very wide and one of their characteristics can be said to be their firing activity ranging from non-nociceptive stimulus intensities.

The firing of the CMH increases depending on the intensity of the nociceptive stimuli. Tentatively they encode the intensity of the sensation comparatively accurate and thus enable central discrimination of both localization and intensity[23,24,25,26,27].

For example, when the tentative characteristics of CMH in their response to the stimulus intensity in case of thermal stimulation is examined, an approximate dependency of the firing activity on stimulation intensity is observed (Figure 4).

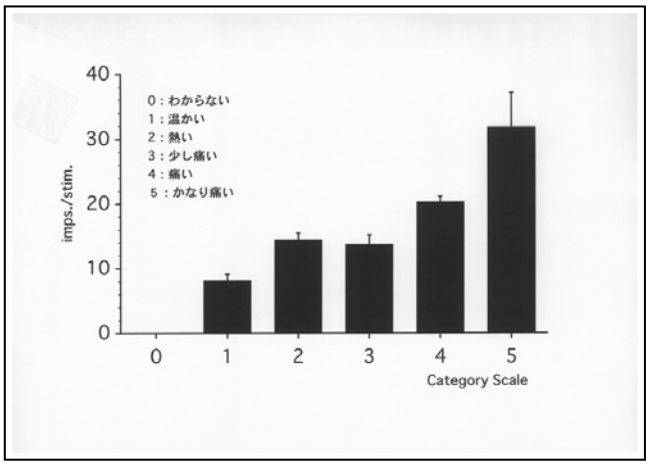


Figure 4

However, in this case the temporal intervals between repetitions become shorter, so that it is influenced by preceding stimuli. In particular, in connection with strong preceding stimulus a low correlation to the firing frequency is observed, characterized by a lower reproducibility of the excitation than from other cutaneous sensory receptors [10)11)]. Accordingly, the function of CMHs is to transmit the algesic sensory information, but regarding the intensity of the nociceptive input, the transmission is neither necessarily continuous nor true. The CMH are thus considered to serve mainly the transmission of early information pertaining to conditions potentially harmful to the body.

Moreover, the changes in the tissue induced by the nociceptive stimulus is transmitted and the condition of the tissue conversely modifies the receptors themselves, so that they are considered to fulfill their original purpose as polymodal receptors within the biological defense.

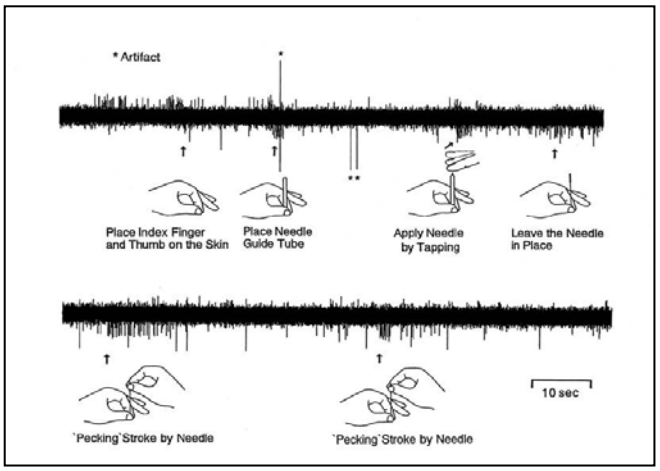


Figure 5

On the other hand, needling stimulation easily excites the CMH (Figure 5). If a series of acupuncture manipulations have been performed within the CMH receptive field, simply erecting the needle tube there after positioning the pressing hand induces firing activity. Next, the performance of needle tapping to insert it through the skin results in a transient, dynamic firing, whereas for the needling technique called thrusting and lifting, where the needle is moved up and down as if in pecking movements, it also induces dynamic firing activity. With this kind of thrusting and lifting stimulation, single unit firing activities show a firing frequency of more than 10 impulses per second, but in most cases the subject does not experience any tingling prick pain.

In spite of the fact that such a series of manipulations induces high frequency CMH firing, it does not cause the subject any pain. Since the acupuncture stimulus itself is a punctuate mechanical stimulus, it is difficult to obtain peripheral or central spatial summation. For example, this indicates that even if the CMH would be firing, it does not necessarily mean that this will lead to the perception of a "de qi" sensation.

Also, thick fibers are simultaneously excited through the pressing hand or movement of the needle, which are considered to be related to pain inhibition, also suggesting a correlation to the manifestation of effects of acupuncture stimulation brought about by retaining the needles, intradermal needles or shallow needling just piercing the skin.

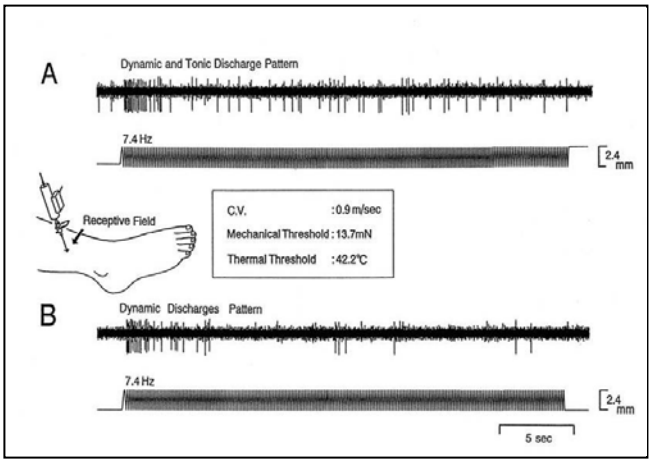


Figure 6

Figure 6 shows the firing activity of CMH when an

acupuncture stimulation of constant frequency is applied using a thrusting and lifting stimulation device. Continuous stimulation period was 30 seconds, thrusting and lifting frequency 7.4 Hz and amplitude 2.4 mm; the upper and lower row show the firing activity of the same unit.

The firing pattern shown in the upper row shows a strong dynamic activity during the starting phase of the thrusting and lifting. After that the stimulation frequency was not followed, but rather a static firing activity continued. Moreover, the lower row shows only early phase dynamic firing activity, which is a pattern lacking the static firing components observed during the latter half. With neither of these two patterns did the subject feel any pain, but reported only a sensation of vibration.

These differences in firing pattern, in spite of originating from the same CMH firing activity, are easily influenced by preceding stimuli and are considered to be the manifestation of a fatigue phenomenon. Also, applying acupuncture stimulation frequently results in the development of flares or swelling in the vicinity of the needled site. This is considered to be the result of neurogenic inflammation caused by the excitation of these polymodal nociceptors[1,2,28].

In this respect, attention has been paid to the action of polymodal receptors as effectors, where the excitation of these polymodal receptors serves as retrograde stimulus; while in the manner of axon reflexes from the free nerve endings in the vicinity substance P or CGRP (calcitonin gene-related peptide) and similar neuropeptides are released, hypothetically causing inflammatory reactions like vasodilatation or plasma exudation[29].

On the other hand, moxibustion stimulation induces a high firing frequency of the CMH. Figure 7 shows the CMH firing activity induced when in the vicinity of a mechanically stimulated receptive field with the relevant sensitivity moxibustion is repeatedly performed in a different receptive field[30].

Direct moxibustion with small cones of moxa with a temperature of 60 - 70°C produced a strong nociceptive thermal stimulus and cause a local burn, but CMH firing activity is observed even after 3 repeated applications. This means that the receptive field at the site of the moxa treatment has not sustained destructive lesions by the moxibustion stimulus.

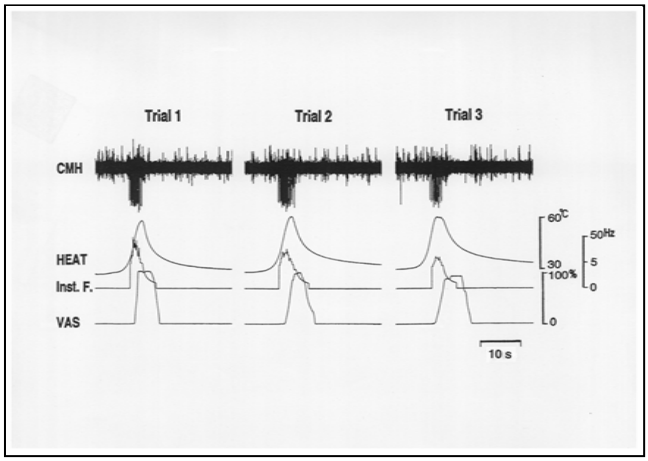


Figure 7

During the first application of moxibustion, the skin temperature reached an average peak of 62°C, whereupon the number of CMP firing impulses and instantaneous firing frequency also reached a considerably high frequency (average 37 imp and 49.4 Hz) and the subject felt a strong thermal pain. Yet, following the second application, even though the peak temperature reached during the moxibustion was approximately the same, a CHM firing desensitization is observed and the thermal pain sensation of subject is attenuated (Figure 8).

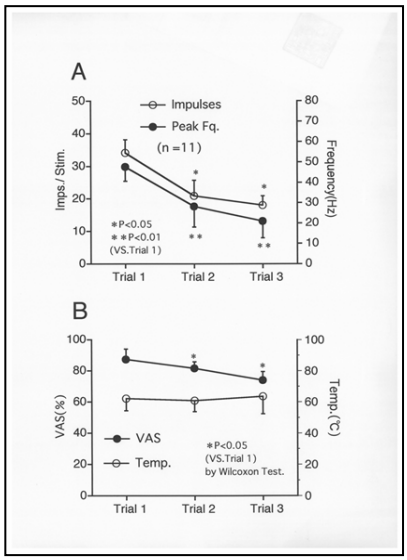


Figure 8

The attenuation of the thermal pain sensation thus observed after repeated application of moxa treatment is considered to represent a fatigue phenomenon[25]. Moreover, the high CMH firing frequency observed during the first moxa application may be expected to cause a central inhibition via the DNIC: diffuse noxious inhibitory control) [31].

2) A-fiber nociceptors

Human cutaneous nociceptors also include apart from the C-fiber polymodal nociceptor Aδ afferent nerve fibers[8,9,12,32].

Among the records obtained so far from human cutaneous afferent nerve fibers the number of units with a conduction velocity in the Aδ range are extremely few. This is also due to the fact that their proportion among the fibers within nerve trunks is compared to the CMH units low[33]. Among these, again, units are classified as units responding to both mechanical and thermal stimulation (A-fiber mechano-heat nociceptor: AMH) and receptors with a high threshold responding to mechanical stimulation only (high threshold mechanoreceptor: HTM) (Table 1)[34,35].

	CMH	HTM	AMH
C.V.(m/s)	0.96±0.17(n=239)	19.2±8.4(n=11)	23.5±10.2(n=15)
Mechanical Threshold (mN)	24.1±21.9(n=180)	29.1±12.6(n=239)	23.0±14.9(n=15)
Thermal Threshold (℃)	41.8±2.7(n=130)		49.1±1.4(n=12)

CMH: C Mechano Heat Nociceptor (mean ±S.D.)
HTM: High Threshold Mechano Nociceptor
AMH: A Mechano Heat Nociceptor

Table 1

The receptive fields of these units show a distribution of either single or multiple points sensitively responding to mechanical stimulation within cutaneous areas of fixed size, where the areas between the individual points have a high threshold for mechanical stimulation, or are not responsive at all. The terminals of these receptors have several branches within specified areas and form points responding sensitively to mechanical stimulation which are considered to be distinctly separate from the surrounding areas.

Morphological studies of high threshold mechanical receptors in hairy skin of cats clearly showed, that axons surrounded by Schwann cells are distributed among the terminals and the nerve endings are surrounded by keratinocytes. This increases the threshold toward stimulation and is considered to define the localization.

The characteristics of HTM and AMH receptors in response to mechanical stimulation show in any case, slowly-adapting firing patterns, transmitting intensity or variation components of nociceptive stimulation to the skin centrally. Both show about the same threshold for mechanical stimulation, which are at the same time of a similar magnitude of the threshold for mechanical stimulation of CMH. Originally nociceptors of A-fibers are thought to transmit the primary pain caused by nociceptive mechanical stimulation[36]. The localization of piercing the skin by tapping acupuncture needles is very distinct, so in that case it provokes stabbing pain, a high frequency firing activity of the AMH is induced[9].

On the other hand, burning the skin surface with moxa through direct moxibustion is a stimulation method definitely causing burns of the skin, in which case, the response of the AMH to the thermal stimulus is very important. Namely, the response of the AMH to the thermal stimulus is distinctly different from the response of the CMH. One of these properties has been demonstrated in units classified as type 1 AMH in hairy skin of monkeys and other animals[33,37,38], that are characterized by an extremely high threshold temperature for nociceptive thermal stimuli (Table 1).

In human AMH, the units that respond to thermal stimulation from the very beginning react at temperatures of 48 - 52°C. The firing starts after temperatures have reached this range and the subjects experience a strong thermal pain sensation (Figure 9).

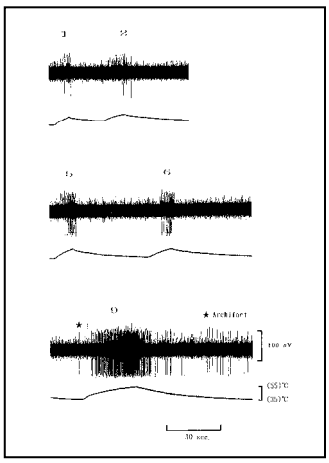


Figure 9

Again, depending on the unit, there are also some that do not show any firing during the initial phase of trials with repeated thermal stimulation, but after several preceding thermal stimuli of 50°C, causing the development of a mild degree of rubescence on the skin surface, the receptive field becomes sensitized to the thermal stimulation, after which the onset of firing is observed. Moreover, through repeated thermal

stimulation, the relevant excitability is temporarily obtained so that the units show an obvious increase in firing in response to the thermal stimulation. In some units, high frequencies of up to 50 times per second may be observed (Figure 10) [9,13,33,34].

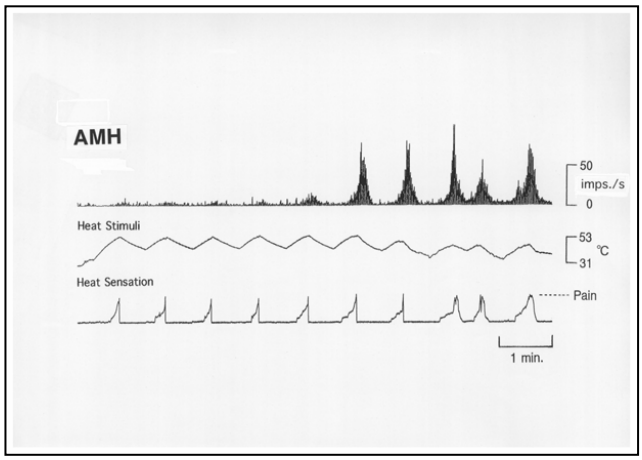


Figure 10

This degree of sensitization of the AMH in response to thermal stimulation which may be called dramatic does not occur in CMH. Here, both firing frequency and the degree of sensitization can be said to be distinctly different from that of the CMH[10]. Examination of the correlation between the firing activity of the AMH in response to thermal stimulation and the subjective sensation of heat pain in the subjects showed only a moderate degree of firing activity during the initial phase of a stimulation trial at a time when the excitability just started to develop, but this did not clearly correspond to a cross-modality matching induced appearance of subjective thermal pain sensation. However, with an increasing number of repetitions of the stimulation the firing activity of the AMH units gradually increased, while both the subjective thermal pain sensation and fluctuations in the firing of the units showed parallel variations that allowed recognition of a clear correlation between firing frequency and changes in the expressions used to describe the thermal pain sensation (Figure 11).

In this way the AMH are sensitized and the thermal pain is localized, allowing accurate transmission of its intensity. Moreover, this also indicates a central input of the hypersensitivity information appearing after the development of burns in response to the thermal stimulation[13,36].

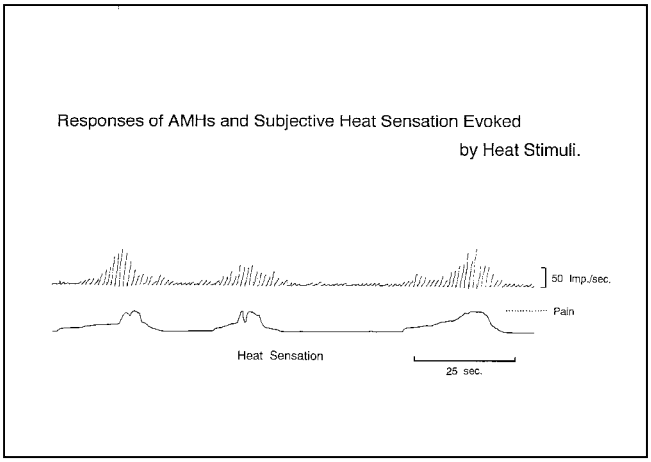


Figure 11

3) Nociceptors in deep tissues

Needling stimulation does not only excite nociceptors in the skin, but also nociceptors distributed in deep tissues like muscles or tendons and the like. In particular, the excitation of small diameter afferent fibers from deep tissue is more likely to elicit responses from the autonomic nervous or endocrine systems than it did in case of the skin, so that it has been pointed out, that the deep nociceptors are rather more likely to feed their information into the autonomic nervous or endocrine systems than the somatic nervous system[1]. Moreover, for the manifestation of acupuncture analgesic effects, excitation of the deep tissue nociceptors is considered to be important[2].

Units responding to needle stimulation of nociceptive fibers derived from human deep tissues (muscles) have the following characteristics[39].

All of the recorded units had conduction velocity in the Aδ range and spontaneous firing was not observed in any of these units. Further, areas from which firing could be evoked by electrical stimulation and their respective depths were markedly limited, and compared with the identification of cutaneous sensory receptive fields, their positions were not easy to determine. Also, they did respond only to mechanical stimulation within a restricted scope while in the presence of responses from proprioceptors, they did not respond to mild muscle contraction, stretching, or else vibrational stimulation. In response to pressure stimuli the firing increases depending in an intensity dependent manner. A good correlation is observed with

the intensity of the sensation following pressure stimulation reported by the subjects. This can be considered to represent the transmission of sensory information pertaining to nociceptive mechanical stimulation.

Although this pertains only to a portion of the units, injection of the points most sensitive to mechanical stimulation with bradykinin (2 ml of a 1μg/ml solution) also induces firing and the pain induced by the bradykinin and reported by the subjects also increases in parallel with an increase in the firing frequency. The subsequent gradual decrease indicates a high probability that these are polymodal receptors (Figure 12A).

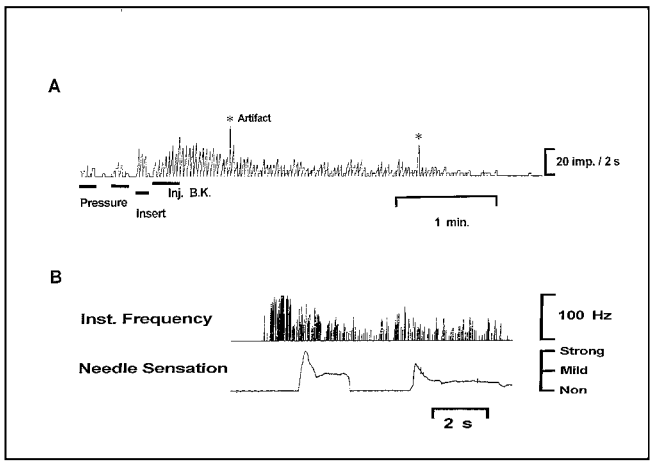


Figure 12

Upon performance of needling stimulation of the receptive fields of this type of muscular Aδ units, that is thrusting and lifting manipulation of muscles, these units definitely display a firing activity and in particular a synchronous high frequency firing was observed when the subjects experienced a de qi sensation. This observation shows the involvement of these units in the manifestation of de qi upon needling stimulation (Figure 12B).

Up to now the activity of C-fiber nociceptors has not been recorded from human deep tissue afferent nerves using microneurography nor found to be mentioned in the literature. In animal experiments, the activity of deep tissue C-fiber nociceptors in muscles and joints has been recorded and numerous relevant research reports[40,41] have been published. This suggests the possibility that regarding the recording of activities from human deep tissues there is some form of bias with the recording method using microneurography.

Since deep tissues are much less likely to be exposed to stimulation than the skin, the spatial distribution of the receptors themselves is conceivably narrower. Moreover, another possibility is the existence of silent nociceptors that under normal conditions are not sensitive to stimulation, that have been detected in muscles, joints, internal organs or the skin[42,43,44] .

These nociceptors are normally present in a concealed condition. In case of tissue lesions or inflammation acquiring excitability, after which they show excitability even for mechanical stimulation for which they had so far not been sensitive, are called chemo-specific nociceptors, or else noted as sleeping nociceptors. Through recruitment of the excitation of this type of nociceptors hyperalgesia or hypersensitivity can conceivably develop in the presence of inflammation[45,46,47] .

Accordingly, by creating minor tissue injuries through needling or moxibustion stimulation, the excitability of this new type of nociceptors is recruited and may be considered to carry hidden possibilities of having various effects on the body's defense system.

IV. Conclusions

The correlation between acupuncture and moxibustion stimulation has been described. Any of these stimuli probably uses cutaneous or deep tissue nociceptors as their main input system. Through excitation of these nociceptors, a negative feedback mechanisms exerts various effects on the body's defense system. Conceivably this can have a variety of effects, for example, the manifestations of an endogenous analgesic mechanism, triggering of responses from the autonomic or endocrine systems, or else modulation of the immune system. Moreover, these stimuli themselves produce some minor degree of tissue injury, leading to the release of algesic substances or modulators and their stimulation then cause retrograde stimulation of the receptors, subsequently probably exerting effects on the axon reflexes of terminals in the vicinity. Furthermore, through neurogenic inflammation the excitability of a new type of so far silent nociceptors is recruited, that then conceivably leads to both peripheral and central summation effects.

Through these mechanisms acupuncture and moxibustion are considered to cause via minor stimulation of the body surface, various clinical effects.

V. References

1) Kenji Kitagawa: Correlation between acupuncture and moxibustion stimulation and peripheral reception mechanisms; Japanese Journal of Physiology 51: 303-315, 1989
2) Kawakita K & Goto K: Role of polymodal receptor in the acupuncture-mediated endogeneous pain inhibitory systems. Kumazawa T, Kruger L, Mizumura K (eds). Prog Brain Res 113: 507-523, 1996
3) Takao Kumazawa: Regarding the modes of action of acupuncture anesthesia, Clinical Physiology 8: 413-419, 1978
4) Sadao Aikawa: Physiology of acupuncture anaesthesia and pain. Keio Medical 50: 463-478, 1973
5) Sjolund B, Terenius L, et al: Increase CSF levels of endrophins after electroacupuncture. Acta Physiol Scand 100: 382-384, 1977.
6) Takao Kumazawa: Pain and polymodal receptors. Japanese Journal of Physiology 51: 1-15, 1989
7) Kumazawa T: Opioids and autonomic functions under abnormal environments. Environ Biol Med 32: 1-20, 1988.
8) Kazuhiro Goto, Yutaka Kagoshima: Activity of human cutaneous C-fibers and Aδ fibers. Collection of abstracts of the 4th Research Conference on Pain 4, 1982
9) Kazuhiro Goto, Yutaka Kagoshima, others: Research into the afferent nerve activities of human cutaneous C-fibers and Aδ fibers. Journal of the Japan Society of Acupuncture and Moxibustion 32: 1-9, 1983
10) Kazuhiro Goto, Yutaka Kagoshima, others: Polymodal receptor activity and pain sensation in human cutaneous C-fibers; Collection of abstracts of the 5th Research Conference on Pain 5, 1983
11) Kazuhiro Goto, Kazuo Sakurai, others: Fatigability of human cutaneous C-fibers in response to thermal stimulation. Journal of the Japanese Association for Study of Pain 2:1, 1987
12) Kazuhiro Goto, Kazuo Sakurai, others: Response of human cutaneous A-fiber nociceptors to thermal stimulation. Journal of the Japanese Association for Study of Pain 5:3, 1990
13) Kazuhiro Goto, Kazuo Sakurai, others: Afferent nerve activity of human cutaneous C / Aδ fiber nociceptors. Clinical Encephalography 34: 81-85, 1992
14) Hagbarth KE & Vallbo AB: Mechanoreceptor activity recorded percutaneously with semi-microelectrodes in human peripheral nerves. Acta Physiol Scand 69: 121-122, 1967
15) Mano T, Mitarai G, et al: Vibratory sensitivity of human muscle spindle, In: Vibratory stimuli and the tonic vibration reflex (Watanabe S eds), Saikon, Tokyo, 1977, 101-110.
16) Knibestol M & Vallbo AB: Single unit analysis of mechanoreceptor activity from the human glabrous skin. Acta Physiol Scand 80: 178-195, 1970
17) Hagbarth KE & Vallbo AB: Pulse and respiration grouping of sympathetic impulses in human muscle nerves. Acta Physiol Scand 74: 96-108, 1968.
18) Hagbarth KE & Vallbo AB: Single unit recordings from muscle nerves in human subject. Acta Physiol Scand 76: 321-334. 321-334, 1969.
19) Hallin RG & Torebjork HE: C-fiber components in electrically evoked compound potentials recorded from human median nerve fascicles in situ. A preliminary report. Acta Soc Med Upsal 75: 77-80, 1970a.
20) Hallin RG & Torebjork HE: Afferent and efferent C unit recorded from human skin nerves in situ. A preliminary report. Acta Soc Med Upsal 75: 277-281, 1970b.
21) Torebjork HE: Afferent C unit responding to mechanical, thermal and chemical stimuli in human non-glabrous skin. Acta Physiol Scand 92: 374-390, 1974.
22) Kumazawa T & Perl ER: Primate cutaneous sensory unit with unmyelinated (C) afferent fibers. J Neurophysiol 40: 1325-1338, 1977.
23) Gybels J, Handwerker HO, et al: A comparison between the discharges of human nociceptive nerve fibers and the subject's ratings of his sensation. J Physiol (London) 292: 193-206, 1979.

24) LaMotte RH, Thalhammer JG, et al: Peripheral neural mechanisms of cutaneous hyperalgesia following mild injury by heat. J Neurosci 2: 765-781, 1982.
25) LaMotte RH, Torebjork HE, et al: Time intensity profiles of cutaneous pain in normal and hyperalgesic skin: a comparison with C-fiber nociceptor activities in monkey and human. J Neurophysiol 51: 1434-1450, 1984.
26) LaMotte RH, Lundberg LE, et al: Pain, hyperalgesia and activity in nociceptive C unit in humans after intradermal injection of capsaicin. J Physiol (London) 448: 749-764, 1992.
27) Torebjork HE, LaMotte RH, et al: Peripheral neural correlates of magnitude of cutaneous pain and hyperalgesia: simultaneous recording in human of sensory judgments of pain and evoked response in nociceptors with C-fibers. J Neurophysiol 51: 325-339, 1984.
28) Jansen G, Lundberg T, et al: Acupuncture and sensory neuropeptides incease cutaneous blood flow in rats. Neurosci Lett 97: 305-309, 1989.
29) Kenis P: Identification of the unmyelinated sensory nerve which evoked plasma extravasation in response to antidromic stimulation. Neurosci Lett 2: 137-141, 1981.
30) Goto K, Aizawa S, et al: Hyperalgesia and sensitivity of nociceptive C fiber unit in human after moxibustion stimuli. Pain Res 12: 99-108, 1997.
31) Le Bars D, Dickenson AH, et al: Diffuse noxious inhibitory controls(DNIC). I Effects on dorsal horn neurons in the rat. Pain 6: 283-304, 1979
32) Adriaensen H, Gybels J, et al: Response properties of thin myelinated (A-δ) fiber in human skin Nerves. J Neurophysiol 49: 111-122, 1983.
33) Ochoa J & Maire WGP: Normal sural nerve in man: Ultrastructure and number of fibers and cell. Acta Neuropathol 13: 197-216, 1969.
34) Campbell JN, Meyer RA, et al: Sensitization of myelinated nociceptive afferents that innervate monkey hand. J Neurophysiol 42: 1669-1679, 1979.
35) Fitzgerald M & Lynn B: The sensitization of high threshold mechanoreceptors with myelinated axons by repeated heating. J Physiol(Lond) 265: 549-563, 1977.
36) Zotterman Y: Studies in the peripheral nervous mechanism of pain. Acta Med Scand 80: 185-242, 1933.
37) Treede R-D, Meyer RA, et al: Evidence for two different heat transduction mechanisms in human peripheral nerves. Physiol Rev 59: 919-957, 1979.
38) Treede R-D, Meyer RA, et al: Evidence for two different heat transduction mechanisms in nociceptive primary afferents innervating monkey skin. J Physiol (Lomdon) 483: 747-758, 1995.
39) Kazuhiro Goto, Kazuo Sakurai, others: Response of thin human intramuscular afferent fibers (Aδ) to thermal stimulation. Journal of the Japanese Association for Study of Pain 3: 1, 1988
40) Hiss E & Mense S: Evidence for the existence of different receptor sites for algesic sgents at the endings of muscular group - afferent units. Pflug Arch 362: 141-146, 1976.
41) Kumazawa T & Mizumura K: Thin fiber receptors responding to mechanical and thermal stimulation in the skeletal muscle of the dog. J physiol(London) 273: 179-194, 1977.
42) Handwerker HO, Kilo S, et al: Unresponsive afferent nerve fiber in the sural nerve of the rat. J Physiol(London) 435: 229-242, 1991.
43) Handwerker HO, Forster C, et al: Discharge patterns of human C-fiber induced by itching and burning stimuli. J Neurophysiol 66: 307-315, 1991.
44) Meyer RA, Davis KD, et al: Mechanically insensitive afferents(MIAs) in cutaneous nerves of monkey. Brain Res 516: 252-261, 1991.
45) Davis KD, Meyer RA, et al: Chemosensitivity and sensitization of nociceptive afferents that innervate the hairy skin of monkey. J Neurophysiol 69: 1071-1081, 1993.
46) Lang E, Novak A, et al: Chemosensitivity of fine afferents from rat skin in vitro. J Neurophysiol 63: 887-901, 1990.
47) Schmelz M, Schmidt R, et al: Sensitization of insensitive branches of C nociceptors in human skin. J Physiol(London) 480: 389-394, 1994.

Basic Research into Japanese Moxibustion – Introduction –

Shigekatsu Aizawa
Department of Basic Medical Research
Tokyo Eisei Gakuen College

Introduction

Therapy forms using heat stimulation of the skin are considered to have developed independently in numerous locations all over the world. Up to the present day a treatment modality closely resembling its original form is still used clinically in Japan and China. In particular, in Japan subtle changes have been made to adjust it to the characteristics of the people, numerous different forms of moxibustion have been contrived and are currently in use. Particularly noteworthy is form of moxibustion used currently in Japan. It is considered to have originated in Japan. It is seldom used in China, where the moxa is burned directly on the skin: direct moxibustion. This form of moxibustion differs from indirect moxibustion, where an attenuated heat stimulus is used like in stick moxibustion as a representative form of this treatment modality. It is considered not only to apply local warming, but rather also exerting considerable effects on distant sites like acupuncture. Yet, direct moxibustion causes, even if only temporarily, moxibustion marks. The heat stimulus when compared to indirect moxibustion is fairly strong and the preparation of the small moxa cones requires some skill so that recently its use has declined. It has not yet been properly investigated from the standpoint of which of these forms is the more effective one and whether there are possible differences in indications. Here I would like to present a brief summary of the research into moxibustion as it is performed in Japan, crude materials, the manufacturing process and the influence moxibustion has on the body.

Moxa raw material, manufacture, quality

The region of Ibukiyama has been famous as a growing district for moxa, but Oda conducted a detailed investigation of the subject and reported the following.[1] There are two sites called Ibukiyama: one in Shiga prefecture and another in Tochigi prefecture, both of which are famous production sites of moxa. The noted production site called Ibukiyama, that has been famous since the Heian period, is located in Tochigi prefecture, whereas Shiga emerged as a growing region following the Azuchi-Momoyama period. The Ibuki moxa varieties of both Tochigi and Shiga have their respective characteristics not found in the other location. Both Ibukiyama regions have a place called 'Shimeji ga Hara' and both regions have similar Buddhistic legends. By the Edo period, the Shiga region flourished, while the Tochigi region declined. Again, regarding the raw mugwort (yomogi) material botanical investigations were performed showing that most of the yomogi material from the Niigata, Toyama and Ishikawa prefectures was Artemisia princes Pamp, while some of it was oo-yomogi (yama yomogi = Artemisia Montana Pamp., whereas all the materials from Shiga prefecture was reportedly of the yomogi variety.[2] Regarding the growing conditions for yomogi, Aizawa et al. compared yomogi grown in sunlight and in shade and reported that the yomogi grown in sunlight is the better suited variety.[3] Regarding the manufacturing equipment Oda has conducted a detailed investigation. The investigation included such aspects as structure, size, power and scale of manufacture for the various types of machinery used during the yomogi manufacture. In particular, the rough stones for stone mortars are obtained from quarries from the upstream region of Itoigawa city in Niigata prefecture of which hornblende andesite or enstatite hornblende andesite materials are reportedly the main products. Reportedly each manufactory uses these stones in particular forms.[4]

Classified by their use, there are about 10 different product types. The moxa used for indirect moxibustion or needle warming moxibustion contains besides the principal component of the T-shaped cilia a fair amount of fragments of leaves or stalks, while superior quality products for direct moxibustion does not contain any impurities. Aizawa used electron microscopy for his related examinations and published a detailed report. This showed that the previously known T-shaped cilia themselves also show differences among high and low grade products and are related to the feel of the material when forming the little moxa cones.[5] Moreover, according to previous hypotheses,

the temperature characteristics and fragrance of high grade moxa was considered due to the fat and oil content in the cilia, but the above mentioned report by Aizawa and the below described report by Shimomura showed[6], that is a mistake in that high grade moxa almost does not contain any oils or fats. It seems highly likely, that the fragrance of the moxa is due to the essential oils contained in the stalk cells of the T-shaped trichome.

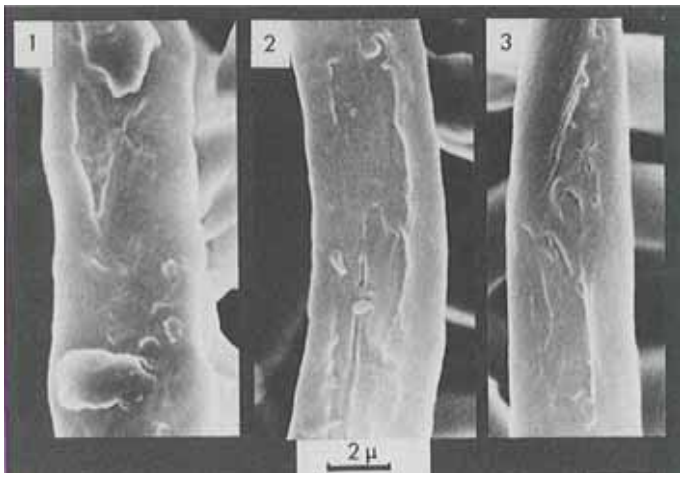


Photo: Comparison of T-shaped cilia of high and low grade products (1: low 2: medium 3: superior)

Essential oil components of moxa

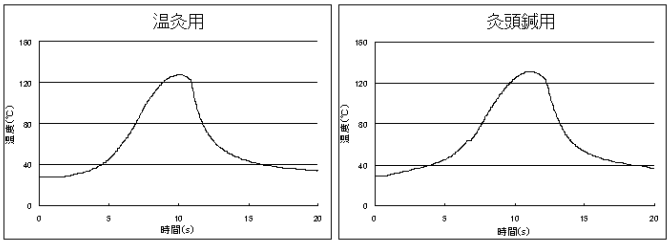
Nakao et a. reported that the moxa leaves contain approximately 0.02% essential oils of which the main component, comprising 50%, is cineol, followed by thujone, sesquiterpene alcohol and similar compounds, where the fragrance of moxa is most likely due to these components.[7] Yet, these reports deal mainly with the moxa leaves and are not the results of an analysis performed using therapeutic moxa material. Generally, moxa is said to contain tricosanol, hentricontane, arachinacohol, thujone and similar substances. In recent years, Toda et al. have identified n-non-acosane and n-hentriacontane using liquid gas chromatography[8] and the results of their essential oil component analysis of commercially available moxa (highest, high, normal grade) showed that the highest grade product contains lower saturated aliphatic hydrocarbons, but in high and normal grade products reportedly higher levels of saturated aliphatic hydrocarbons are present.[9]

Kobayashi et al. isolated from moxa a new tannin composed of the lipophilic heptatriacontene and catechols. Comparing the ratios by weight of the heptatriacontene and tannins among the various moxa varieties for a given moxa weight showed that the ratio by weight for heptatriacontene is approximately the same in all moxa varieties. However, the tannin content varies with the product quality, being low in the highest grade moxa and increased with increasing coarseness of the moxa. The combustion temperature – time curve for moxa treated to extract the lipophilic components und untreated moxa showed, that there were no differences in peak temperature, but for moxa from which the lipophilic components were extracted, the time required after ignition of the moxa to reach the peak temperature from 25°C increased and removing the heptatriacontene tended to make combustion more difficult. These workers thus reported that heptatriacontene affects the time for the rise in temperature in the combustion temperature – time curve.[10]

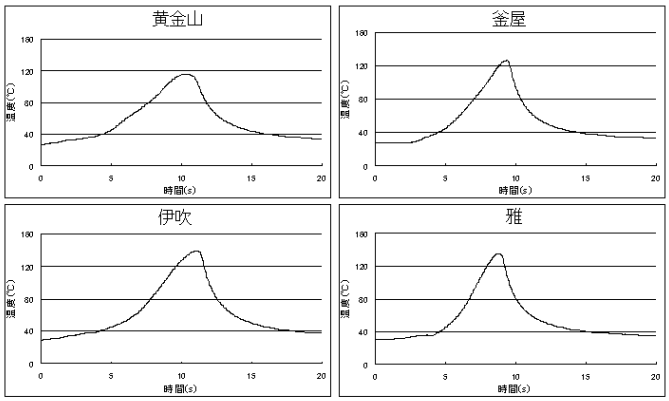
Temperature characteristics during moxibustion treatment

Reports pertaining to the temperature characteristics observed during direct moxibustion have been published for a long time[11], but few papers dealt with the amount of heat generated by the moxa and the large size of the temperature measurement probe did not allow exact measurements. Aizawa et al.[12] and Sugeta et al.[13] reported on their use of microscopic thermocouples to measure the temperature characteristics on and below the skin of mice. They reported that in contrast to what was believed in the past, skin temperature was significantly higher than 60**℃**, while the subcutaneous temperature was lower than the temperature on the skin and even continuous performance of moxibustion did not produce an increase in temperature proportional to the number of moxa cones burned. Commonly the fact that moxibustion treatment using low grade moxa felt hot was ascribed to a large amount of heat generated. Yet, quite recently, Aizawa's research showed that the difference in the amount of heat generated by different qualities of moxa is minimal and the effect is more likely due to differences in heat sensation and the burning technique.[14]

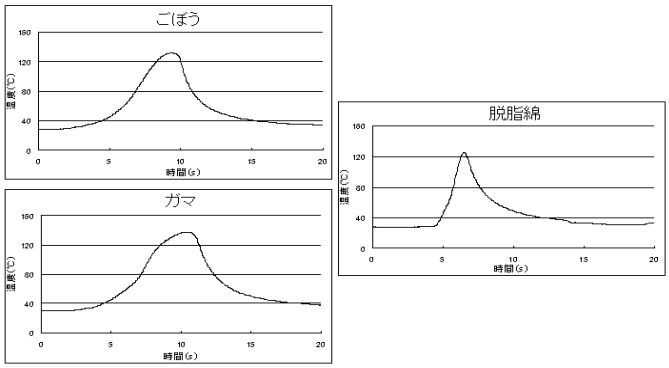
Figures: Moxibustion temperature curve



The left graph is for warming moxibustion
The right graph is for needle warming moxibustion
(vertical axis indicates Temperature (°C), and horizontal axis indicates Time (s).)



The upper left is Ogonzan; the upper right is Kamaya; the lower left is Ibuki; and the lower right is Miyabi.
(vertical axis indicates Temperature (°C), and horizontal axis indicates Time (s).)



The upper left is Burdock root; the right is Bulrush; and the lower left is Absorbent cotton.
(vertical axis indicates Temperature (°C), and horizontal axis indicates Time (s).)

Considerable research has been conducted into warming moxibustion or indirect moxibustion. Ozaki[15] and Ueda[16] performed a detailed examination of the temperature characteristics of moxibustion using a moxa tube or moxibustion on pedestals of intervening materials and reported considerable differences depending on products used regarding the temperature and its sustenance. Onishi reported that with indirect moxibustion, also used as frequently as warming moxibustion, it is not only the warming effect, but the components of the material used as pedestal may possibly also exert some effect.[17]

Tissue changes at the site of moxibustion treatment

Aizawa et al. observed the effects of direct moxibustion on mouse skin over a period of 14 days following treatment and found that after application of three moxa cones the skin had recovered almost to its normal state after 14 days, without moxa scar. In the case of treatment using 20 cones there was some hypertrophy of the epidermis after 14 days, but after about 20 days the skin was considered to have recovered almost to its normal state.[18] Menjo et al. electron microscopically observed morphological changes in cutaneous collagen microfibrils using both electron and light microscopy. He found that the local alterations were the most marked, where the greater the amount of moxa was and these effects did not disappear even after 24 hours. This is a highly interesting fact when considering the influence of the temperature reached during moxibustion treatment on the body. Moreover, the heat stimulus provided by moxa treatment on the one hand and burns on the other hand may be considered to differ in the degree of their invasiveness for the body and will need further study in the future. The effects of moxa treatment are considered to be mediated via local inflammatory reactions, but it should be taken into account that the term inflammation could imply that the effects of inexplicable heat stimulation may also be considered as being included in the moxibustion effects.[19] In this respect, this report was very interesting. In other words, burns in general and burns caused by moxibustion are completely different regarding the degree of invasiveness and size. Accordingly, the inflammatory reaction alone caused by a simple burn cannot conceivably be considered to have the effects moxibustion does. Rather, the heat stimulus applied

during the moxibustion is considered to be important.

Influence of moxibustion on blood circulation

There are also many reports dealing with local and distant changes in blood flow. Takeda et al. have investigated the changes in local and distant cutaneous blood flow depending on the number of applied moxa cones and found that the application of a single moxa cone may produce locally a maximal increase of 580%, while application of 10 cones resulted in an increase of 720%. The stimulus intensity dependent increase in blood flow and sequential changes subsequently gradually decreased and returned reportedly after about 30 minutes to the control value set for the experimental time.

Almost no changes are observed in the peripheral blood flow after application of 1 cone, but moxibustion using 3 to 10 cones produced a transient reduction in blood flow that subsequently returned close to the control value, after which a tendency towards a slight increase was reportedly observed.[20] Ueda et al. applied various types of warming moxibustion to the forearm to examine the temperature characteristics and then used the laser Doppler method and a thermocouple thermometer to observe the changes in dermal blood flow both locally and on the dorsum of the hand as a distant reference site. In case of moxibustion on pedestals, the duration of the high temperature phase was short and the temperature curve cone-shaped, where the peak temperature varied with product type. For moxibustion using moxa tubes, the duration temperature was long and was maintained near the peak temperature with the temperature curve trapezoidal. Locally at the site of moxibustion an increase in blood flow was observed with all forms warming moxibustion, but the rate of increase depended on the peak temperature and quantity of the stimulus. Moreover, it was reported, that no obvious changes were observed in the periphery both in dermal blood flow and temperature. Yet, the rate of increase in blood flow increased with the quantity of the stimulus, but very strong warming moxibustion sometimes caused burns. There are marked individual differences in the rate of increase in blood flow and intensity of thermal pain sensation. Thus, these authors stated that it is important during clinical application of warming moxibustion to choose a type of warming moxa which provides a suitable quantity of stimulus within a scope not causing burns.[16]

Regarding indirect moxibustion, Matsuhata et al. performed "ginger moxibustion" on Ashi no sanri (zusanli, ST36) and observed the effects on the blood flow through the lower extremity and deep plantar tissue temperature. Local blood flow through the lower extremity increased over a period of 2 to 4 minutes following the stimulation, but no changes were observed on the contralateral side.[21] They also reported to have observed no changes in deep tissue temperature at the site of measurement. Recently, warming moxibustion providing a mild heat sensation tends to be favored, but there are certain differences pertaining to the changes caused in blood flow by direct and indirect moxibustion. Regarding the other actions, similar differences may well be expected. The lighthearted concept of moxibustion being the use of moxa, or else whatever is warm may also be called moxibustion needs to be revised. It seems necessary to investigate the different actions of direct, warming and indirect moxibustion.

Immune system, blood etc.

Furuya et al. performed moxibustion on mice to observe changes in phagocytosis using the carbon clearance method and reported an increase.[22] Effects on blood coagulation capacity have been reported by Sakamoto et al., observing a slight increase in liver function and obvious effects on the clotting system.[23] Okazaki et al. examined the influence on blood clotting capacity and observed a tendency toward activation of the coagulation induced by burning a single cone of moxa, but intermittent continuous moxibustion apparently did not maintain this increase. Moreover, platelet aggregation tended to be inhibited over a period of 1.5 hours after application of 5 mg of moxa, while after application of 15 mg of moxa a tendency towards ATP release over a period of 1 hour, as well as a tendency towards shortening of the lag time by 1 to 5 hours was observed. ADP induced platelet aggregation after application of 15 mg of moxa showed a tendency

towards continued elevation over a period of 24 hours, while the moxa application produced in both the 5 and 15 mg treatment groups an apparent increase in ATP after 1 and 3 hours respectively. The above results showed that a single application of moxa produced responses in the platelet system of mice that were not observed after intermittent continuous moxibustion stimulation, so that in case of a repeated moxa stimulation the effects may be considered to disappear.[24)]

Matsukuma et al. applied an amount of moxa used during daily clinical practice in humans (0.3 mg of moxa, 5 cones) for the treatment of adjuvant arthritis in rats on a point corresponding to Ashi no sanri (zusanlin, ST36) in humans and reportedly observed an anti-inflammatory effect.[25)]

While the amount of moxa usually used in clinical practice on humans when applied during research using normal animals is relatively greater, no obvious changes were obtained. In contrast, in research using animal disease models the amount of moxa usually used during daily clinical practice in humans produced observable effects. Thus, since the stimuli of acupuncture and moxibustion are very subtle, it may conceivably be difficult to demonstrate their effects during experiments using normal animals.

hsp

After maintaining the subcutaneous temperature for 15 minutes at 45℃ and within the muscle layer at 39-40℃ following the application of moxibustion, extraction of proteins from the gluteal regional muscle samples obtained after 3 and 24 hours showed that 3 hours after the performance of moxibustion on rats hsp70 and hsp71 were detected. Immediately after the moxibustion and 24 hours after it hsp71 was detected in the rats, hsp70 was not observed. Hsp71 was observed, however, in the control rats. Heat shock proteins (hsp) are synthesized as one form of physiological stress proteins. This suggests that the local application of heat in the form of moxa stimulation leads to the synthesis of hsp and thus exerts a physiological effect.[26) 27)]

These reports indicate that hsp are involved in the modes of action of moxibustion so that warming moxibustion provides a method of increasing hsp. Yet, while methods to increase hsp concentration generally require a certain degree of equipment and time, moxibustion can be considered to be a very simple method to achieve an increase in hsp concentration.

Anti-ageing

Sakamoto et al. investigated the effects of moxibustion treatment on age induced locomotor ataxia using Marshall's method applied to 4- and 9-month old Wistar female rats, treating the animals continuously at a rate of once per week with a total amount of moxa of 15 mg/body on points corresponding to Hyakue (Baihui, GV20) and Keimon (Jingmen, GB25). Regarding the vigor, no significant improvements in the locomotor ataxia were observed, the moxa treatment caused some improvements in locomotor ataxia regarding success.[28) 29) 30) 31)]

Since anti-ageing has recently become a common topic, this report suggests that moxibustion treatment may be expected to have some anti-ageing effects.

Antioxidation

For a methanol extract of moxa and the combustion products of moxa, radical, eliminating effects have been observed.[32)]

Activity differs depending on the type of moxa, where the radical eliminating activity of warming moxa was weak, but that of moxa for direct moxibustion strong. Based on these results, it was considered that the inhibiting activity of moxa for direct moxibustion of lipoperoxidation is stronger than that of warming moxa.[33)]

The above described results show that there are differences between direct moxibustion and warming moxibustion. As described above, the differences in the effects of direct, warming and indirect moxibustion are considered to require further thorough investigation.

Closing remarks

It is not easy to introduce all the research pertaining to the entire scope of moxibustion induced actions. Research into the both ancient and modern treatment modality of moxibustion is progressing with results used in treatment form for people of the world.

It is my goal to finish my research results in the hope that this treatment form may be helpful for promoting health.

References

1) Ryuzo Oda: Studies of Moxa (II) - About Mt. Ibuki -, Journal of the Japan Society of Acupuncture and Moxibustion 35(1): 66-72, 1985
2) Ryuzo Oda: Studies of Moxa. (I) The Latest Process of Manufacture in Moxa and Its Raw Material, Journal of the Japan Society of Acupuncture and Moxibustion 33(3): 427-430, 1984
3) Shibekatsu A. et al.: Fundamental Study of Moxa (Report I) Comparison with Altemisia vulgaris grown in the sunlight and in the shade, Journal of the Japan Society of Acupuncture and Moxibustion 31(1): 27-33, 1982
4) Ryuzo Oda: Studies of Moxa (part 3) a study of millstones used in producing moxa, Journal of the Japan Society of Acupuncture and Moxibustion 43(2): 135-141, 1993
5) Shibekatsu A. et al.: Fundamental Study of Moxa (Report II) - Morphological Changes in the Producing Stage of Moxa / Morphological Differences in the Quality of Moxa -, Journal of the Japan Society of Acupuncture and Moxibustion 32(3): 242-249, 1983
6) Tsutomu S. et al.: Pharmacognostical Studies on the Artemisiae Folium., Journal of Natural Medicines 20(2): 84-91, 1966
7) Manzo Nakao, Chuzo Shibue: Regarding the components of mugwort leaves, Journal of Pharmacology 44: 636-643, 1924
8) Shizuo T. et al.: Research on Essential Oil of Moxa (No. 1), Journal of the Japan Society of Acupuncture and Moxibustion 38(3): 330-333, 1988
9) Shizuo T. et al.: Research on Essential Oil of Moxa (No. 2), Journal of the Japan Society of Acupuncture and Moxibustion 40(4): 380-382, 1990
10) Kazuko Kobayashi: Organic Components of Moxa Analyzed by NMR Spectroscopy, The Bulletin of Meiji University of Oriental Medicine 3: 45-51, 1987
11) Katsusuke Serizawa: The Science of Acupuncture and Moxibustion, Theory, 2nd Edition, Ishiyaku Shuppan: 17-28, 1964
12) Shigekatsu A. et al.: Effect of moxibustion on skin tissue - Changes of skin temperature during moxibustion - Journal of the Japan Society of Acupuncture and Moxibustion 35(2): 105-110, 1985
13) Ryoujin S. et al.: A Study on Temperature-Changes in vivo with Moxibustions, Journal of the Japan Society of Acupuncture and Moxibustion 38(3): 326-329, 1988
14) Shigekatsu Aizawa: Characteristics of moxa and research into its use for thermal stimulation, Journal of the Japan Society of Acupuncture and Moxibustion 57 (3): 290, 2007
15) Akihiro Ozaki: A Special Quality of Themal Stimulus on the Indirect Moxibustion, The Bulletin of Meiji University of Oriental Medicine 3: 85-99, 1987
16) Tomofumi Ueda, Yoshiko Egawa, Takao Kawahara, Shunji Koike, Masame Sakamoto: Temperature characteristics of warming moxibustion and comparison of hemodynamics – local and peripheral changes depending on different varieties, Tokyo Eisei Gakuen College, Department of Oriental Medicine, collection of graduation theses 10: 89-100, 2002
17) Motoyo O. et al.: Research on indirect moxibustion, Journal of the Japan Society of Acupuncture and Moxibustion 38 (4) : 420-422, 1988
18) Shigekatsu Aizawa: Temperature in the epidermis and dermis as well as the thereby induced tissue changes at sites treated by moxibustion in mice, Educational promotion group of Vocational school, Research Bulletin: 207-218, 1983
19) Yuki Menjo et al.: Ultrastructural Changes of Collagen Fibrils in Mouse Dermal Connective Tissue after Moxibustion Treatment, Acta Anatomica Nipponica 77: 7-15, 2002
20) Shinichi Takeda, Miki Menuma, Kenji Hasegawa, Takahiro Katsumata, Shigekatsu Aizawa: Investigation pertaining to methods of skin temperature measurement at combustion sites, Journal of the Japan Society of Acupuncture and Moxibustion 51(3): 418, 2001
21) Izuru Matsuhata, Koji Hisashita: Regarding the influence of ginger moxibustion on lower extremity blood flow and the deep tissue temperature in the sole of the foot, Journal of the

Japan Society of Acupuncture and Moxibustion 54: 402, 2004

22) Eiji F. et al.: Effects of Moxibustion on the Phagocytic Activity in Mice (report I) TIME COURSE FOR CHAGE IN PHAGOCYTIC ACTIVITY AFTER SINGLE MOXIBUSTION, Journal of the Japan Society of Acupuncture and Moxibustion 31(1): 34-41, 1982
23) Hideharu Sakamoto, Masako O. et al.: Effect of Multiple Moxibustion on Blood Coagulation in Mice, Journal of the Japan Society of Acupuncture and Moxibustion 36(3): 152-157, 1986
24) Masako Okazaki, Mayumi Y. et al.: Effect of Single Moxibustion on Platelet Aggregation and ATP-release in Mice, Journal of the Japan Society of Acupuncture and Moxibustion 38(2): 188-194, 1987
25) Hideaki M. et al.: Anti-inflammatory Effect of Moxibustion on Adjuvant-Induced Arthritis, Journal of Japanese Association of Physical Medicine Balneology and Climatology 68(3): 181-188, 2005
26) Kobayashi K. et al.: The Appearance of Heat-Shock Proteins (hsp) by Moxibustion, The Bulletin of Meiji University of Oriental Medicine 4: 67-71, 1988
27) Kazuko K. et al.: Relationship between Acupuncture and Stress Proteins, Journal of the Japan Society of Acupuncture and Moxibustion 39(3): 338-341, 1989
28) Hideharu Sakamoto: Effects of moxibustion stimulation on ageing phenomena (second report) – Effects relating to recovery from locomotor ataxia (1), Journal of the Japan Society of Acupuncture and Moxibustion, 37(3): 153-158, 1987
29) Hideharu S. et al.: Effect of Moxibustion on Aged Rats (Report 3) Reversal from Movement Disorders of Aged Animals (2), Journal of the Japan Society of Acupuncture and Moxibustion 37(3): 159-163, 1987
30) Hideharu Sakamoto: Effect of Moxibustion on Aged Rats (Report IV): Reversal from Movement Disorders and Recovering the Regular Cyclicity, Journal of the Japan Society of Acupuncture and Moxibustion 38(2): 195-201, 1988
31) Hideharu Sakamoto: Effect of Moxibustion on Aged Rats (Report V) Reversal from Movement Disorders of Aged Animals (3), Journal of the Japan Society of Acupuncture and Moxibustion 38(3): 314-319, 1988
32) Motoyo O. et al.: Effects of Moxa and Moxibustion-products on superoxide, Journal of the Japan Society of Acupuncture and Moxibustion 40(2): 228-231, 1990
33) Motoyo O. et al.: A Study on Radical Scavenging Effects of Moxa, Journal of the Japan Society of Acupuncture and Moxibustion 40(4): 377-379, 1990

Clinical Trials on Acupuncture in Japan

Shoko Masuyama[1], Hitoshi Yamashita[1]
Hiroshi Tsukayama[2]
1) Department of Acupuncture, Morinomiya University of Medical Sciences, Osaka, Japan
2) Center for Integrative Medicine, Tsukuba University of Technology, Tsukuba, Japan

1. Introduction

The concept of evidence-based medicine (EBM) has permeated Japanese clinical research on acupuncture and moxibustion, and the number of randomized controlled trials (RCT) is also increasing in Japan. For RCTs conducted in Japan, some reviews were published[1-3]. However, data has not been updated for several years. Therefore, we reviewed and evaluated the relevant papers in order to identify the current status of clinical trials on acupuncture conducted in Japan and to assess the quality of them.

2. Methods

We performed a literature search by using "Ichushi (Japana Centra Revuo Medicina) Web", PubMed, reviewing papers already published[2,3], and our own files. In using Ichushi Web and PubMed, we used the keywords "acupuncture" and limited to RCT or quasi-RCT.

We included only controlled clinical trials (CCTs) or RCTs which were conducted in Japan, published before 2008, focusing on the effect of acupuncture for patients. Cross-over RCTs were included. We excluded experimental studies which stressed or loaded healthy subjects/athletes, N of 1 trials, trials on moxibustion. After eliminating duplications, we extracted data from the located papers, and assessed sample size, randomization, blinding, language, type of control group, modified Jadad score, and so on. (Fig. 1)

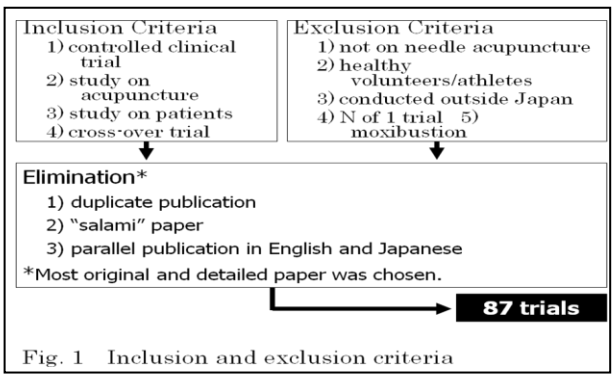


Fig. 1 Inclusion and exclusion criteria

3. Results

We located 87 RCTs/CCTs on acupuncture conducted in Japan. In fact, some clinical trials were reported in the 1960's, most of which papers, however, were unavailable. Consequently, whether these papers are of independent trial or duplicates was not clear. Therefore, trials after CCT by Kinoshita published in 1969 will be analyzed in this paper.

The 87 trails were RCTs or CCTs conducted during 1969 through 2007 and their abstracts have been published in journals as full paper or abstract. These trials do not contain experimental RCTs which stressed or loaded healthy volunteers or athletes. If we included trials using healthy subjects or athletes, the number of trials would have been more than 150.

Of the 87 trials, 76 were reported in Japanese, and 11 were reported in English. Eighty-one trials were parallel-armed, and 6 were cross-over trials. There were 5 multi-center RCTs. Sample size ranged between 4 and 170.

RCT on acupuncture was conducted at a relatively early stage. This may be because of the influence of Dr. Kosei Takahashi and Oubu-Kai. However, there was no publication of clinical trial on acupuncture between 1990 and 1996, after which the number of clinical trials increased again, especially after 2000. (Fig. 2)

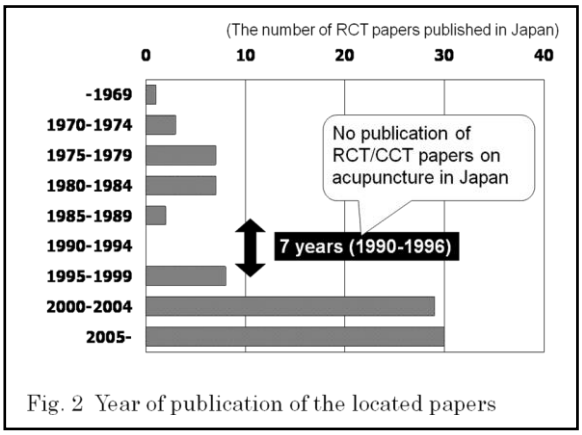


Fig. 2 Year of publication of the located papers

Most of the trials were published in acupuncture journals. While some trials used more than 100 subjects, the sample size has not been increasing even after 2000. Most of the trials used patients with musculoskeletal problems such as low back pain or neck and shoulder pain. (Fig. 3, Table 1)

At the early stage, until the 1980s, clinical trials were mainly conducted and published by practicing

acupuncturists, but after the 1990s, the authors are mainly acupuncturists who work for a university or school. (Fig. 4)

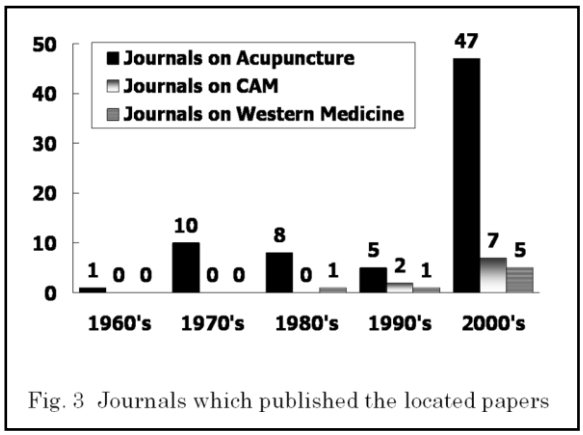


Fig. 3 Journals which published the located papers

Table 1 Conditions treated in 87 trials

Musculoskeletal (62 trials)
Circulatory (4)
Neurological (3)
Urological (2)
Respiratory (1)
Digestive (1)
Others (14)

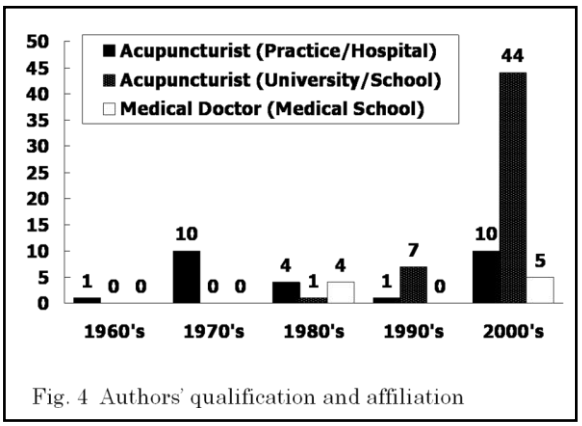


Fig. 4 Authors' qualification and affiliation

At an early stage, trials focused on comparison of different styles of acupuncture, and then shifted to comparison of acupuncture with sham needling after 2000. This may be related to the author's acupuncture affiliation because it is difficult to set the no treatment or sham needling group for practicing acupuncturists. (Fig. 5)

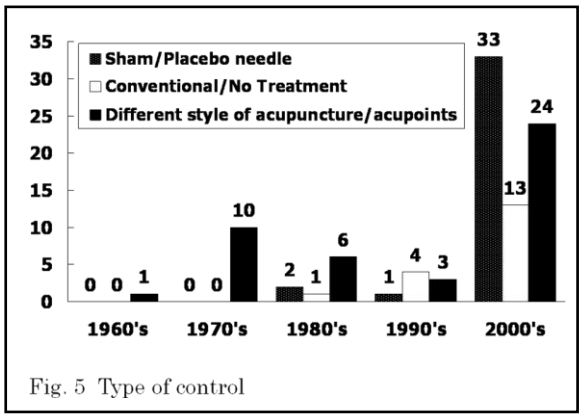


Fig. 5 Type of control

If we look at the average Jadad score (Table 2) in each decade, the quality of the trials improved gradually. However, even after 2000, the Jadad score is 0 in some trials. Sample size decreased after the 1980s. The reason for low quality has two aspects: one is that the trial itself is poor, and the other is that reporting methods are poor, but actually both may be poor in the trials of zero score. (Fig. 6,7)

Table 2 Jadad Score (modified)

Described as "randomized"	Give 1 point
Appropriate method (table of random numbers, computer generated, etc.)	Give 1 point
Inappropriate method (allocating alternately, hospital number, etc.)	Deduct 1 point
Subject blinded	Give 1 point
Evaluator blinded	Give 1 point
Dropouts/withdrawals described	Give 1 point
Worst score = 0	Best score = 5

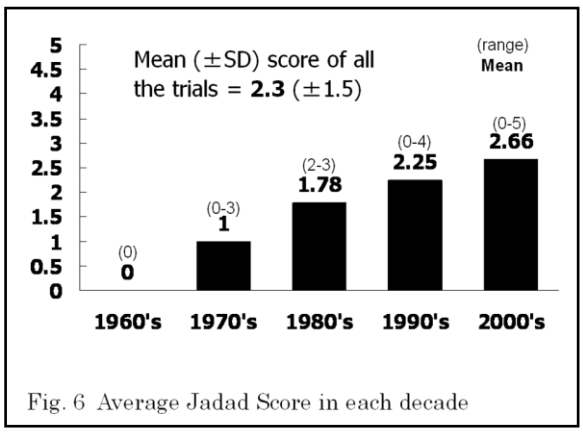


Fig. 6 Average Jadad Score in each decade

There were 5 multi-center RCTs. However, the sample size is not very large, and average Jadad score is 2.2. This means that the quality of multi-center

RCTs on acupuncture in Japan is not necessarily high. (Table 3)

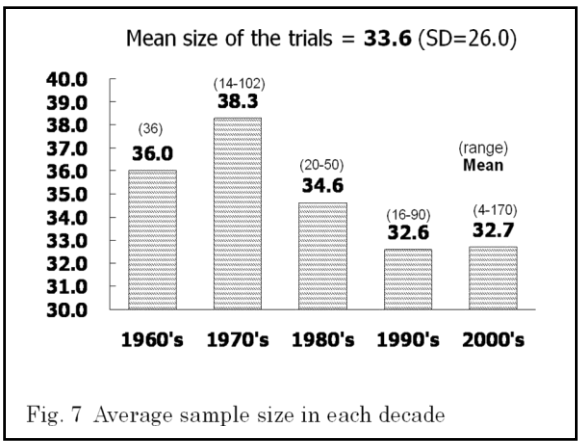


Fig. 7 Average sample size in each decade

Table 3 Five multi-center RCTs

1999	Dysuria	n= 90	Jadad=1	Practitioner group
2000	Hypertension	n= 24	Jadad=2	Practitioner group
2001	Low back pain	n= 68	Jadad=4	University group
2005	Rheumatoid Arthritis	n=170	Jadad=1	University group
2006	Low back pain	n= 64	Jadad=3	Practitioner group
Mean: 2.2				(Jadad score: 0 (worst) – 5 (best)

4. Discussion

We summarize the points as follows: RCTs or CCTs on acupuncture in Japan suddenly increased after 2000. They once were conducted mainly by practicing acupuncturists, and then mainly by school acupuncturists after 1990s.

Initially, they focused mainly on comparison of different styles of acupuncture, then shifted to comparison of acupuncture with sham needling after 2000. Most trials assessed the effect of acupuncture for musculoskeletal conditions. The quality of the trials is improving slightly, but generally not very high.

The result of PubMed search (Keyword: acupuncture, Limits: randomized controlled trial) as of December 31, 2007 showed that the earliest literature was written by Strom in 1974[4]. In contrast, it deserves special mention that RCT literature was published in the 1960s in Japan. Although far more RCT literature on acupuncture has been published in European countries and the U.S. than in Japan, there were some practitioners in acupuncture and moxibustion who had interest in RCT from earlier times and implemented it in Japan. Then-RCTs were performed by private-practice acupuncturists and moxibustionists under the guidance of scholars of universities. In the latter half of 1990s and onward, most of the RCTs have begun to be conducted by acupuncturists and moxibustionists working in universities. This may have caused a rise after 2000 in the number of RCTs comparing acupuncture with sham needling.

Through the evaluation of the trials we found some problems withcontrolled clinical trials in Japan. The trials on acupuncture in Japan are not easy accessible from overseas, because most of the reports are written in Japanese and published in domestic acupuncture journals. There were some inappropriate papers, such as duplicate publications or so-called “salami” papersto increase the number of literature entries by fragmentation of data. Data fragmentation, which may be seen in other countries, is a major impediment for literature reviews to get muddled and also an objectionable act as a researcher. Overall, we have an impression that acupuncture RCTs in Japan tends to be conducted too easily without careful consideration. We propose that acupuncture schools/societies in Japan strengthen the functions of their Institutional Review Board for better quality of clinical trials on acupuncture in Japan.

In conclusion, the number of RCTs on acupuncture and moxibustion is growing, whereas the quality is not necessarily high. Thus we consider it necessary to cope with the tasks ahead; quality improvement, adequate control group setting, and English publications accessible from abroad.

References

1) Shichido T. Shinkyu no rinsyo-hyouka(32). Ido no Nippon [The Journal of Japanese Acupuncture & Moxibustion] 1996; 55(7): 95-102.
2) Tsukayama H, Yamashita H. Systematic review of clinical trials on acupuncture in the Japanese literature. Clin Acupunct Orient Med 2002; 3: 105-113.
3) Tsutani K, Suyama S. Nippon-no sinkyu RCT data-base(JRC-RCT)[Acupuncture RCT database in Japan]. http://jhes.umin.ac.jp/JAC-RCT/020605/JAC-AT21.pdf; 2002 Mar 31.
4) Strom H. Acupuncture treatment of post-tonsillectomy pain. The analgesic effect compared with blind puncture. Ugeskr Laeger 1974; 136: 1855-1856.

Japanese Acupuncture Schools and their Characteristics

Hiromichi Yasui
Japan Institute of TCM Research

The Chinese medical system and techniques were introduced to Japan approximately 1,300 years ago. Since then, the Japanese have cherished it as their own medical system, using the relevant knowledge and skills in their clinical practice. Acupuncture and moxibustion have been handed down alongside with pharmacotherapy as important pillars supporting the medical system in an unbroken tradition to the present day. During this process, Chinese theory and techniques remained, but were not the only foundations. A number of unique Japanese concepts were developed and put into practice. Those practicing acupuncture and moxibustion formed individual schools and transmitted the advantages of their schools. Some of these traits are still preserved today. These have been handed down as the Japanese acupuncture and moxibustion tradition from generation to generation.

Based on a decision by the new Meiji government in 1868, acupuncture and moxibustion were set apart from medicine in schools. Their preservation and development have been maintained by acupuncturists. Even then, the treatment modality was not directly endorsed by western medicine. However, the tradition was kept alive. Yet, the characteristics developed by previous generations of the various schools gradually faded.

By the 1930's, some acupuncturists felt that it was their duty to develop this traditional medicine. They gathered like-minded people and started to investigate the potential of acupuncture and moxibustion. They read of course, the Chinese classics, but also Japanese books on acupuncture and moxibustion. Using this information, they developed their own style. A new group of schools was formed. The concepts of those schools have been inherited by modern Japanese acupuncture and moxibustion. The acupuncture and moxibustion of that time can grossly be classified into the following three forms.

First, a system based primarily on classics like *Su Wen, Ling Shu, Nan Jing,* and *Zhen Jiu Jia Yi Jing*. These relied predominately on pulse diagnosis and the diagnosis of channel excess of deficiencies, which were then treated with appropriate reinforcement or reduction. The techniques of this school rely mainly on the use of command points on arms and legs for the treatment. With reference to the therapeutic characteristics, this school has been called the "Channel therapy school".

Another school is called the "Taikyoku Therapy phenomenon" which relies on the diagnosis of imbalances in the five phases determined by the four diagnostic methods and subsequently the therapeutic adjustment of that balance. The name of this school, the Sawada style, is derived from the name of its founder, Ken Sawada. This style uses considerable moxibustion.

Still another style (at that time being the latest kind of scholarly attainment) is based on the knowledge of physiology and tries to adjust imbalances in the autonomic nervous system using acupuncture and moxibustion. At one of the leading centers of academism at the time, the faculty of physiology at Kyoto University provided the foundation for this style which relied on a scientific basis. Although there is no specific name for this style, it could be called the scientific style.

Besides the mentioned styles, there have been numerous acupuncturists guided by their individual theories and techniques but which did not develop into formal styles.

Japanese acupuncture and moxibustion developed under these circumstances through mutual cooperation. Yet, the situation changed drastically after Japan engaged in World War II.

During the occupation following the war, the Supreme Commander of the Allied Powers (GHQ) proceeded with a reform of the Japanese medical system. In that process, it considered the elimination of acupuncture and moxibustion and made the relevant recommendations to the Japanese Ministry of Health and Welfare. Please refer to the articles "Japanese Acupuncture and Moxibustion under the Rule of GHQ after World War II" by Okutsu appearing

in previous editions of the Journal of KAIM regarding the reasons for this move.

Thanks to the efforts of many people, an understanding by the GHQ was achieved and acupuncture and moxibustion was thus fortunately spared its obliteration. Conversely, this event triggered major changes in the awareness of acupuncturists. Some people considered scientific evidence of the effects of acupuncture and moxibustion necessary, and therefore, started to measure the electrical resistance of the skin and endeavored to verify the effects of acupuncture and moxibustion using modern scientific methods. Thus the new scientific (neo-scientific) school was founded.

Conversely, the schools emphasizing deficiency and excess of the channels, believed that the relevant theoretical foundations should be strengthened and thus put even more effort into the study of the classics. They maintained the position that therapeutic theories and skills, as well as the subjective evaluation of the efficacy, should be measured using a different scale. The members of this school, who originally had already been practicing channel based therapy, started to study not only channel therapy, but also included far-reaching research of the classics in general. For this reason, the school is sometimes termed the classic school.

By the 1960s, the influence of Chinese acupuncture and moxibustion reached Japan from China and started to spread through the Japanese acupuncture and moxibustion community bringing about numerous significant changes. In particular, President Nixon's China visit and the simultaneous world-wide coverage of news about acupuncture anesthesia, shocked the Japanese acupuncture and moxibustion community. Chinese acupuncture related literature was imported via Hong Kong. Japanese researchers thoroughly worked through this material, undeterred by the fact that everything was written in Chinese, in order to incorporate this knowledge into their own clinical practice. A significant number of acupuncturists went to China to study acupuncture and moxibustion in their medical research facilities and Chinese medical schools and then returned to Japan. These people practice Chinese acupuncture and moxibustion and have achieved many remarkable results. Collectively, they are called the Chinese school.

Currently, many people practice acupuncture and moxibustion based on their own unique concepts outside of these established schools, so that their style cannot be identified as any of the aforementioned specific styles. However, each of the above described schools has distinct characteristics, comprehension of which, will contribute to a deepening of the understanding of Japanese acupuncture and moxibustion.

Brief outline of the contents of each school

1. Channel therapy style

This style was introduced in the 1930s by acupuncturists in their 20s and its theoretical and clinical maturation later developed in parallel with the growth of these practitioners. They considered Chinese classics like *Su Wen, Ling Shu, Nan Jing*, and *Zhen Jiu Jia Yi Jing* to be the foundation of acupuncture and moxibustion. They attempted to comprehend the contents of these books from a modern point of view and based their clinical practice accordingly on these principles.

These practitioners placed particular emphasis on the diagnosis of deficiency and excess conditions of the channels (jing mai). For that purpose they performed meticulous pulse diagnoses and palpation of the channels to determine which of the channels were in a state of either excess or deficiency. Accordingly, treating the conditions by administering a suitable reduction of reinforcement treatment. They also studied the therapeutic techniques described in the classics and tried to revive their use.

This required that the acupuncturists who were trying to do so had to be in command of extraordinary skills. The members of this school acquired extremely high level skills. In particular Sorei Yanagidani, Keiri Inoue, Sodo Okabe and others are representatives of this style and at the same time known for their outstanding technical skills.

Therapeutically, they followed the instruction given in a paragraph of the "69th difficult issue" of the *Nan Jing*, which advises to reinforce the mother in case of deficiency and reduce the child in case of excess. This forms the foundation of the therapy advocated by this school.

Following this principle, they selected acupoints for reinforcing or reducing, based on the identification of conditions of deficiency or excess in certain channels. This may take either the form of selecting acupoints for reinforcing or reducing conditions of deficiency or excess in a single channel and reinforcing or reducing multiple deficiencies, or excessive channels. A summarization of the acupoints for reinforcing or reducing of a single channel is presented below.

< Table 1 >

Acupoints used for reinforcing or reducing in case of deficiency or excess of the various channels

	Excess / Deficiency
Hand Tai Yin Lung Channel:	LU5 / LU9
Hand Yang Ming Large Intestine Channel:	L12 / LI11
Leg Yang Ming Stomach Channel:	ST45 / ST41
Hand Tai Yin Spleen Channel:	SP5 / SP2
Hand Shao Yin Heart Channel:	HT7 / HT9
Hand Tai Yang Small Intestine Channel:	HT3 / SI3
Leg Tai Yang Bladder Channel:	BL64 / BL67
Leg Sho Yin Kidney Channel:	KI1 / KI7
Hand Jue Yin Pericard Channel:	PC7 / PC9
Hand Shao Yang Tripple Warmer Channel:	TE10 / TE3
Hand Shao Yang Gallbladder Channel:	GB38 / GB43
Leg Jue Yin Liver Channel:	LR2 / LR8

This table provides only the principle. In actual clinical practice, suitable points are selected from among the listed ones, or depending on the conditions, additional points are used. Since the acupoints are sometimes selected depending on symptoms, the therapy becomes quite complex and requires experience to achieve good results.

Various forms of channel therapy

Individuals involved in the research and establishment of channel therapy were also trying to reach even deeper levels of understanding. The result was the development of forms different for each individual.

The basic form of channel therapy is to identify any imbalances there might be of the channels, carefully placing one needle at a time and applying either reinforcement or reduction in order to correct the imbalance. The needling techniques applied here have been handed down since the time of the Yellow Emperor's Classic of Internal Medicine (*Huang Di Nei Jing*). For example, a needle had to be inserted at a particular point to specified tenths of an inch (fen), retained for respiratory cycles and various techniques had to be applied for either the reinforcement or reduction. Even today, this procedure is carried on and has not changed its place as the “mainstream of channel therapy”.

Sodo Okabe’s new method

Sodo Okabe (1907-1984) is one of the founders of the above mentioned channel therapy and had been a distinguished person in command of the most outstanding technical skills. In the latter half of the 1960, he suddenly developed a new system and introduced it into his therapy. This was characterized by inserting needles at various key acupoints distributed over the entire body. Moreover, he also needled some of the five transporting points on the four extremities to achieve reinforcement or reduction. Okabe himself did not elaborate on this method, and while neither his family nor his students received any explanation they used this method for their treatment. An explanation of the method is presented below:

Initially the patient assumes a dorsal position for the treatment. The therapist starts then needling from the head. GV20, BL2, GB6, ST5, CV12, ST25, CV4. Depending on the status of repletion or deficiency of the channels, essential points on the arms and legs are also needled. At this point, the question arises, which of the channels is deficient, whereas it is not really of any concern as to which channel is replete (rare). Accordingly, assuming that the kidney channel has been diagnosed as deficient, LU5 on the arms, KI10

and KI7 on the legs are needled. Other points are needled similarly and the needles retained. On the legs ST36 and SP6 are added.

After retaining the needles for 15 to 20 minutes they are removed and the patient is instructed to assume a prone position. The therapist then stands next to the back of the patient and starts needling from the head downwards. GB20, BL10, GB21, several (for example BL13, BL15, BL17, BL23, BL52 and under certain circumstances BL32) as well as BL40 are needled and the needles retained for 15 to 20 minutes.

The treatment is then completed by removing the needles. Treatment duration is a little less than one hour. The patients should relax mind and body regardless of the kind of disease treated, returning home with a feeling of exhilaration.

For this treatment the patient rests while the needles are retained, which has relaxing effects on both mind and body. Moreover, during the treatment period, the conditions of excess and deficiency are either reduced or reinforced by needling important points on the arms and legs and thus allow the balance to be restored. Since the therapeutic points appropriate for the condition at hand are not used too much or too little, after the treatment, the satisfaction of the patient is very great.

2. Schools originating from the Taikyoku Therapy (Tai-ji Therapy)

Ken Sawada (1877-1938) had extraordinary skills, but was an unknown acupuncturist. His rise to fame was the result of a journalist introducing him in the mass media. Mr. Sawada was a master of inspection. Apparently he could often identify the symptoms of the patients who entered his consultation room without asking them any questions. Yet, he did not just vaguely stare at the patients, but rather inspected and palpated the condition of specific back shu points to examine which organs and viscera or channels were disturbed and then applied moxibustion to the necessary points distributed over the entire body. This was called his Taikyoku Therapy (Tai-ji Therapy).

Bunshi Shirota (1900-1974) observed Mr. Sawada perform his treatment at his place and wished he were able to perform a similar treatment himself. Sawada systemized a number of acupoints as commonly used points and thus established a holistic therapy. Based on this concept, the various parts of the body cannot be considered apart from the whole and their very presence necessitated that they have some correlation with the whole. Sawada used the following basic points.

* abdomen: CV12
* back: GV12
* low back: BL20, BL23, BL32
* arms: LI11, left TE4
* legs: KI3

Shirota made some minor revisions, omitting the left TE4 and K13 points, often adding GV20 on the head and among the back shu points (BL15, BL17) and similar points. Currently, Shirota's method is still frequently used. While Sawada applied moxibustion to all points, Shirota used acupuncture and moxibustion as required by the circumstances. Moreover, by adding or removing points to or from the set of basic points, he described the application of his holistic treatment for a number of representative diseases (Bunshi Shirota: Clinical Practice of Acupuncture and Moxibustion Based Mainly on Case Studies Vol I, pp. 60-66, Sogensha Inc., 1966).

These concepts gained wide acceptance, but currently more scientific methods have become the mainstream, so that they ceased to be the central topic of academic conferences. Yet, when thinking about the real nature of acupuncture and moxibustion, they are still important.

3. Scientific schools

Among the scientific schools there are numerous schools which differ slightly from each other. Western scientific elements were introduced in Japan to acupuncture and moxibustion in the 1930s. Professor of physiology Hidetsurumaru Ishikawa at the medical faculty of Kyoto University, started to study acupuncture and moxibustion via his research into autonomous nervous function until he died in 1947. Individuals like his students Kazuo Komai and Yoshio

Nakatani, who had developed the Ryodo Raku system, were also outstanding researchers in the field of acupuncture and moxibustion. In Tokyo, Takeshi Itakura conducted research at the Toho Research Laboratory with content that could be comprehended by western scientists too.

After World War II, the GHQ ruling Japan tried to eradicate acupuncture and moxibustion, but at this time Ishikawa and Itakura used scientific evidence to oppose that movement. Ishikawa's son, Tachio, who was a professor of pathology at Kanazawa University, continued the research into acupuncture and moxibustion according to his father's dying wish. He investigated the correlation between acupoints and the electrical resistance of the skin and subsequently called points of low electrical resistance "electrodermal points". Through a detailed examination of the electrodermal point patterns associated with various disease, he was able to develop a map.

Bunshi Shirota practiced the Taikyoku Therapy of Ken Sawada which he developed himself into a holistic therapy, yet sought in addition to his practice scientific explanations. For this he was intrigued by Ishikawa electrodermal points, so that he started commuting to Kanazawa to conduct joint research with Dr. Ishikawa. As a result, he found that the electrodermal points often also represent therapeutic points and therefore used them for his treatments. On his way back from his trip to Kanazawa he frequently stopped at the house of Shiro Hosono in Kyoto. Hosono was a physician noted for his skilled use of Kampo medicine and the first pioneer promoting the establishment of the scientific foundation of Kampo. Simultaneously he also used acupuncture. They frequently spent the night discussing acupuncture and moxibustion related topics and gained a lot from each other. The most famous discovery of these two people is probably "carotid sinus needling". This is a technique where the needles are inserted so that they come in contact with the carotid sinus, retained in this position for approximately ten seconds and then removed. Recently, progress has been made in research on the carotid sinus in which sympathetic nerves have surgically been removed from its vicinity. This provided the observation, that this procedure may be particularly beneficial for patients with asthma. They found that inserting a needle here could achieve similar effects as the surgical procedure, and it became clear, that the maneuver had other effects too.

Among the channel therapy schools were also scientifically orientated schools. Masao Maruyama observed in certain patients that a specific sensation occurred, that followed upon needling the courses of the channels as they are described in the classics. He then needled the source points of each channel and recorded the resulting feeling in the form of a map. This proved to coincide almost completely with the descriptions in the classics. This treatise was later translated into Chinese. The phenomenon he had discovered was called the "Xun jing gan chuan phenomenon".

Attempts to apply western science to acupuncture were made in the field of research as well as in clinics. The use of additional electrical stimulation may be cited here as an example. The technique has also been used in acupuncture anesthesia and could successfully be applied to various neurological diseases and diseases associated with pain. It is still widely used today. However, in Japan many acupuncturists consider it to be the wrong course and do not appraise it at all.

From the latter half of the 1990s, the concept of EBM became established in the medical world which affected acupuncture and moxibustion. Evaluations of therapies were not acknowledged any longer as they had in the past based on subjective views, but had to be based on evidence. This resulted in a situation, where preference is given to therapies anybody can perform by following certain protocols and a tendency toward disregard of mastership.

Yet, something should be noted here. Many Japanese acupuncturists generally do not insert the needles very deep, so that this depth often is about the same used with sham acupuncture. Regarding research into acupuncture, controlled studies are used, in particular, comparing ordinary treatment with sham acupuncture. Yet, sham acupuncture itself may be a valuable treatment, so that some Japanese acupuncturists consider this research method as rather meaningless.

4. Chinese medical schools

Since the latter half of the 1960s, the new Chinese medicine has been introduced to Japan from China in the form of books. During the 1970s American President, Richard Nixon, visited China His news about acupuncture anesthesia amazed the world. Since then the number of people starting to study Chinese medicine has been increasing in Japan and study groups were established everywhere. Some of the researchers of Japanese acupuncture and moxibustion went to China to study Chinese acupuncture. When they returned to Japan they used the Chinese style for their treatment and made efforts to spread those methods. In 1990 Chinese medicine was included in the standardized teaching material of Japanese schools for acupuncture and moxibustion and students had to become familiar with this knowledge before their graduation.

Not all new acupuncturists are familiar with Chinese medicine based acupuncture and moxibustion therapy, but the relevant knowledge built up during their training will in some form or other be integrated into their clinical practice. Naturally, there is also a substantial number of acupuncturists who specialize in Chinese medicine. This Chinese medicine has already become established in Japan and may be said to have formed one particular school.

5. Other schools

In Japan, there are also several other concepts and therapies. For example, "pediatric acupuncture" has spread mainly in the area around Osaka and is characterized in that the needles here do not penetrate into the body, but stimulate specific acupoints on the surface of the skin. Or else the skin is stroked along the channels in this therapy. This is a special skill and not a school, but represents one of Japan's unique acupuncture techniques.

Micropuncture to let blood has been in wide use in Japan for about 250 years. Recent research has been conducted by the "Nihon Shiraku Gakkai" (Japanese Blood Letting Society) and actively announced during relevant conferences. Many conditions can dramatically improve through this "Shiraku" (blood letting). Moreover, the "Dashin" method, that had its origin about 400 years ago, seems to have experienced a revival and there is currently a group of practitioners who use it.

Since acupuncture and moxibustion treatment is largely influenced by the technical skills of the practitioner, it may be stated that there are as many styles as there are practitioners of acupuncture and moxibustion.

Acupuncture in Japan - Clinical Applications

Shuichi Katai, Hiromichi Yasui
Committee of Japanese Acupuncture - Annual Report

Introduction

The skills and theory of acupuncture and moxibustion are based on experience. Both contain many things that cannot be verified through case series studies or randomized controlled clinical trials. The clinical abilities of a single excellent acupuncturist may exceed the clinical experiences of 100 people. Attempts at imitating the therapy performed by really outstanding acupuncturists often do not yield the same results. Follow-up studies have revealed that the skills of acupuncturists are very important. In contrast to the application of drugs, with acupuncture and moxibustion, the skills of the individual therapist plays an extremely important role. Clinical trials are an effective method to verify the efficacy of acupuncture and moxibustion. Although certain aspects defy verification using this methodology, they should not be considered ineffective.

Acupuncturists in command of outstanding skills may be called masters (sensei). It should be noted that the clinical practice of masters in this art cannot be elucidated using research methodologies[Note1)].

Following the Meiji restoration in 1968, the new government decided to adopt German medicine. Subsequently, acupuncture and moxibustion were entrusted to acupuncturists and not to physicians. Yet, for this very reason the influence of western medicine decreased, so that the original form of the tradition was handed down and provided the foundation for its present status.

This situation prevailed for about half a century, during which time the search for a new perspective was pursued. The new government, with its policy of national prosperity and defense, prepared the ground for the cultivation of folk medicine in its attempt to maintain the health of the people and provide a means of improving the health of the young. Acupuncture is considered to be an extremely powerful tool for this purpose.

In the 1920s, a sudden burst of new activities occurred in the field of acupuncture and moxibustion. Even though it was based on tradition, a Japanese form of acupuncture and moxibustion integrating new concepts emerged. Continuing to the present, this was the time in which the foundations of modern acupuncture and moxibustion were laid.

Compared with today, western medicine at that time had not yet achieved a satisfactory level of proficiency. This allowed for an abundance of experiences with acupuncture and moxibustion for the treatment of many different diseases. Today, acupuncture and moxibustion are used mainly for the treatment of pain, but are used as an excellent therapy applicable to disease in all fields of medicine. The fact that it is not only described in the literature, but proven in practice as well, demonstrates its value in today's health care system. These experiences have not lost their validity to the present day.

Similar to China, Japan produced a number of acupuncture and moxibustion masters and the work of these people has been driving the development of Japanese style acupuncture and moxibustion. Verification of the methodology of these masters, as well as an analysis of their clinics, are a task for future research. What follows is a review of modern medical research, including case studies that are representative examples of the original characteristics of Japanese acupuncture and moxibustion.

Note 1)

Genzo Kanbe had been a master of needle manufacturing during the latter half of the 20th century in Japan. He needled each individual using carefully hand-made needles. These were used by outstanding acupuncturists of the age who achieved excellent therapeutic results.

When Kanbe lost his home during a bombardment of Tokyo by the American army during World War II in December 1945, he stayed temporarily at the house of relatives in the suburbs of Tokyo. His intense work schedule led to the development of acute pneumonia. At that time, antibiotics, like penicillin, had not yet found widespread application in Japan. Before he lost consciousness due to the high fever, he fortunately told the famous acupuncturist Sodo Okabe about his condition. Hearing about this emergency, Okabe rushed to Kanbe, but his consciousness had already

become so clouded that he could not answer Okabe's questioning. Okabe observed the symptoms, checked the pulse and then started his treatment.

Kanbe describes his recollections of the event in his state of clouded consciousness as follows.

"Each individual needle placed by master Okabe was very effective. I was under the impression that a thick needle had struck an evil lump that made me cough up phlegm. Next, more phlegm came up. Following the expectoration of the phlegm I started to feel better and the fever fell. I was told that he had used 50 mm gold needles with a diameter of 0.2 mm, but to me they had felt like very thick needles. This event made me painfully aware that with increasing skill, even application of very thin needles can evoke the feeling of thick needles. After my complete recovery I asked master Okabe where exactly he had needled me. He said he had been so absorbed in the treatment that he did not remember. Yet, he said, that under similar circumstances, he would not needle the trunk. Deducting from this statement, I presume that he had carefully tonified and sedated the relevant command points on the arms and legs.

The clinical practice of masters frequently takes this form. The skills of master Okabe could not be reproduced by anybody else, so that a large number of artists and politicians of that time became his patients. He also went to Moscow to treat General Zukov of former Russia. The famoues Japanese painter, Taikan Yokoyama loved his needles throughout his life.

The clinical applications in other specialized fields than those discussed here are also reported in the Journal of Kampo, Acupuncture and Integrative Medicine.

Clinical Application: Stress and Shoulder Stiffness

I. Introduction

Modern man is subjected to a wide variety of stress, and regardless of whether he recognizes this or not, will suffer from stress induced mental and physical fatigue. Stressors are influenced by both the physical and mental aspects of our living environment, where a somatic reaction to stress could be the development of gastric and duodenal ulcers, gastrointestinal discomfort, or similar symptoms related to the digestive organs, hypertension and similar cardiovascular symptoms, headache, shoulder stiffness, dizziness, easy susceptibility to catching cold and similar indefinite complaints, cerebral stroke or intracerebral hemorrhage, myocardial infarction, and like problems. Moreover, diabetes or obesity and similar lifestyle-related diseases are also included in this category and considered to be possible etiologic factors or exciting causes.

While under stress many people also suffer from psychological troubles. Motivation, vitality and perseverance may be reduced. Afflicted persons could tend to brooding and often develop depressive moods. A marked feeling of exhaustion is then experienced on a daily base.

Thus, psychosomatic problems develop when under stress. Actually, oriental medicine tends to detect the close correlation between mind and body. The seven emotions: joy, anger, worry, anxiety, sadness, fear, and fright may become causative factors for the development of human diseases. They affect the functioning of both the internal organs as well as physical functions and may lead to physical problems. The reverse also holds true. That is the basis for the concept of mind-body unity.

The term "stress" (stressed conditions) induced by a variety of stressors is often used in the sense of being under "mental pressure". Yet, the original meaning of this term is "distorted condition" and would be better understood if interpreted as the outward manifestation of "physically strained conditions" in response to negative stimulations affecting both mind and body. Specifically, this refers to physical tension or stiffness, or on the contrary, may also mean the lack of tension. This represents the conditions of deficiency or excess as they are identified by palpation in oriental medicine. The stress concept put forward by Selye may, in fact, be considered to be very close to the oriental medical concept of mind-body unity.

If a person becomes stressed, the site where this person feels to be afflicted. (i.e., where the stress finds its physical manifestation), differs among people and countries. In Japan, these conditions generally become manifest in the form of "shoulder stiffness" marked mainly by tensioning of the shoulders (trapezius muscles). The shoulder stiffness the Japanese complain about should be understood in this context as a distorted condition characterized by both physical and mental problems.

1. What is shoulder stiffness?

"Kata-Kori, or shoulder stiffness" refers to an increased tension and therefore hardening of the shoulder muscles that is felt as pain or discomfort. Anatomically, this is the shoulder region around the shoulder joint. The oriental medical term also refers to this region around the shoulder joint. Yet, in Japan the term "shoulder stiffness" generally refers to a region centering on the central fibers of the trapezius muscles on top of the shoulders. The term "koru = become stiff, suffer stiffness", expressed by the character "凝る" usually meaning a stiffening and thus hardening of the muscles (sometimes also involving the skin and connective tissue). Accordingly, shoulder stiffness refers mainly to symptoms of tensioning of the trapezius muscles and their vicinity.

However, the patients who actually come for treatment of shoulder stiffness complain about a feeling of distension, stiffness or tension over a region extending from the neck to the shoulders, the

interscapular region, the anterior chest, and sometimes the upper portions of the arms. In severe cases, symptoms may even be associated with headache, tinnitus, dizziness, and a general feeling of fatigue or marked weariness, so that patients may become unable to lead a normal daily life or work

Considering the above described scope, the muscles included in the category of shoulder stiffness may be all the muscles of the neck, interscapular region, scapular region, anterior chest, and upper arm. They may give rise to pain or tension causing the development of a feeling of heaviness that will then lead to the complaint of "shoulder stiffness".

Scrutinizing the classics reveals that the term "shoulder stiffness" is not mentioned in the *Su Wen* or *Ling Shu*. Yet, in the section "Gyokuki Shinzo Ron", section No. 19 in the *Su Wen*, expressions like "internal pull on shoulder and neck" or "shoulder neck heat" are found that indicate symptoms involving the region from the neck to the shoulders

Wind cold has been cited as a cause for this condition. This is derived form the latter half of a famous passage stating, "Wind is the chief of many diseases." In the chapter on the channels in the *Ling Shu*, section 10 under "greater yang of the leg bladder channel ... in the primary disease of the channel, the disease penetrates to the head and causes pain, it is as if the eyes would fall out, the nape might fall off and the back hurts. In this section, the phrase "like the nape might fall off" could partially coincide with the modern concept of shoulder stiffness. In the *Shang Han Lu,*in the section on differential diagnosis of pulse patterns for the greater yang diseases (section five), it says: "In case of a greater yang disease the pulse will float, there is stiffness and pain of head and neck and chills." The phrase seems to indicate the development of shoulder stiffness during the early phase of a cold. Incidentally, in the *Sun Wen*, the character for shoulder is found 37 times, the character for nape 38 times and the combination shoulder – nape three times; and the combination neck - nape once. The neck - shoulder is not found at all. Moreover, in the *Ling Shu* the respective number of appearances of these characters is 54, 39, 1 and 1 time. In the Shang Han Lun the term nape - back appears 4 times, neck - nape seven times and head - nape six times. The term neck seems to refer to the anterior neck, while nape means posterior neck. Further, the terms shoulder and nape in expressions describing pathological conditions appears in the *Sun Wen* and *Ling Shu* in the form of diseases are located in the shoulders and back, shoulder - back pain, internal pulling pain on shoulder and nape, shoulder - nape heat, interscapular pain, nape - shoulder pain, etc., while in the *Shang Han Lun* terms like strong pain, strong tension, or simply strong are found.

In Japan during the Edo period, expressions close to the modern term shoulder stiffness, are found that were based on the etiologic factors cited in the *Sun Wen* and *Ling Shu*. The book *Shinkyu Choho Ki* (1718, by Masatoyo Hongo) cites: “When the shoulders hurt, it may be due to phlegm, or else to cold wind, but often indicates an stagnation of Qi and Blood and in acupuncture and moxibustion therapy for various diseases, under the heading 'genpeki'.” Pain in the shoulders certainly refers to shoulder stiffness and the relevant passage is followed by a detailed explanation of the treatment for shoulder stiffness.

It should be noted in particular that phlegm and wind cold are cited as causes for shoulder pain. Moreover, the pathologic condition is considered to be a stagnation of Qi and Blood. The term 'genpeki' resembles aggregation-accumulation and is a general term referring to either a mass in the hypochondrial or umbilical region or a lump in the chest and shoulder and nape stiffness (either of which are derived from the *Lexicon of Kampo Terminology*), but here the Choho Ki adopts only the latter meaning.

Thus, 'kata-kori = shoulder stiffness' is not only a feeling of tension and stiffness in the region around

the shoulder joint, but may also be a symptom resulting from Qi and Blood stagnation caused by wind, cold, dampness and phlegm. In this case the stagnation of Qi and Blood often results in the simultaneous development of the entire body involving fatigue or suffering. Severe shoulder stiffness may thus lead to systemic problems.

Yet, when Japanese people complain about shoulder stiffness there are in addition to the physical symptoms of shoulder stiffening, associated depressive moods, stress of human relationships, feelings of social entrapment, etc. that often serve as supplementary means of complaining about one's personal condition to others. For example, within social groups formed by companies, fatigue caused by human relationships may be expressed as, "I have stiff shoulders". In particular, when people are keenly aware of other in cases where the human relationship is not going well, the expression "I get stiff shoulders whenever A is around," used by the affected people clearly, shows this. A representative expressions used for the complaining is, "I am tired" or "I have had enough." In addition to that, the term "shoulder stiffness" is a skillful way of expressing the physical and mental fatigue not restricted only to the physical fatigue and is usually well understood in this sense by the listener.

In this way various psychosomatic signs are interlaced in a complex way and kata-kori, in its sense of both physical and mental fatigue, seems to be an expression unique to the Japanese society that is not observed elsewhere abroad. However, the mental feeling of depression, interpersonal relations induced stress and a feeling of social entrapment are also known in other cultures outside Japan. They too will most probably have some forms of expression that correlate people's complaints of physical discomfort to these psychological aspects. For example, in the final analysis, the term headache may in American and European societies possibly assume the meaning of kata-kori = shoulder stiffness. Yet, even if this is said to be so, the depressive moods and fatigue etc. that Japanese people experience may still depend on the background formed by the characteristic Japanese natural environment, social structure, and human relationships. These factors relate to the moods when experiencing muscle tensioning associated with feelings of fatigue accompanying the daily work or study, so that for Japanese people the expression kata-kori seems to be most suitable. The typical Japanese communication technique where a word meaning physical fatigue should be used to express mental problems is very intriguing.

2. The condition of shoulder stiffness

This refers to what the therapist can objectively feel (beginning with the muscles) and the pathological condition of the patient's soft tissues. Classifying these findings into excess and deficiency, they would indicate a state of excess. The patient may feel the condition of stiffness himself, but s/he may also just feel some localized pain or discomfort. Yet, if that feeling intensifies, it does not remain a localized subjective feeling of discomfort, but may develop into a feeling of fatigue, loss of motivation or similar feelings of discomfort affecting the entire body. The following table shows what patients and therapists feel from their respective point of view when faced with kata-kori (Table 1).

Table 1

Patient's subjective experiences and therapists objective findings in the presence of shoulder stiffness

(1) Subjective symptoms in patients with shoulder stiffness

Local ..... pain, tenderness, feeling of distension, heaviness, stiffness, fatigue, discomfort etc.

Systemic ..... generalized fatigue and discomfort, fatigue, weariness, physical heaviness, lack of motivation, irritability, difficulties rising in the morning, depressive moods, hopelessness etc.

(2) Conditions the therapist can objectively identify in

the presence of shoulder stiffness (classified into excess and deficiency)

Excess ..... tension, swelling, indurations, distension, hardness, etc.

Deficiency ..... skin or connective tissue, muscles lack elasticity, chilliness, getting moist etc.

3. Sites of shoulder stiffness

The locations where patients complain about stiff shoulders include, as stated already above, not only neck and shoulders, but may also extend over the entire back. The condition could affect a wide area, including a region of the neck,the trapezius, semispinal, splenius, sternocleidomastoideus, scaleni, levator scapulae muscles, in the scapular and interscapular regions the supraspinatus, infraspinatus, teres major, teres minor, latissimus dorsi, greater rhomboid, lesser rhomboid muscles, the crector muscles; or else in the anterior thoracic region the pectoralis major, pectoralis minor, triceps brachii muscles, etc. Figure 1 illustrates this. Moreover, in the treatment of shoulder stiffness, general acupoints are selected by palpating the affected region or specific therapeutic acupoints that may include many local points like GV20, BL10, GB20, GB21, TE15 etc. Moreover, points on the arms include LI11, LI10, TE5, LI4, HT3, LIV3, KI6, GB40. The acupoints lying within the range indicated in the figure may conceivably serve as therapeutic points, when they have been identified as such through palpation in the presence of relevant complaints.

4. Causes for shoulder stiffness

What kind of factors cause shoulder stiffness?

The first cause that comes to mind is:

(1) Fatigue of the muscles forming the shoulder belt or poor posture, resulting in excessive or continuous exertion of the muscles of the neck, shoulders and arms that will lead to problems with the local muscles of the shoulder.

(2) Cervical spondylosis or cervical sprains, intervertebral discitis, periarthritis humeroscapularis (frozen shoulder) and similar conditions, deformations, injuries, sprains, inflammation, etc. of the cervical and thoracic vertebra as well as the shoulder joint as the skeletal elements forming the neck, shoulders and chest may be either directly cause or conceivably lead secondarily to the development of shoulder stiffness.

Yet, shoulder stiffness is not solely due to the muscles and skeletal elements comprising the shoulder locally.

(3) In the presence of headache, eyestrain, astigmatism, dental caries, inflammation of the temporomandibular joint, malocclusion, throat pain, tinnitus, hardness of hearing and similar problems of the various organs of the head (in particular organs related to the special senses) patients often complain simultaneously also about shoulder stiffness. While these causes undoubtedly may lead to shoulder stiffness, the etiologic factors causing these conditions may at the same time also induce shoulder stiffness directly. Conversely, shoulder stiffness may also be a causative factor in the development of these symptoms and possibly also modify the said symptoms.

(4) Shoulder stiffness caused by problems of the various internal organs. Patients with asthma or cardiac diseases, digestive organs like the gastrointestinal tract or liver, gynecologic or urologic problems and the like affections of internal organs may simultaneously cause one to complain about shoulder stiffness.

(5) Anxiety, anger, stress and similar mental problems can cause shoulder stiffness as well.

(6) From a characteristically oriental medical point of view wind, cold or damp evil and similar external affections, or else shoulder stiffness caused by phlegm are also conceivable.

7) The presence of chilling, hot flashes or dizziness,

listlessness or heaviness of the legs, edema, insomnia and similar indefinite complaints patients may simultaneously lead patients to complain of shoulder stiffness. An imbalance of the autonomic nervous system considered to be a causative factor for indefinite complaints, has also been suggested as a possible cause for shoulder stiffness.

II. Approach to the determination of therapeutic points for shoulder stiffness

1. Identification of painful or stiff regions

For the treatment of shoulder stiffness it is first of all necessary to identify the painful or stiff regions. These may be found by: (1) instructing the patient to flex the neck anteriorly, posteriorly or laterally, rotate it or flex it obliquely, assume a position of the limp(s) that usually induces the pain or stiffness in order to clearly identify the painful or stiff regions; (2) when there is pain or stiffness of the muscles, it is necessary to identify the involved muscle(s). Clearly define, which of the above mentioned muscles of the neck, shoulder, chest, and arm are involved. Pain, swelling or tenderness may also be observed in other tissues than the muscles; and (3) for example tendons, ligaments, connective tissue, skin etc., in which case the respective painful or stiff regions need to be identified. Among these (2) and (3) are achieved through palpation, but in particular, (3) requires very careful palpation in order to identify the affected regions.

2. Search for sites of swelling or pain in the local area (above, below, left, right, anterior, posterior).

Once the site of the complaint has been clearly identified, its vicinity has to be palpated for swelling and pain. Again, not only swelling and pain, but also indurations or indentations, and areas of decreased sensitivity are checked. This is required in order to identify the areas to be treated.

Figure 1 shows that the head, neck, interscapular region and anterior chest are conceivable adjacent regions.

3. Examine the upper and lower extremities for swelling and tender spots with reference to the channels.

Check through palpation of the shoulder region, its vicinity and more distant areas with reference to the course of the channels and the muscles along the channels and the nervous system for sites showing signs of deficiency or excess. The most distant regions are the upper and lower extremities.

4. Palpate the abdomen, lumbar and sacral vertebrae for tension and tenderness.

Due to the correlation with the autonomic nervous system and the inner organs' reactive sites of the abdomen, lumbar and sacral vertebrae may be related to shoulder stiffness and thus serve as sites for therapeutic stimulation. Palpate these regions and check for relevant reactions.

III. Basic concepts of acupuncture, moxibustion and massage treatment

1. Most basic concepts during the identification of pathologic musculoskeletal conditions to be treated:

(1) Is it solely a problem of the locomotor system?

(2) Should an involvement of various organs, distant organs and tissues be considered?

(3) Is the condition due to extrinsic pathogenic factors?

(4) Is there a strong influence of mental, psychologic problems?

The treatment will differ depending on these considerations.

2. Establishing the therapy

(1) Treatment of local pain or stiffness

Perform an anamnesis of local pain or stiffness, or ask the patient to assume the painful posture to identify the relevant regions and then treat the involved sites directly.

A major portion of the current acupuncture and moxibustion treatment is directed locally at the

shoulder stiffness and needling of the tensioned muscles. In the book *Shinkyu Chouho Ki* of the Edo period, the following passage is found.

"First, massage and twist the shoulder with the hands, stroking downwards and open the flow of Qi before needling. Deep needling may be a mistake. In other words, indiscriminate needling may injure the patient. For the needling the needles should be retained between skin and muscles. At least, the muscles should not be needled. Do not use needle twirling on the shoulders and back. Stone needles should be used. Use a needling tube and flick the needle in, so that it drains Qi and Blood. This will have a quick effect. Also, the tube should be thrust. This will inevitably lead to bleeding and thus eliminate the pathogenic Qi. In ancient times they used the tip of stones to pierce sites of pain or numbness, disrupt the channels, eliminate the evil influences, and thus the acupuncture classics stated the use of stone needles to drain pus and blood." (cited from the *Shinkyu Chouho Ki*).

The intent is not to pierce the muscles, but rather insert the needles shallowly, or else perform blood letting for cases, as described above where wind evil has invaded Qi and Blood and thus led to their stagnation.

(2) Treatment of related but not local sites

(therapies exploiting the somato-visceral reflex, back shu and anterior mu points)

When pain in muscles, and the like connective tissues or referred pain, has been induced via the somato-visceral reflex, the site of the pain is treated locally, but at the same time, the organs and other causative factors of the condition are also treated.

(3) Treatment of distant sites

Treatment follows the pathologic condition.

Treatment according to disease pattern

* Performed referring to the course of nerves, channels, the muscles along the channels, special effect points, clinical experience etc.
* Selection of points based on the identification of the oriental medical disease pattern, performance of tonification and sedation.
* In general clinical practice, the filiform needle and manual stimulation are used.
* Intradermal or press-needles are often used, if after the above described treatment pain remains, in order to prolong the therapeutic effects.
* Network vessel pricking is also effective, but in Japan it is not generally used.

Clinical Application: Cerebrovascular Disorders

Cerebrovascular disorders were quite prevalent in Japan, but with the medical progress in recent years, their incidence began to decrease after 1965. Currently, they rank third as the cause of death, after malignant neoplasms and heart diseases. Yet, their prevalence is rising. Annually, one in 400,000 people have the disease in some form, and among these, 130,000 die from it. The number of patients with sequelae is approximately 1.4 to 1.5 million. Previously, the cause for stroke was often cerebral hemorrhage, but today the incidence of cerebral infarction increases[1,2].

This disease, regardless of whether it has been caused by hemorrhage or infarction, is an indication for acupuncture treatment. During the acute phase, modern western medicine is currently used for the treatment and acupuncture is not considered to be an indication. This treatment modality is administered in a small number of special cases.

However, in times when medical care was not as good as it is today, treatment during the early stages, often had to rely on acupuncture. Diagnosis had not been as exact as it is today so that the treatment of stroke was based on clinical symptoms. Patients, only a few days after their attack, presented an indication for acupuncture treatment. Before the concepts of rehabilitation were generally acknowledged, acupuncture had already been applied for such purposes[Note1]. The methodology applied at that time was a traditional Japanese one. Subsequently, therapies based on unique new views, were added. Concepts of modern medicine of the day were also integrated and thus a fairly coherent treatment proposed. Later, due to treatment increasingly centered on western medicine, the application of acupuncture gradually declined.

Completely new developments in the treatment of stroke occurred in the 1990's when Chinese "Xing Nao Kai Qao Fa" (activating the brain and opening the orifices method - Note2 and Zhu's scalp acupuncture - Note3) were introduced in Japan. At the same time, a renaissance of the application of acupuncture and moxibustion for diseases already being treated with western medical methods and rehabilitation, heightened the interest in this therapeutic modality.

A brief introduction to the treatment of these diseases with acupuncture and moxibustion as performed in recent years in Japan is presented below.

1. Acute stage

Western medical treatment receives priority during the acute stage of stroke. During this stage there will be almost no occasions to use acupuncture and moxibustion treatment, but Prof. Akao at the Gifu University Hospital, has treated many stroke patients during the acute stage and also performed acupuncture and moxibustion treatment when western medical treatment alone did not produce sufficient effects. He reported that he has observed comparatively quick improvement in consciousness among these patients[3]. For this purpose, the "Xing Nao Kai Qao Fa" method, in particular for GV26, appeared to be effective for people with impaired consciousness and blood letting performed at the well points traditionally performed in Japan, has also been found to be effective.

Bunshi Shirota (1900-1974), who had a great deal of experience with treating stroke patients during the acute stage, stated: "perform minimal blood letting at GV20 , BL7 , and additionally at the well points of both hands and feet. When patients feel irritated, the healthy side should not be moved, micropuncturing performed for blood letting at GB12 of the healthy side and the use of cupping to drain some blood should be performed. Many patients will calm down after this treatment." He indicated needling at GB20, GB12, LI10, LI4, GB34, ST36, LI3 (single insertion, depth 1-2 cm)[4]. The beneficial effects of blood letting performed at the well points during the acute stage has been pointed out by many acupuncturists, one of whom spent half of his life on research into the effects of blood letting, Kunimasa Kudo (1918-1889). He also recommended this method based on a wealth of clinical experience[5]. Generally this treatment form is not used.

2. Transition from the acute to the chronic stage

During this stage, one usually waits for the condition to stabilize and then initiates rehabilitation therapy, but it is also an indication for acupuncture and moxibustion treatment.

Shirota used the same treatment as applied during the acute stage several days after the attack and added his "Doshi" technique. He also described the application of moxibustion on GV20, CV12, LI10, GB34 and the Sawada style KI3[4].

Yet, the most efficient treatment during this stage appears to be the "Xing Nao Kai Qao Fa" method developed by Prof. Xue-Min Shi. This treatment should be initiated as early as possible and it is desirable to begin with the acupuncture and moxibustion treatment as soon as symptoms have been stabilized through western medical treatment. Prof. Shi frequently visits Japan and has instructed many Japanese acupuncturists in this technique. In several hospitals he has actually treated patients himself. Direct observation of the dramatic improvement has surprised Japanese acupuncturists. After receiving his tutelage, many acupuncturists in Japan perform this treatment.

Since the introduction of this treatment, the method today is applied in facilities with experienced acupuncturists. People observing for the first time how hemiplegic patients with complete paralysis of either an arm or a leg start moving the affected arm or leg immediately after the treatment cannot conceal their astonishment.

However, among Japanese rehabilitative medical societies and academic societies of acupuncture and moxibustion, a consensus has not been reached as to when acupuncture and moxibustion treatment should be started.

3. Chronic stage

Currently, treatment of this disease with acupuncture and moxibustion is restricted in Japan almost entirely to this stage. The introduction of rehabilitation concepts is a comparatively recent event and up to that time no such concepts had been available. Among them, acupuncture and moxibustion as well as shiatsu, were the only treatment forms that fulfilled this role. Rehabilitation is an independent therapeutic system and not related to acupuncture and moxibustion, but a combination of these treatment forms produces even better effects. Today, efforts are made to propose even better therapies achieved by a combination of these different modalities.

Methodologically there is no way that acupuncture and moxibustion can be applied to the site of the stroke lesion itself, and in practice, this is not possible either. Nevertheless, when symptoms typical for the affected region are observed, the therapy may be directed at those symptoms. In particular the "Xing Nao Kai Qao Fa" explains in detail the treatment of symptoms including impairment of consciousness, hemilateral motor or sensory paralysis, central facial paralysis, dysphasia, articulation disorders, disorders of deglutition, disturbances of vision (visual field defects), and urinary incontinence. Practical application of this method allows for treatment of these symptoms. The basic points used for the "Xing Nao Kai Qao Fa" method are as follows. On these points, lifting-thrusting, twirling, reinforcement or reduction techniques are used for the needling. For other associated symptoms, other necessary points may be added[6].

Main points: PC6, GV26, SP6
Supplementary points: HT1, LU5, BL40, GB20, GB12, BL10
Other points added depending on the presence of associated symptoms:

* central facial paralysis: GB20, EX-HN5, ST7, penetrating needling from ST4 to ST6, LI4 on healthy side
* pes equinovarus: ST41, penetrating needling from GB40 to KI6
* motor aphasia: blood letting at EX-HN12, EX-HN13
* receptive aphasia: penetrating needling from GV23 to GV20, GB20, HT7
* disturbances of vision: GB20
* hearing impairment (hearing loss): GB20, TE21, SI19, GB2

* disorders of articulation or deglutition (pseudobulbar paralysis): GB20 or TE176, GB12
* urinary incontinence: PC6, GV26 or EX-HN3, penetrating needling from GV23 to GV20, KI3, CV2.

Shirota reported increasing the number of therapeutic points used for acupuncture and moxibustion following the 10th day after the attack, also including important points on the paralyzed side. In patients with dysarthria, he added GV15 or GV16. Continued performance of micropuncturing for blood letting is also said to be beneficial. He further reported puncturing areas on the back of the neck or shoulders marked by blood congestion and the application of cupping to drain some of the blood, as well as the suitability of the use of well points GV20, or the "clearing of nutrient" method etc.

The treatment for the chronic stage recommended by Shirota is as follows[4].

Acupuncture: GV20, GB12, LI10, LI4, GB34, ST36, LR3, BL2, BL10, TE15, BL15, BL18, BL25, BL32, GB30 on the affected side
Moxibustion: CV12, CV9, GV12, TE15, BL25, LI11, GB34, GV20
Only on the affected side: LU1, ST27, SI11, SI10, LI15, LI10, LI4, TE4, PC7, GB31, Kampu, ST36, LR4, GB40 (half rice grain size, 3 to 5 cone on each point)

During this stage, moxibustion is also effective. Isaburo Fukaya (1900-1974), who dedicated his entire life to the research and clinical application of moxibustion, has written his treatment records in the form of a diary and published this as a book entitled *Stories About Healing Diseases with Moxibustion*. In this book, he recommended the application of moxibustion on the fingertips for stroke induced hemiplegia. For example, apply moxa for paralysis of the arm using points at the fingertips on the affected side (approximately 3-4 mm on the midline proximal to the edge of the nail). If the patient feels the heat, use only one moxa cone. If he/she does not feel the heat, use several cones. This treatment reportedly resulted in a comparatively quick recovery of motor function. However, at some point in time, the effectiveness of this method decreases and requires moxa treatment of specific points on the entire body. At that time, the use of 5 half grain sized moxa cones each on GB21, LI15, BL10, LI11, LI10, LI8, PC5, GB31, ST36, ST41 is indicated. The description includes records of the progress in stroke patients actually treated in this way including patients from one week to several years after the attack. These records contain descriptions that are noteworthy even today[7].

Many experiences with acupuncture and moxibustion treatment have been gathered and the above described example is definitely not unique.

Yamada stated that the three main purposes of acupuncture and moxibustion treatment during that stage are: (1) recovery of basic functions as a part of the rehabilitative measures like exercise therapy, (2) prevention of various complications, and (3) alleviation of pain[8].

The chronic stage is often associated with pain and patients frequently experience extremely severe pain. Acupuncture is effective for central pain like thalamic pain, but its efficacy for the various forms of peripheral pain on the paralyzed side in patients with hemiplegia, are an even better indication. In particular, pain of the shoulder joint is encountered frequently and many patients stop walking because of the pain that is triggered during walking. For this condition, Prof. Shi states that he needles LI15, Kengairyo and Kennairyo in order to promote the flow in the local channels and punctures painful spots for blood letting in attempts to dissolve blood stasis and alleviate pain. Kitamura needled "ashi" (tender) points to treat pain upon elevation of the arm and subsequently achieved an improved ROM through active and passive exercise. He did not treat just the shoulder simply because it is painful, but also needled points like BL62 or GB26, ST36, SP9 and GB34; and thus reportedly achieved alleviation of the shoulder pain[8].

Spasticity too is a great problem. Prof. Xue-Min Shi has pointed out that slightly stronger stimulation of LI14 for flexion and contractures of hands and

fingers induces instant relaxation[6]. Moreover, in case of spasticity of the biceps muscle, Kitamura also used motor points of that muscle and applied electric current of an intensity that does not induce joint movements and a frequency of 30 Hz for a period of 5 minutes, followed by 2 minutes of rest and then repeated these cycles three times. Thus he reportedly achieved, although only temporarily, some relief of the spasticity. Based on the principle of reciprocal innervation, he stated that stimulation of the antagonist is also beneficial[8]. These therapies are effective immediately after their application, but the effects do not last very long and thus require repeated treatment and exercise therapy should preferably be performed while the therapeutic effect lasts. It is important that the patient remembers the relevant sensations.

Although the number of case reports describing stroke patients is not small, the number of such reports coupled with reports on detailed western medical examination is not high. Acupuncturists like Shirota of about one generation ago, published a large number of case reports, attesting to the abundance of clinical experiences, but many of these records are nevertheless incomplete by modern medical standards. Yet, in recent years, the number of reports providing findings of both medical systems has been increasing. For example, Yukimachi, et al. started to treat a 72-year old woman and a 76-year old man (both of which were diagnosed with lacunar infarction based on MRI findings) with acupuncture and moxibustion from the first week of hospitalization. Patient management was performed based on western medicine and these patients reportedly healed without any late effects[9].

There are not yet any clear statements regarding the long-term prognosis when acupuncture and moxibustion therapy are used for the treatment of patients with this disease. Shirota reported that persistent treatment resulted in patients regaining the power to power to write, and patients who had difficulties to walk, found it easier to walk. Also, treating patients with contractures and fixed joints in the same way as patients with RA or neuralgia, has reportedly led to an amazing degree of alleviation[4].

In the collection of essays by Shirota, *Records of Clinical Acupuncture and Moxibustion,* he emphasizes the importance of persistent and careful treatment, describing it as follows. "After a long time after a stroke, local treatment of the late effects is particularly important. The muscles, nerves and blood vessels that supply the affected area need special attention. In order to improve their function, careful treatment should be given. Treatment of the arms is important when the goal is to regain the ability to use a brush or chopsticks. Yet, treatment of the legs is also required. Even minor improvements in the condition of the legs help to make walking easier. When walking becomes easier, the maintenance of equilibrium improves and thus stabilizes the entire body. Even if 1 or 2 years have passed since the attack, treatment will gradually lead to improvements. Although it may not be possible to expect a full recovery, it should be sufficient to achieve a certain degree of improvement. The patient's joy will thereby be increased."[10]

Note 1:

The concepts of rehabilitation were clarified in Japan in the 1950s. Later, after many deliberations, the Japanese Association of Rehabilitation Medicine (JARM) was founded in 1963. In the same year, the first school for the training of physiotherapists and occupational therapists was opened. Three years later, in 1966, the first graduates left that school and the first state examination was held. This created the first generation of physiotherapists and occupational therapists and led to the foundation of the Japanese Physical Therapy Association and the Japanese Association of Occupational Therapists. Later, rehabilitation was integrated into medical care and played an important role in the various fields of medicine. Since acupuncture and moxibustion on the other hand remained outside the framework of medical care, the treatment of late effects of stroke that used to be an indication for acupuncture and moxibustion, fell into the category of rehabilitation, so treatment by acupuncturists decreased.

Note 2:

The **Xing Nao Kai Qao Fa** ("Xing Nao Kai Qiao" = XNKQ, activating the brain and opening the orifices) method was developed by Professor Xue-Min Shi at the First Teaching Hospital of Tianjin University of TCM. This therapy, which adds new views to the traditional theories and is applied from the acute stage of a stroke to the sequelae developing during the chronic stage, is an epoch-making technique allowing dramatic improvements immediately after the treatment. Professor Shi himself introduced this technique in Japan and there is a Japanese textbook which describes this method. It is being practiced in many medical facilities.

Note 3:

Zhu's scalp acupuncture is a therapy that has been developed by Professor Ming-Qing Zhu at Beijing University of Traditional Chinese Medicine (which has absorbed the former Beijing College of TCM). Various therapeutic areas are used on the scalp and stimulated by needling, applying a unique technique. The technique is applied not only for the treatment of stroke, but also for a wide spectrum of other neurological diseases. Professor Zhu himself has introduced this technique in Japan and there is a Japanese textbook which describes this method. It is being practiced in a number of medical facilities.

References:

1. Ministry of Health, Labor and Welfare: 2001, *Estimated vital statistics (determinate), rehabilitation of cerebrovascular disorders*, http://www.mhlw.go.jp/toukei/saikin/hw/jinkou/kakutei01/hyo4.html
2. Ministry of Health, Labor and Welfare: 2002, *General conditions of the patients, total number of patients with the main disabilities*, http://www.mhlw.go.jp/toukei/saikin/hw/kanja/kanja99/5.html
3. Akao M.: Round-table discussion "*Acupuncture therapy for cerebral stroke"*, Ido no Nihon, No. 714, p25-36, 2003
4. Shirota B.: *Practical acupuncture therapy centering on descriptions of clinical case reports* (Vol. one), p252-279, Sogen Publisher, 1966
5. Kudo K.: *Illustrated Blood Letting Therapy*, p93-96, Shizen Publisher, 1980
6. Xue-Min Shi: *Pictoral explanation of acupuncture therapy for cerebrovascular disorders*, Oriental Medicine Publisher, 1991
7. Fukaya I.: Stories *About Healing Diseases with Moxibustion, Collection Nos 1 through 12,* Shinkyu no Sekai Publisher, 1972

(The section of clinical applications continues on page 67)

Manufacturing Process and Characteristics of Modern Acupuncture Needles

1. History of disposable acupuncture needles (Single use acupuncture needle)

Disposable acupuncture needles (hereafter referred to as "single use acupuncture needles") were first mass-produced and introduced to the market by Seirin Corporation in 1978. Subsequently, China money and the funds of Chinese companies were invested for the manufacture in about 1995 and the sales started on a full scale around 1997. These needles are packaged in blister packs. About ten brands are now sold on the world markets. This has accelerated the use of single use acupuncture needles.

Importance of single use acupuncture needles is adequate sterilization being ensured and needle points uniformly shaped. This makes the techniques of acupuncturists to be transmitted as they are, resulting in therapy efficacy. Since the single use acupuncture needle is a medical tool, it is required to satisfy international legal requirements. Adequate sterilization is an important issue and counts of living microbes including bacteria, attached to the product, that are likely to propagate need to be reduced to the least possible. Thus, the manufacture has to be carried out under a specifically clean environment. Following is the manufacturing process of single use acupuncture needles.

2. Manufacturing process of disposable acupuncture needles

(1) incoming inspection

All Seirin needles are manufactured from high quality raw materials made to specifications established by adding our company's original requirements to the specifications of stainless steel wires prescribed by JIS standards applicable to wires made in Japan. No effort is spared to perform the trace control of stainless wires that were used.

(2) process of setting straight

By having established inimitable straightening technologies, we perform straight line processing without damaging surfaces and carry out wire materials processing, which forms the basis of needles with high roundness.

(3) process flow inspection

Measurements are made of the true wire diameters, cut dimensions, etc. of cut parts on which straight line processing was performed and standard size cutting operation was completed, thereby controlling conditions where uniform needlepoint processing can be carried out in subsequent processes.

(4) grinding process

Seirin's original needlepoint technology is utilized to finish products into uniform, rounded, and smooth forms that serve to minimize pains.

(5) process flow inspection

After completion of needlepoint operation, in-process inspections are performed, with each production lot as a unit, thus severely checking needle lengths in terms of accuracy requirements. Then needles flow to the cleaning process, which is the next one.

(6) washing process

Cleaning work is performed in a number of stages to prevent oil, foreign objects, etc. from adhering to needles. Distilled water cleaning is carried out in a clean booth for which strict environmental control is conducted, and final cleaning is performed by a dust-free dryer. In this work setup, no human hand comes into contact with needles.

(7) process flow inspection

A magnifying microscope is used to carefully check the needlepoint condition, with each production lot as a unit.

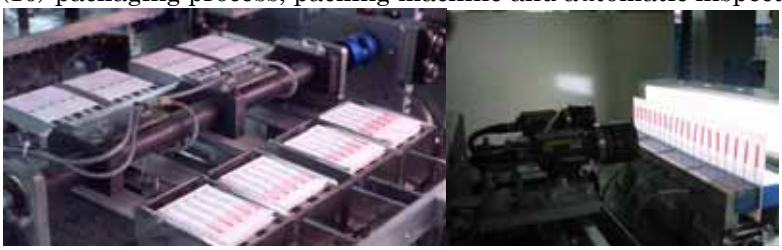
(8) assemnly process and inspection of auto-assembly machine

Inspection devices are installed in all automatic assembly line sections where no human hand comes into contact with needles. Thus uniform disposable acupuncture needles are assembled.

(9) process flow inspection

Items such as the needlepoint condition, the adhesion strength of joints between needle shafts and needle tubes, and the drawing tension between needle shafts and needle bodies are subjected to in-process inspections, with each production lot as a unit, thereby achieving the quality suitable for the next process.

(10) packaging process, packing machine and automatic inspection



An automatic packaging machine for packing individual needles is used to strictly control the sealing condition capable of steadfastly maintaining sterility. Inspection devices including an image processing apparatus are used to make sure that no defects are overlooked.

(11) process flow inspection

In-process inspections are performed, with each production lot as a unit, to check the indication condition, the sealing condition, etc., thereby providing products with air-tightness capable of steadfastly maintaining product sterility suitable for the sterilization process, which is the next one.

(12) process of diminishing germs

The environment in the production processes are controlled on a thoroughgoing basis, and sterilization validation is performed, thereby reliably ensuring sterility.

(13) product warehouse

Products are managed in a room subjected to controlled air conditioning.

(14) shipping inspection

Final functional inspections are performed including the confirmation of the in-process inspections conducted in all production processes. Also, culture examinations for biological indicators are conducted.

(15) numbered lot

(16) shipping

The production lot number and the expiration date are printed on the back of each blister package formed in the packaging process. By searching for production lot numbers, it is possible to clarify data ranging from shipment inspection histories to sterilization histories and to stainless wire purchase histories. Any product for which such production lot trace is unclear is not allowed to be distributed even if it has passed shipment inspection.

(Materials provided by SEIRIN CORPORATION)

Manufacturing Process of Classical Acupuncture Needles (since the Ancient Period of Edo)

I. Introduction

Thin needles commonly used in the Japanese acupuncture have been manufactured since the Edo Periodup up to the present. Attitude toward sanitary affairs, however, changed over time and the method of needle manufacturing maintained since the Edo Period was forced to undergo changes. Moreover, with the end of the Edo culture that supported the technique of needle manufacturing, manufacturers of long standing have faced difficulty finding successors. This report will introduce the manufacturing process of acupuncture needles that has been handed down to the present from the Edo Period. In preparing the report, Aoki Jitui Shouten, which has a history of 140 years in manufacturing acupuncture needles since the end of the Edo era, provided cooperation.

II. Manufacturing process of needles

1. Needle handle

The manufacturing method of needle handles underwent a great change. Many years ago, handles were all made of processed pure silver. To make a handle, a pipe was made with a block or ingot of pure silver (Photos 1 and 2), which was processed into a shape of plate (Photo 3), and then passed through a die (Photo 4). A die is a modern tool. Many years ago, a tool with equivalent functions was made uniquely using the same material as the one used for Japanese swords (Photos 5 and 6). Patterns were elaborately handcrafted on a handle which was very time consuming for the artist (Photo 7). Presently, seamless pipes of stainless steel or brass are manufactured and these are processed to make handles (Photo 8).

2. Needle body

A needle body is the most important part of a needle, but there were almost no changes made in its manufacturing method. Or rather this is the part for which manufacturers do not want to make alterations. This section will mainly describe the manufacturing process of a silver needle (for a gold needle, the process is almost identical). A needle made of pure silver is too soft to prick the skin skillfully, and when pricking the skin, the needle gets bent in the guide tube and its tip does not adequately cleave the skin to get into. To give hardness, different metals are blended. Alloy composition with copper, or brass, or others depend on manufacturers. Metals are mixed by an electrical furnace, whereas it was done by an air blasting unit called Fuigo (Photo 9) many years agro.

As a first step, a thick cylindrical block is made, and then it is extended by little by little. It is not shaved off, but stretched thinly (Photos 10 & 11). At the initial stage, a machine is used, but when the silver alloy becomes a certain diameter, the machine is stopped and a craft-man extends it manually with a pair of pliers. This process is absolutely necessary and it is in this process to get rid of something bad, which requires technical skills of the craft-man. The tool used is a diamond die (a hole is made in the center of the diamond) (Photo 12). In the early days, diamonds were not available, so the tool with a narrow hole as in Photo 5 and Photo 6 was used. A piece of silver alloy is elongated to the required diameter, which is cut to the specified gauge, and pressed to attach to the handle.

Initially, materials used to make the body were gold, silver and iron in old days, whereas gold, silver and stainless steel are now used. Iron rusts easily, so since the development of stainless steel, iron has been replaced with stainless steel.

3. Attachment of a handle to a body

A handle and a body are attached by presswork, but it was done so by soldering in the past. A piece of solder alloy with unique blending was made in a plate shape (Photo 13) and cut thinly, and then the thinly cut solder was run into a heated pipe in which the body was placed and attached after cooling. The autoclave popularity created a thermal problem in soldering and the calking technique by presswork is now employed.

4. Needle tip

In the early days, natural whetstone was used to grind the tip (Photo 14). At present, the tip is sharpened on a whetstone attached to the grinder. A tip sharpening process can be finished in four steps. This is the most difficult process and challenging to the craftsman. There are reasons why this process is used. Aoki Jitui Shouten produces needles that are used in a guide tube (“pine needle type”) and needles as “nenshin” that do not use a guide tube (“willow leave type”). The tips of these two types of needles have quite different shapes. There are demands from clinicians that the tip should be made more round (“oval type”), or that they need more sharp-pointed tips (sharp-pointed tip, “noge type”) and

the Jitui Shouten is responding to their requirements. However, only manual work can fully satisfy their requirements as described above. What makes the biggest difference between automated production and manual production is this process.

5. Needle guide tube

In the early years, a guide tube was made through the process of hammering a piece of pure silver plate to a round tube. To make a square guide tube, edges of the plate were rasped off to make it octagon. At present, a guide tube is produced by pulling a tube from a die specially made for the purpose (Photo 15 & 16). Materials used are three kinds of metals, gold (20K), pure silver, and stainless steel (Photo 17).

III. Summary

The manufacturing process described above is highly appraised among clinicians as the manual technique for making needles by a craftsman, rather than the method of making needles mechanically. Aoki Jitui Shouten has more orders received for needles of silver than those of stainless steel. There are two types of needles available for selection in Japan of today: less expensive needles and more expensive needles produced according to the requirement of clinicians. Less expensive needles have one disadvantage in that clinicians have to carefully pre-sterilize the needles and dispose them once used.

Photo 1

Photo 2

Photo 3

Photo 4

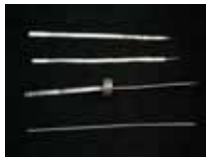


Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

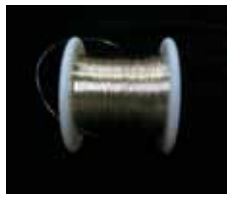


Photo 12

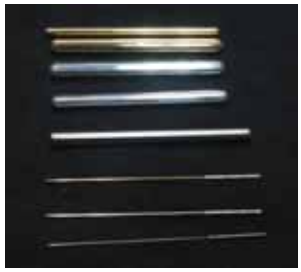
Photo 13

Photo 14

Photo 15

Photo 16

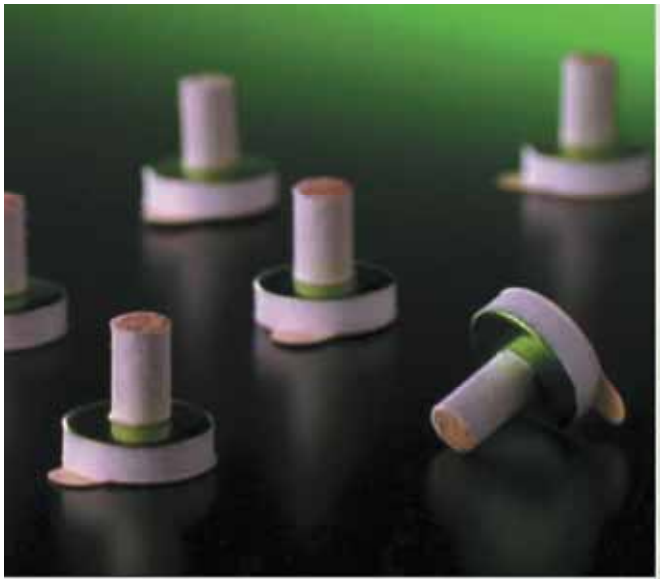
Photo 17

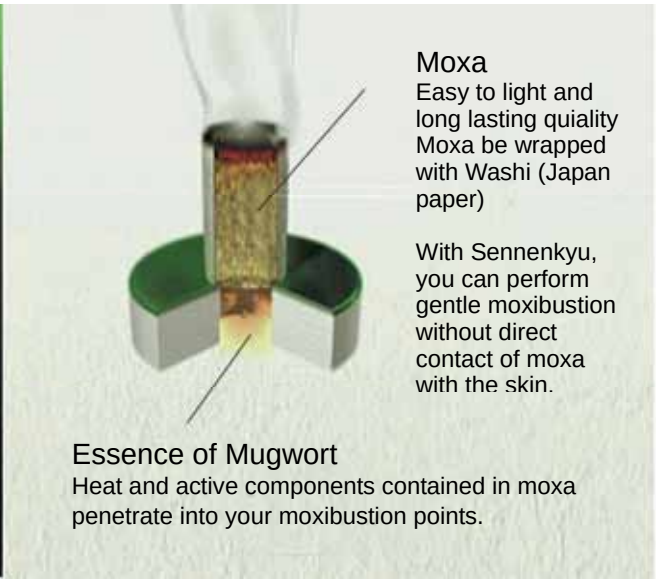


(Contents and photos provided by Aoki Jitsui Shoten)

Introduction of Modern Moxibustion

The Modern Moxibustion





SENNENKYU

Characteristics of Sennenkyu

* "Moxa" burned for moxibustion is prepared from the medicinal herb "mugwort".

* With Sennenkyu, you can perform gentle moxibustion without direct contact of moxa with the skin.

* Heat and the active components of mugwort contained in moxa penetrate to moxibustion points through the aeration pores.

How to peel
off the adhesive paper

How to burn Sennenkyu

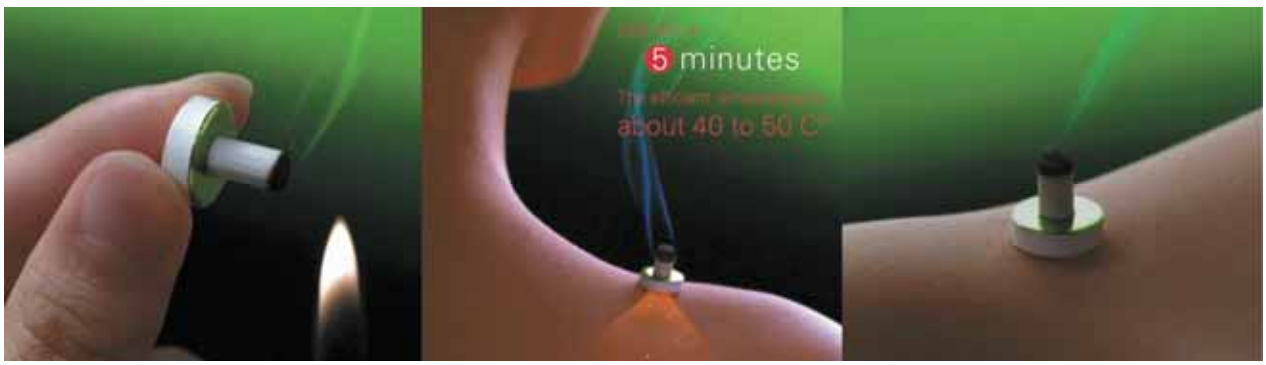
1) Peel off the adhesive (ground) paper at the bottom of the holder.

2) Light moxa at its top with a match or a lighter.

3) Attach Sennenkyu gently and securely to the moxibustion points .

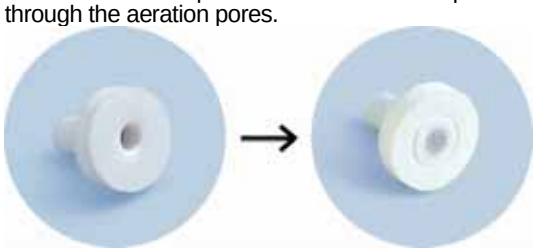
4) As moxa burns gradually, you will begin to feel the heat after about 4 minutes, and the fire goes out shortly after you eventually feel sharp heat.

5) Since the effect of moxibustion continues even after the fire goes out, keep Sennen-kyu in place until the holder cools.



The aeration pore

Heat and the active components of mugwort contained in moxa penetrate to moxibustion points through the aeration pores.



Milder type moxibustion with the bottom lined with Japan paper. Much gentler on your skin.

“ Japan paper” absorbs excess moisture from the skin surface and prevents skin troubles such as low temperature burns.It absorbs skin surface moisture only from the moxibustion spot. Strain of the skin surface is diminished with still the same thermal penetration onto the moxibustion points.

Relaxation by fragrances

Our product line introduced most recently is moxa formulated fragrances of fruits and flowers. Its exquisite and delicate fragrances put your heart at rest, leading to complete relaxation.

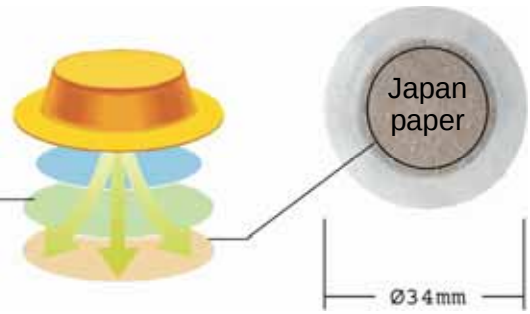
Pleasant scents are said to have relaxation effects of freeing mind and body and the moxa that used to be for therapy has now begun to be recognized especially among young generations as a product for relaxation.

The Self-Heating Moxa (SENNENKYU TAIYO)

Essence of Mugwort

Pyrogen
The exothermic agent is used to gradually heat the moxibustion points without fire consumption.

Moxa
The “moxa sheet” contains an active component of mugwort and penetrates into the skin with heat



How to Use

1) Be sure to open the package just before use.

2) Peel the air-blocking seal off of the protrusion. Heat will be generated and, after about 20 to 30 minutes, reaches the efficient temperature.

3) Peel the seal off of the bottom part (skin contact surface).Firmly apply the moxibustion to the predetermined the moxibustion points.The sufficient temperature (about 40 to 45 C°) will "last about 3 hours".

4) Be sure to remove the burned moxa after it loses the heat and cools down.

(Contents and photos provided by Senefa Corporation)

Manufacturing Process and Characteristics of Classical Moxa

<Moxa raw materials> Moxa is made from the leaf of the mugwort (Artemisia vulgaris), using the dense white hairs on the bottom side of the leaf. Although mugwort is common throughout Japan, the plants that grow in areas of high snowfall are considered to provide the best-quality raw material for moxa. The areas around the Ibuki mountain range in Shiga Prefecture and in the mountains of Toyama and Niigata in western Japan produce particularly large mugwort leaves with optimal characteristics for moxa production. Large leaves mean fewer stems, which in turn reduces the amount of stem impurities introduced during the process of separating the fine hairs from the back of each leaf. This improves the yield rate and decreases production costs.

<Harvesting mugwort> Mugwort leaves are gathered from mid-May until early August. The harvested leaves are pulled from the stems and spread on a straw mat or other surface to dry naturally in the sun for 5 days. During this time, the leaves are carefully turned once or twice daily (a process termed "reversing heaven and earth") to ensure uniform drying. The dried mugwort is stored until the beginning of winter in the mountains, when the air becomes dryer than during the hot, humid summer months.

<Drying by heating> Moxa production is begun in late November. At that point, the sun-dried mugwort is dried by heating to remove any remaining water. If the leaves are not adequately dried, it is very difficult to separate impurities from the moxa later in the production process, and the resulting moxa will not be of high quality. This is why moxa is manufactured during the winter, when the humidity is low and better drying can be achieved. We use special drying rooms heated with natural gas, and blowers to disperse the hot dry air throughout the room. For moxa that will be used directly on the skin (direct moxibustion), the leaves are dried for about 20 hours. For applications in which a thin sheet of paper or similar substance is placed on the skin and the moxa is then positioned on that sheet (indirect moxibustion), the leaves are dried for about 12 hours.

<Grinding> Grindstones are used to separate the impurities from the fine hairs that will be used in the moxa. This process uses three different types of grindstone, which differ by the number and depth of grooves in the stones, and by the weight of the upper stone. Grindstones 1, 2, and 3 are used in grinding direct moxibustion, Grindstones 1 and No. 2 are used for applications in which moxa is burned on the head of an inserted acupuncture needle, and only Grindstone 1 is used for indirect moxibustion.

The grindstones are constructed in pairs, with one upper stone and one lower stone. The upper stone turns, the lower stone is fixed in position, and the mugwort is introduced through a hole in the upper stone. The stone used in grindstones for moxa production should be neither hard and fine-grained or soft and coarse-grained; the best stone is hard and coarse-grained. Fine-grained hard stone produces moxa fibers that are too finely powdered and will not stick together, while rough-grained soft stone yields poorly cut fibers and coarse, uneven moxa. For well-cut mugwort, with minimal damage to the fine hairs from the leaves, the best grindstones are made from volcanic rock.

<Nagadoshi> At the end of the grinding process the dried leaves have been reduced to powder. However, impurities such as leaf and stem pieces remain. The moxa is separated from the impurities by sieving through a device called the "nagadoshi". Within this device is a cylinder made from a bamboo screen, similar to the screens used to make sushi rolls, but larger. The powdered mugwort is turned and mixed within that cylinder, and then passes through a sieve. The bamboo screen is set at an angle, with the powdered mugwort introduced through the top of the cylinder. As the cylinder turns, the powdered impurities are gradually thrown out through the spaces between the bamboo screens, leaving only moxa by the time the product reaches the exit point at the bottom. The yield rate for coarse moxa at this point is 10-15% in comparison to the dried leaves. The moxa is now suitable for use in indirect moxibustion and acupuncture needle head applications.

<Tohmi Winnower> The coarse moxa that was obtained from the Nagadoshi is further purified by filtering through a Tohmi in order to produce high-grade point acupuncture moxa. This device works much like the Nagadoshi, turning and mixing the coarse moxa to separate impurities, except that instead of a turning cylinder, the Tohmi is equipped with large revolving plates that turn within an unmoving bamboo cylinder. Coarse moxa is poured in through an opening at the top of the device. The rotating plates mix the contents of the cylinder, so that the impurities fly out through the bamboo screen, and only purified high-quality moxa remains within the Tohmi. The time required for this winnowing process depends on the quality of the desired product: about 6 hours for direct moxibustion, and about 12 hours for the highest-grade direct moxibustion. The yield rate at this stage is approximately 4% of the original dried leaf.

<Regulating quality> The finished moxa may differ in quality depending on the weather conditions at the time of production, so sorting and blending are performed to insure uniform quality before the product is shipped. Moxa manufacturing is concluded by the end of March, when winter is drawing to a close in the mountains.

(Contents and photos provided by Yamasho Co., Ltd.)

Clinical Application: Trigenimal Neuralgia

Trigeminal neuralgia is a lancinating pain occurring in the area innervated by the trigeminal nerve that continues for short periods of time and is frequent in the elderly. The pain usually lasts only a few seconds, occurs suddenly and then disappears suddenly. Western medical approaches include pharmacotherapy, surgical treatment and nerve blocks; but neither of these treatment forms is 100% effective. Acupuncture and moxibustion treatment is effective, but the condition still remains intractable. Nevertheless, when various treatments have been tried without providing any relief, it may be possible to induce some relief, or in some cases, even cure the condition. Several treatment forms have been tried.

Bunshi Shirota recommended and performed the following treatment[1].

First, treat the acuppoints CV12, BL20, GV12, TE15, LI11, GV34, etc. with acupuncture and moxibustion for the purpose of adjusting the general body condition.

For the treatment of the first branch, the ocular nerve (causing pain of the upper eyelid, forehead up to the vertex; eye socket, eye bulb, tip of the nose, nasal cavity), the acupoints BL2, GB14, TE23, GB3, GB16, BL10, etc. on the affected side are needled, while the point BL2 is also needled on the healthy side.

Moxibustion: GB16, GB5, TE22, GB12, TE17, BL10, Sawada style LI4 and similar points are treated with moxibustion. In case of a neuralgia of the first branch in particular acupuncture and moxibustion treatment of the point BL10 should not be forgotten. This may induce a sudden relief of the pain.

For the treatment of the second branch, the maxillary nerve (pain in the lower eyelid, buccal region, upper lips, nasal wings, anterior portion of the parietal bone, upper row of the teeth. Pain of the pallate, nasal cavity etc.) on the affected side GB3, ST7, SI18, ST3, LI20, etc. are needled, TE22, SI19, GB5, TE17, LI10, etc. are treated with moxibustion. Furthermore, if there are any fine visible vessels micropuncturing in the buccal region, it could be beneficial to attempt letting blood from these vessels by puncturing them with the tip of No. 4-5 needles. This kind of blood letting frequently induces a sudden relief of the pain.

For the treatment of the third branch, the mandibular nerve (pain in the mental region, mandibular region, inferior dental alveoli, external ear, parietal region etc.) ST7, ST6, ST5, ST4, Ikoten, GB2, etc. are needled on the affected side, while moxibustion is applied to GB2, TE17, L97, Sawada style LI4, etc.

For the treatment of the second and third branch, needling of SI18, ST7, ST5, etc. on the healthy side or somewhat strong manipulation on the affected side can provide some relief of the pain.

In Meridian Therapy (channel based treatment) deficiency and repletion of the various channels are adjusted and reactive points treated with acupuncture and moxibustion. Sodo Okabe reported the following. The first branch of the trigeminal nerve is governed by the bladder and stomach channels, the second branch by the stomach, gallbladder and tripple heater channels and the third branch by the large intestine and stomach channels. Reactive points for the first branch include BL2, for the second branch ST1 AND ST2, Shihaku and for the third branch ST5, ST6 AND CV24. Needle retaining is probably most suitable for the treatment of trigeminal neuralgia. From the affected painful regions stiffness and muscle tension spreads over the parietal region, covering neck, shoulder and back. Searching these areas for indurations and tenderness allows to select the treatment points and needles have to be retained here until the pain disappears[2].

Okabe determined the basic acupoints required for the treatment of this disease and conducted his treatment following the relevant pattern. He stated the following "Select reactive points from among the basic points including GB14, ST1, BL2, GB3, ST7, LI20, ST6, SI18, CV24, Iko, ST9, LI18, BL10, GB20, GB21, BL12, GV14, BL11, BL43 and LI15 for the treatment."

The relevant patterns can be divided into two types. The first type is the greater hand yin pattern, for which SP4, ST44, LI10, LI11, ST36, LI4, LU7 and

similar points are selected. The second type, the lesser foot yin pattern, for which KI10, KI7 and KI3, etc. are needled. The point LI15 is effective for facial edema and should be treated with a large number of moxa cones.

Okabe also stated the following. "Even for diseases of the upper half of the body the conditions will not improve properly unless the patterns for liver, kidney, lung and spleen deficiency are adequately identified. Local treatment alone certainly does have some effect, but will not lead to a general improvement. Both in cases of trigeminal neuralgia as well as paralysis, the channels on both the affected and healthy side have to be needled in order to adjust them, even if the affected area is limited to one side of the body."[3)]

References

1 Shirota B.: Practical Acupuncture and Moxibustion Therapy Based on Case Reports, Vol. 1, p.385-394, Sogensha 1966

2 Okabe S.: Channel Therapy with Acupuncture and Moxibustion p.119-121, Sekibundo 1974

3 Okabe S.: The Essence of Acupuncture and Moxibustion Therapy, p.90, Sekibundo 1983

4 Publication group for an anthology of works in memory of Sodo Okabe: Okabe S.: p.84-89, Tosho Printing Company, Limited 1985

Okabe was invited in February 1973 to the (former) Soviet Union and went to Moskow to treat General Zhukov, who suffered from trigeminal neuralgia. At that time his patient was about 77 years old. The trigeminal neuralgia reportedly affected the entire left side of the face and neck the patient had been in pain for about 5 years. Okabe needled important points for the first, second and third branch of the nerve to a depth of about 2-3 mm while tonifying both kidney and liver channels. He said that in these cases the area from the neck upwards is extremely important and believes, based on personal experience, that needling of the neck can provide considerable relief of the facial pain. Thus, the condition of General Zhukov improved constantly day by day and Okabe returned to Japan three months later. In September he went again to the Soviet Union, spent about 2 weeks there and the treatment resulted in an almost complete recovery[4)]. This story was derived from an essay collection written by Okabe himself. It shows, that he apparently diagnosed a foot lesser yin pattern, tonified the correlated liver channel, and needled important points on the face.

Clinical Application: Facial Palsy (Bell's Palsy)

Bell's palsy is a good indication for acupuncture and moxibustion treatment. In this condition the severity of the paralysis symptoms during the first few days of the disease are an indicator of the prognosis. Yet, in about 60% of the cases it heals without any treatment, so that even if acupuncture and moxibustion is effective, it would be difficult to express the degree to which this treatment modality contributes to the recovery. Nevertheless many patients seek acupuncture and moxibustion treatment, when western medical therapy have been ineffective. Currently, in the absence of therapies based on hard evidence, acupuncture and moxibustion treatment has been proven worth a try during all stages of the disease.

The earlier the treatment with acupuncture and moxibustion starts, the better the prognosis. In particular daily treatments should be administered over several days following the onset. In many cases in which a certain degree of paralysis remains even after a course of several months, complete recovery many not be possible.

Bunshi Shirota recommended mainly adjusting the general physical condition with moxibustion and the use of acupuncture as a local treatment. Patients were instructed to perform daily moxibustion at home.

Acupuncture:

BL2, GB14, TE23, GB3, SI18, ST3, ST4, Ikoten, ST6, ST5, ST7, TE17, BL10, GB20, TE15, BL18, LI11.

Moxibustion:

CV12, GV12, BL12, BL18, BL20, LI10, GV34, GB2, TE22, GB2, GB16.

For the face thin No. 2-3 needles are used and inserted superficially (to a depth of up to 1 cm). Occasionally, threadlike moxibustion is also performed[1].

Sodo Okabe made the following statement "Considering that the face is the affected body part suggests the occurrence of anomalies in the brighter yang channels of both foot and hand. For this reason, essential points on these channels should be added for the treatment of the roots. For the face, acupoints of the bladder channel like BL2, gallbladder channel GB6 and EX-HN5, small intestine SI18, stomach channel ST1, ST4, ST5, ST7 and LI20, large intestine channel Geiko, etc. are selected depending on the symptoms. At the same time stiffness of the neck and shoulder on the affected side and tenderness should be noted. In particular, the region in front of and behind the sternocleidomasteiod muscle should be checked for indurations and tenderness. Selecting points here is important in order to relieve increased tension and stiffness over the shoulders and back.

Needles should be inserted superficially to a depth of 1 to 2 mm and retained for a while. Hemorrhage is particularly likely to occur on the face, so that shallow needling should be a matter of course, while indurations and tender areas on the neck allow somewhat deeper needling. In general, if the limbs are cool, care should be taken to warm them. The face is particularly related to both arms and legs, so that warming arms and legs can be considered an important point for a successful treatment."[2]

Isaburo Fukaya did not use any needles, but only moxibustion for his treatment. He chose his therapeutic points not on the face, but mainly on the back, including GV14, GV12, SI14, BL18, BL15, BL14, GB20, BL20 and similar points and applied three extremely small moxa cones (half the size of a rice grain) each on these points. Targeting tender acupoints the disappearance of tenderness or indurations during the treatment decreased the relevance of those points for the treatment. The point Saninko on the leg was always selected. Usually moxibustion is not done on the face, but when palpation revealed a reaction, points like SI19 or GV20 were treated with moxibustion. Sometimes it is necessary to apply moxibustion several dozen times until its heat is felt[3]. He reported several cases in which he achieved a complete cure with this method.

Besides ordinary acupuncture and moxibustion treatment, electroacupuncture is also frequently used for this disease. Umeda reported that strong electric stimulation in new cases within 2 weeks after onset may lead to nerve degeneration and thus may aggravate the condition, so that for the treatment during this period only shallow needling should be

used[4]. Tsukayama also reported that during the early phase mostly needle retaining was used, while electroacupuncture was often used once the paralysis had become fixed to a certain degree[5]. Arai et al. reported they achieved improvements in various evaluation scores treating patients suffering from sequelae of facial paralysis with asynchronous transdermal low frequency electrization (AET)[6].

Moreover, micropuncturing to let blood is also very effective for this disease. In particular, if there are any fine visible vessels micropuncturing in the buccal region on the affected side should always be used to let blood. Even a minimal amount will be effective. Ordinary needles would be sufficient for this purpose, but there are only very few reports on this form of micropuncturing.

Among the diseases causing facial palsy there is also a viral infection of the geniculate ganglion with the herpes zoster virus, causing the Ramsay Hunt syndrome marked by poor prognosis. Acupuncture and moxibustion treatment is effective, but compared to Bell's palsy the effectiveness is insufficient.

References

1 Shirota B.: Practical Acupuncture and Moxibustion Therapy Based on Case Reports, Vol. 1, p. 292-296, Sogensha 1966

2 Okabe S.: The Essence of Acupuncture and Moxibustion Therapy p 96-97, Sekibundo 1983

3 Fukaya I.: Stories about Healing Diseases with Moxibustion, Collections No. 1 to 10, Shinkyu no Sekai Publisher, 1972

4 Tsuta Y., Hosokawa Y., Umeda T., et al.: Treatment of Facial Palsy; Shinkyu Osaka Vol.13, No.1 54-72 1997

5 Yoshida N., Tsukayama H., Okada A., et al.: Diagnosis and Treatment of Facial Pain and Palsy; Ido no Nihon 59(10) 7-20, 2000

6 Arai C., Yamaguchi S., Omata H., et al.: On the Effectiveness of Acupuncture Treatment of Patients with Sequelae of Facial Palsy, Summary Collection of the 54th Conference of the Japan Society of Acupuncture and Moxibustion, No. 201, 2005

Clinical Application: Low Back Pain

Low back pain can have various causes, and depending on the cause, requires the corresponding specific treatment. Acupuncture and moxibustion treatment is suitable for low back pain of any origin.

Shirota frequently used the following treatment points for both acupuncture and moxibustion.
CV12, ST27, BL20, BL23, GB25 (Sawada style), BL25, GV3 (waist), BL32, Onodera's gluteal point, Kampu, GV34, LR4.

Occasionally BL18 may be required. GB26 or GB28 can also be required. In either case, spots of marked tenderness or induration are needled. In case of a strained back (acute myofascular low back pain), application of acupuncture and moxibustion close to the vertebra at the level of BL26 can be very effective. Generally, needles need to be inserted to a depth of 3 to 5 cm, but when the patient has a fever like during a cold or immediately thereafter, needling for low back pain to a depth of 1.5 to 2 cm will be sufficiently effective. If in these cases the entire back musculature is tender, scatter pricking targeting the muscles along the second line of the bladder channel from top to bottom often elicits a needle sensation (Hibiki) and produces an immediate, marked effect.

Among the forms of low back is also one that originates from neurasthenia and requires the use of the acupoints GV20, BL10, BL11, GV12, etc. Without calming the central nervous system in this way, improvements are rather unlikely. Subdermal needles may be unexpectedly effective for pain of the lumbar myofasciae causing pain while lying in bed. In case blood network vessels are visible in the lumbar region, blood letting from these can be markedly effective[1].

Keiraku Chiryo (meridian therapy) is performed in accordance with the descriptions in the classics. For example, the text *Shinkyu Choho Ki* (1718), published about 300 years ago in Japan, states that "greater yang low back pain is pain extending from the nape of the neck to buttocks, rendering the back heavy. Brighter yang low back pain prevents the patient from looking to the sides and suffer from stiffness. Lesser yang low back pain feels like a needle piercing the skin and prevents the patient from assuming a supine position. Greater yin low back pain feels feverish and like a tree in the back, leading to leakage of urine. Lesser yin low back pain is like a bent bow, causing silent discomfort." Currently, acupuncture and moxibustion therapists perform their treatment referring to this description.

Sodo Okabe said, "The waist is the pivot of the entire body. Here six channels are involved. Among these, treatment of the lesser yang channel is of central importance. In case of a strained back not overly long after the onset of the symptoms, strong reactions are found along the bladder channel, but in prolonged cases the condition will be difficult to cure unless the lesser yang channel is treated. Immediately after the onset of the pain, when the patient is unable to move, treatment of the acupoint Chufu of the liver channel is beneficial."[2)]

The "Taikyoku Therapy" developed by Ken Sawada and further improved by Shirota is currently practiced in Japan. Kase, et al. used Taikyoku Therapy and conducted the following research.

A total of 64 patients with low back pain were divided into four groups:

Group A: receiving Taikyoku Therapy + low frequency electroacupuncture;

Group B: only Taikyoku Therapy;

Group C: only low frequency electroacupuncture;

Group D: sham acupuncture.

The results were evaluated based on VAS, and according to the JOA score, superior improvements were observed in the groups A, B and C, but not in group D[3)]. This showed that either therapy is effective so some degree, while further studies will be required to determine which of these is superior.

As in this study, low frequency electroacupuncture is currently widely used in Japan and produces considerably good therapeutic results. The use of various other new therapies for the treatment of low back pain have also been reported. A therapy using trigger points is one of those and has already developed in Japan into an established treatment form. Research showed that it yields better results than simply the treatment of tender points[4)].

Moxibustion, warming needle, intradermal needles, pricking of the network vessels and Ryodoraku and many other treatment forms are also practiced, but there are few publications in the form of case reports.

References

1. Shirota B.: *Practical Acupuncture and Moxibustion Therapy Based on Case Reports*, Vol. 2, p.6-17, Sogensha 1966
2. Okabe S.: *The Essence of Acupuncture and Moxibustion Therapy* p. 123, Sekibundo 1983
3. Kawase Y., Ishigami T., Nakamura H., et al.: Acupuncture therapy for low back pain – multifacility randomized comparative trial using sham acupuncture as a control, *Journal of the Japan Society of Acupuncture and Moxibustion* 56 (2) 140-149, 2006
4. Hirota S., Katsumi Y.: Comparative trial using trigger point therapy and treatment of tender points for patients with chronic low back pain, *Journal of the Japan Society of Acupuncture and Moxibustion* 56 (1) 68-74, 2006

Clinical Application: Osteoarthrosis of the Knee

Osteoarthrosis of the knee is a disease that rarely required treatment in Japan until 1950. Two reasons for this are conceivable. The first was the rarity of progressive aging of the population, where increasing age is associated with the development of degenerative diseases. The other reason was that the Japanese people at that time spent a major part of their daily life on tatamis (mats) and had the habit of sitting with their legs tucked under. This life style required simultaneously maximum bending and stretching of the knee joints, the use of the muscles around the knee joint in order to stand up from the sitting position. In other words, they were training themselves. Later, the incidence of this disease increased in association with the westernization of the life style of the Japanese people. In conjunction with the expected, even more advanced aging of the population, its incidence will probably continue to increase in the future. Patients usually consult orthopedists and undergo a variety of therapies, but currently there is still no decisive treatment. Acupuncture and moxibustion is one extremely valuable therapy and recommended in particular during the early stages of the disease.

Bunshi Shirota has used acupuncture and moxibustion to treat this disease and reported to have achieved a cure within a period of 2-3 months. This claim does not apply to cases with progressive deformation. He recommended the following acupoints: ST34, SP10, EX-LE5, LR8, ST36, GB34, BL55, etc.; but in actual practice he often applied acupuncture locally to the knee and performed whole body treatment with moxibustion and thus obtained his results[1].

Sodo Okabe selected points above and below the painful area on channels passing through it. If the painful area itself was warm (feverish), he drained the pathogenic heat, while if the region was cool, he applied a large number of moxa cones. Since improvements often cannot be obtained by local treatment alone, he treated the patients according to the presenting pattern. The knees tend to be prone to collecting fluid, in which case he reportedly applied a treatment generally promoting water management[2].

Currently, the therapy for this disease is based on the experiences of leaders in this field like the above mentioned therapists. Nakao asserts that it is necessary to pay careful attention to the point selection depending on the painful or injured area in order to obtain correspondingly good therapeutic results[3].

Ochi expresses his view that representative acupoints for the treatment of this disease would be ST36, SP9, GV34, GV31, EX-LE4 (inside), Shitsugan (outside), BL40, SP10, ST34, ST32, etc. among which the appropriate points for the treatment at hand are selected. Moreover, in order to examine the importance of a combination therapy comprising acupuncture and exercise therapy, the following trial was performed. Forty-eight patients (12 men and 36 women) for whom roentgenography identified in the early or intermediate stage of the disease were included in the study. They were divided into three groups: Group A: 18 patients (acupuncture, SSP combination therapy); Group B: 20 patients (acupuncture, SSP, exercise combination therapy); and Group C: 10 patients (only exercise therapy). The therapeutic results as evaluated with the JOA score and measurements of muscle strength with a sthenometer showed that in the fourth week after treatment began, a reduction of the pain had been achieved in groups A and B, while an increase in knee extensor power was observed in groups B and C. Based on these results, it was stated that a combination of acupuncture and exercise therapy produces even better results[4].

Besides ordinary acupuncture a number of other treatment forms have also been tried.

Low frequency electroacupuncture is frequently used. Furukawa et al. applied a 50 Hz stimulus to the knee joint region and reported on the observed course[5,6]. Concerning pain the treatment was reportedly effective regardless of the grade, but improvements of the activities of daily living are reportedly difficult to achieve in cases of advanced gonarthrosis.

The warming needle method too is an effective

treatment form. Tanaka has presented the method for treatment with the warming needle in supine position choosing the points ST32 (rectus femoris muscle), SP10 (vastus medialis muscle), Kampu (vastus lateralis muscle), Shitsugai (articular space), SP9 and GV34, and in the prone position KI10 (articular space), BL55 (triceps muscle of the calf), SP9 (triceps muscle of the calf), Soto Chokuritsu (biceps femoris muscle) and the Chokuritsu (semimembraneous muscle)[7].

Moxibustion is an effective treatment for this disease, but so far there are few written reports on it. Recently, Uryu, et al. used sham moxibustion in a controlled clinical trial (CCT) to examine the effects of warming moxibustion He divided the patients into a warming moxibustion and a sham moxibustion group and reported the treatment to be effective for the pain[8].

Kuroiwa, et al. reported the practical application of trigger points during acupuncture treatment. The use of single points was rare and they reasoned that it is necessary to use several points during the acupuncture treatment in order to guarantee adequate relaxation of the muscles[9].

Otherwise network vessel pricking is also effective. In particular in cases of marked swelling of the knee joint dramatic effects are seen. Therefore many therapists do use this modality, but the number of reports is small.

References

1. Shirota B.: Practical Acupuncture and Moxibustion Therapy Based on Case Reports, Vol. 2, p.6-17, Sogensha 1966
2. Okabe S.: The Essence of Acupuncture and Moxibustion Therapy p. 123, Sekibundo 1983
3. Nakao M.: Acupuncture and moxibustion treatment for osteoarthritis of the knee (4) — case reports classified by painful region - *Ido no Nihon*, Vol. 532, p.15-26, 1986
4. Ochi H.: Acupuncture and moxibustion treatment for gonalgia (osteoarthrosis of the knee), *Ido no Nihon*, Vol. 664, p.16-26, 1999
5. Yamaguchi S., et al.: Effects of low frequency stimulation for osteoarthrosis of the knee (first report), *Journal of the Japanese Society Of Balneology, Climatology and Physical Medicine*, Vol. 54 (3) 155-160, 1991
6. Komazaki Y., Shinjiro Yamaguchi, Jun Hamada, others: Low frequency stimulation for osteoarthrosis of the knee, *Ido no Nihon*, Vol. 585, 1993
7. Tanaka H.: Introduction to the warming moxa (9) – therapy (3), gonalgia, *Ido no Nihon*, Vol.508, 1986
8. Uryu N., Katsumi Y., Itoi M., et al.: Effects of warming moxa therapy osteoarthrosis of the knee, Summary Collection of the 54th Conference of the Japan Society of Acupuncture and Moxibustion, No. 150, 2005
9. Kuroiwa K., Sakai S., Morita Y.: Introduction to acupuncture treatment using trigger points for shoulder, low back and knee [1], approach to gonalgia (Vol.1), *Ido no Nihon*, 18-24 No. 634, 1997

Clinical Application: Periarthritis Humeroscapularis

Periarthritis humeroscapularis is a disease occurring mainly in people in their 50s characterized by pain in the shoulder joint and limitation of movement. In Japan it has been termed "Fifty-age shoulder" because it develops mainly after that age. The western medical approach to the pain is rest, administration of analgesics, and injection of steroids or sodium hyaluronate into the synovial sac. This treatment is combined as early as possible with exercise therapy within a range that does not cause pain.

It is a good indication for acupuncture and moxibustion treatment which is often markedly effective. Shirota stated that mild cases of the condition may heal within a period of 2 to 3 weeks, while moderately severe cases may require 1 to 1.5 months. In severe cases, the treatment may require more than 3 months. Yet, a cure is usually achieved within a period of 3 months. Treatment may consist solely of moxibustion, but a combination of acupuncture and moxibustion reportedly will accelerate the cure. He recommends the following treatment.

Acupuncture and moxibustion:

GV12, TE15, BL43, SI11, SI10, LI15, LI15, LU1, LU3, LI11, LU4, LU6.

In patients with spontaneous pain, the acupoints BL10, BL11, SI6, etc. on the affected side are often required. In order to alleviate spontaneous pain and limitations of movement at an early stage, obvious tender spots around the shoulder joint were needled shallowly as required. Intradermal needles were also applied[1].

Isaburo Fukaya treated this disease with moxibustion only. He carefully observed the movements of the muscles related to the shoulder joint, searched for tender spots within these muscle groups, and palpated for indurations. Mostly he used SI11, SI9, SI10, LI14, TE12 and on the front side LU1, LU2, LU3 and LU4. In particular, Ketsubon, or spots a little lateral of it, is a famous moxibustion point for the treatment of this condition. Otherwise, supplementing the action of aforementioned acupoints, BL41, BL43, GB21 and similar points on the back constitute the main therapeutic points[2]. Fukaya has reported highly interesting case studies such as presented below:

Patient: A 58-year old woman with a limited range of motion of the left arm and associated pain.

She visited a local physician because the arm was uncomfortably painful during the night and treated with injections that were completely ineffective. She also underwent shiatsu and moxibustion treatment, but the condition nevertheless remained unchanged. Fukaya applied seven cones half the size of a rice grain to the acupoints GB21, BL41, SI11, TE12 and SI9. When he instructed the patient to raise her arm, the patient replied, "I cannot possibly be able to raise my arm so quickly. Besides, moving it will be painful."She did not even try to raise the arm. I told her, "The stiffened muscles have been relaxed, so you will be able to raise the arm painlessly, so please raise it." When the patient doubtfully tried to raise the arm, it went up smoothly. When requested to turn it onto her back, she could effortlessly turn the arm. Yet, she still felt pain at the shoulder joint. When the patient was requested to assume a slightly oblique posture, pressure a short distance lateral of ST12, an excruciatingly painful spot was revealed. Pressure on the point LU1 elicited the same kind of pain. Following application of seven cones of moxa as described above on these two points, the patient could rotate the arm easily. Delighted, the patient raised and rotated her arm. Fukaya made the following comments regarding this case. "The patient should be afforded this kind of relief from the pain in exchange for enduring the very hot moxibustion. However, this patient was not yet cured. On the following day there was a relapse but she now had developed faith that the moxibustion treatment would work so the treatment could be continued. For a patient with these symptoms, first apply moxibustion to important points for the treatment of this disease. Repeat this treatment and then check for the remaining pain. Then you may look for the next therapeutic points. Regarding the point selection, good effects will not be obtained unless there is marked tenderness. This is very important[2].

Although this disease is marked by lesions of the shoulder joint, it can often be cured by using acupoints on the legs. In the 1950s, Sorei Yanagiya, a leader of Japanese acupuncture and moxibustion at that time, was once asked during a lecture to treat the periarthritis humeroscapularis of one of person in the audience. Checking the pulse of that person he predicted, "This will be cured by the great needling method," and needled Fukuryu on both sides. When he next needled Gokoku on the left, the patient could lift the right arm higher than had been possible so far. That had been a feat of agility of about 2-3 minutes[3].

This is just one example, but many acupuncturists take a similar approach.

Nishida takes the meridians, channels, and collateral channels into account that pass through the vicinity of the shoulder joint and performs the following type of treatment[4]. First, regarding the sequence of the treatment, he uses acupoints on the legs, next points on the arms or else remote extraordinary points and then finally selects points around the shoulder joint, extraordinary points or irregular reactive spots (Aze points).

A. In case of pain on the anterior side of the shoulder joint, use the acupoints SP9 or SP8 of the greater yin spleen channel of the foot associated with the greater yin lung channel of the hand. Needle LU5 next and finally perform a regional treatment.

B. In case of pain on the lateral side of the shoulder joint, use the acupoints ST38 of the stomach channel associated with the brighter yang large intestine channel of the hand and then needle strongly tender points among LI11, LI10, or LI4 of the large intenstine channel of the hand.

C. In case of pain on the posterior side of the shoulder joint, first needle GB34 of the lesser yang gallbladder channel of the foot associated with the lesser yang triple heater channel of the hand, then needle TE5, and finally TE14 and TE13 in the region of the shoulder joint.

D. In case of pain under the shoulder joint, first needle BL57 of the greater yang bladder channel of the foot associated with the greater yang small intestine channel of the hand on the affected side, next select SI3 on the affected side. For the regional treatment, the shoulder pain point, SI9 and irregular reactive spots are needled.

E. If GB26 on the affected side is very tender, needle TE5 and GB41.

F. If the shoulder joint pain streches over a wide area, retain the needles in ST38 and BL57 (in Chinese medicine penetrating needling from ST38 to BL57 is used, but separate needling is also effective).

Thus, for the treatment of this disease the channels passing through the region of the shoulder joint are frequently taken into consideration.

Tanaka palpates for reactive spots on the channels associated with the painful areas or channels associated with the relevant meridians, channels and collateral channels (for example the greater yang small intestine channel and the greater yang bladder channel, or the brighter yang stomach channel and the greater yin spleen channel) and says that the selection of very painful points is beneficial[5].

Sakamoto pricks network vessels if present and then applies cupping for nocturnal pain. Moreover, he says that in particular for the kidney yang deficiency type aggravated by cooling the regional application (to the shoulder joint) of warming needles is also beneficial[5].

References

1. Shirota B.: Practical Acupuncture and Moxibustion Therapy Based on Case Reports, Vol. 2, p. 252-279, Sogensha 1966
2. Fukaya I.: Stories about Healing Diseases with Moxibustion, Collections No. 1 to 12, Shinkyu no Sekai Publisher, 1972
3. Uechi S.: Acupuncture and Moxibustion of the Showa Period, pp 263-264, Sekibundo, 1985
4. Nishida K.: Record of personal experiences with oriental medicine 4, acupuncture and moxibustion treatment of shoulder joint disorders, Ido no Nihon, Vol. 633 pp 38-56, 1997
5. Tanaka S., Matsuura H., Watanabe G., Okumura Y., Sakamoto T.: Effective approach to frozen shoulder Shinkyu Osaka Vol.8 No.1, pp 4-15, 1992

Current Status of Acupuncture in Japan

Tadashi Yano
Health Medicine Department
Meiji University of Oriental Medicine

1. Introduction

The history of acupuncture therapy in Japan dates back to the year 562 CE, when the physician/monk Zhi Cong brought books on Buddhism and acupuncture from China. This was the beginning of the acupuncture tradition in Japan.

Chinese traditional medicine was changed over time in Japan to adapt to the physical characteristics of the Japanese people while also incorporating some elements of Western medicine and native Kampo medicine. It developed gradually into a uniquely Japanese approach to traditional medicine. However, in the Meiji Era, the government abolished Kampo medicine and established German medicine as the basis for Japanese mainstream medical practice. Acupuncture education continued to be permitted, but only as employment training for the visually impaired, and acupuncture was positioned well outside the medical mainstream. That positioning and educational system has continued into the present day.

This article will provide a short overview of the history and current status of acupuncture in Japan, in hopes that the information provided here will lead to improved understanding of Japanese acupuncture therapy.

2. The position of acupuncture therapy

In Japan today, the use of acupuncture within a medical institution is prohibited. This means that acupuncture is effectively positioned outside the primary medical system as "unorthodox" medicine. Acupuncture is considered to be "free" treatment meaning that it does not come under the jurisdiction of national health insurance, and therefore the services and fees are not regulated by the government. Generally, acupuncture must be paid for directly by the patient, rather than being covered by health insurance. The only exceptions are cases of: ① low back pain, ② age-related shoulder pain or stiffness, ③ neuralgia, ④ rheumatoid arthritis, ⑤ cervicobrachial syndrome, and ⑥ cervical sprain, where mainstream modern medicine provides little hope of relief. Those conditions can be covered by national health insurance if the doctor signs a form certifying that the condition cannot be cured by orthodox medicine. However, since only a few Japanese physicians understand the acupuncture system, it can be quite difficult to obtain acupuncture therapy under national health insurance even for patients who have these approved conditions.

3. The licensing system for acupuncturists and moxibustionists

A license is required in order to perform acupuncture or moxibustion therapy. This is because acupuncturists and moxibustionists have legislated status in Japan. The professional status of acupuncturists and moxibustionists is legally protected, and since their right to independently operate a business is assured, they are able to open an acupuncture clinic. However, legislation assures that no one other than a physician can perform moxibustion and acupuncture therapy [in such a facility], which means that moxibustion and acupuncture may not be performed by non-physician health care practitioners.

Thus, licensed acupuncturists and moxibustionists are free to start a business. However, they are strictly prohibited from performing moxibustion or acupuncture within a medical facility alongside orthodox mainstream medicine, and their access to national health insurance coverage for their patients is strictly limited.

Acupuncturists and moxibustionists are credentialed by the national government. Those students who qualify for college entrance examinations must study at a designated school for three years (four years for university students) and earn specific credits in order to qualify for the national examination. Those

students who pass the national examination and receive a license are permitted to perform acupuncture and moxibustion therapy. Nearly all examinees apply simultaneously for both the acupuncturist license and the moxibustionist license, and the successful candidate is designated as an "acupuncturea/ moxibustionist" (or simply "acupuncturist") in Japan.

4. Number of acupuncturists and moxibustionists

The register of enrolled (licensed) acupuncturists and moxibustionists showed 127,018 acupuncturists and 125,868 moxibustionists in Japan as of September 2005. However, these figures represent the number of persons in the enrollment register, and do not indicate the number of acupuncturists and moxibustionists who are actually working in the industry. The true number of acupuncturists and moxibustionists currently employed in clinical moxibustion and acupuncture is unknown, but a 2004 report on health and sanitation administrative operations by the Ministry of Health, Labor, and Welfare showed a total of 76,643 acupuncturists and 75,100 moxibustionists at that time (Table 1).

	1992	1994	1996	1998	2000	2002	2004
Acupuncture, moxibustion	12055	12481	13166	13455	14216	14008	14993
Amma, shiatsu, acupuncture, moxibustion	28624	29451	30850	31434	32024	32722	33601

Table 1 Annual trends in working acupuncturists and moxibustionists
(2004 report on health and sanitation administrative operations by the Ministry of Health, Labor, and Welfare)

The totals from the Ministry of Health, Labor, and Welfare are for all acupuncturists and moxibustionists who registered with their public health center, and may include some acupuncturists and moxibustionists who are not currently practicing. According to a survey by Fujii and colleagues[1], approximately 26.5% of that number are not actually engaged in the practice of acupuncture/moxibustion. Investigation into the number of acupuncture clinics providing related forms of alternative medicine showed 14,993 clinics offering moxibustion and acupuncture, and 33,601 clinics offering traditional amma massage and shiatsu pressure-point massage as well as moxibustion and acupuncture in Japan (2004 report on health and sanitation administrative operations by the Ministry of Health, Labor, and Welfare)[2], for a total of 48,594 clinics providing moxibustion and acupuncture.

Based on these findings, we can estimate a total of approximately 55,000 acupuncture/moxibustionists actively practicing in Japan today.

5. Clients seeking moxibustion and acupuncture therapy

Table 2 shows the frequency with which people who had medical complaints ("yusosha") selected various types of treatment options for their symptoms, according to a 2001 basic national health survey in Japan. Forms of treatment such as amma, massage, shiatsu, and acupuncture/moxibustion accounted for 7.4% of the total. The term ”yusosha”, meaning people who had subjective symptoms, was introduced as an index for health status among the Japanese people. The 2001 survey found 4,0552,000 yusosha, 322 out of every 1000 individuals. It was estimated that approximately 300,000 of these patients received treatment at an

acupuncture/moxibustion/massage clinic. It was also reported that approximately 7% of all sick and injured persons sought out such alternative clinics for their treatment.

Hospital or mainstream medical clinic	Over-the-counter drugs or poultices	Amma, acupuncture, moxibustion, etc.	Other therapies	No treatment
49.7%	19.9%	7.4%	3.7%	21.8%

Table 2 Treatment options selected by yusosha
(2001 survey of health status in Japan)

These indicators in all cases relate to the situation for patients receiving treatment. However, since judo therapy was included in the category of "Amma, acupuncture, moxibustion, etc.", these figures do not provide an accurate picture of the status of acupuncture/moxibustion therapy.

A nationwide survey of the use of complementary and alternative medicine (CAM), including moxibustion and acupuncture, was initiated by Yamashita [3] in April 2001. For their survey, Yamashita and colleagues used RDD (Random Digit Dialing) and a telephone questionnaire. Their subjects were persons 20 to 79 years of age who were not residing in a hospital or extended care facility. The survey was continued until 1000 subjects had been contacted. Even though the response rate was only 23%, this survey was notable because it was the first such survey of CAM to be performed in Japan. The results of the survey showed nutritional drinks and supplements to be in first place, used by 43% of respondents while moxibustion and acupuncture were reportedly used by 6.7%.

Because the survey by Yamashita and colleagues did not focus specifically on the situation regarding moxibustion and acupuncture therapy, the author and colleagues performed an annual interview survey during March in each of the four years from 2003 through 2006. This nationwide survey used a random sampling of 2000 men and women 20 years of age or older (2000 names collected from 157 regions across Japan, including 122 cities or municipal wards and 35 towns or villages). This survey also excluded patients in hospitals and extended-care facilities. The response rate differed somewhat from year to year, but was approximately 68%. The primary reasons for non-response included change of residence, long-term absence, short-term absence, unknown address, and refusal to respond.

The results of this survey clearly showed that 6% to 7% of Japanese persons 20 years of age or older visited an acupuncture/moxibustion clinic during the year (Table 3). Results for the March 2004 survey showed a lower level of such clinic visits, but still within the range of significant error for the March 2003 figures.

	March 2003	March 2004	March 2005	March 2006
No. of responses	1,420	1.338	1,337	1,346
Consultation rate	6.4%	4.7%	6.4%	6.7%
Response rate	71%	66.9%	66.9%	67.3%

Table 3 Moxibustion and acupuncture consultation rates and response rates

Both the findings by Yamashita and colleagues and those from our own studies, showed that moxibustion and acupuncture therapy accounted for approximately 6% to 7% of the annual response to medical complaints.

If we can determine the mean number of treatments per patient, then we can also calculate the

total number of patient treatments given. Assuming a treatment rate of 6% gives us an estimated 6 million patients treated. If we also assume an average of 5 treatments per patient, then the total number of patient treatments would be 6 million × 5 times, or total of 30 million treatments. A treatment rate of 6.5% would be 32.5 million treatments, and a treatment rate of 7.0% would indicate 3.5 million treatments.

Acupuncture/moxibustion clinics can provide a broad spectrum of care, from health maintenance and wellness care to the treatment of presymptomatic illness, treatment of disease, and improvement of quality of life for chronic disease patients. However, unfortunately acupuncture/moxibustion therapy is currently used in only 6% to 7% of cases. If we can determine why this use rate remains so low, and then remedy at least some of the reasons for that low use, acupuncture/moxibustion therapy could experience a new spurt of growth and development in Japan.

6. Health status in those patients who seek out acupuncture/moxibustion therapy, and their reasons for seeking such treatment

In a survey of health status in patients seeking acupuncture/moxibustion therapy, Takano and colleagues[4] performed a survey based on the Euro-Qol measure of quality of life (a measure of health indicators developed in Europe). The survey was designed as a random sampling of 2210 patients across Japan, performed through 101 clinics operated by graduates of Meiji University of Oriental Medicine. From the 1230 valid responses obtained, the mean functional value (Tariff Score) was reported to be 0.782 ± 0.22 (mean ± SD). Using these materials, Ishizaki and colleagues[5] reviewed the Euro-Qol EQ-5D domains (① mobility, ② self-care, ③ usual activities, ④ pain/discomfort, and ⑤ anxiety/depression). They found that "④ pain/discomfort" was a significant factor for a high percentage of patients seeking acupuncture/moxibustion therapy (Table 4).

Table 4: EQ-5D	Men	Women
Mobility	(%)	(%)
No problems	81.5	76.4
Some problems	18.5	23.6
Self-care		
No problems	93.0	95.2
Some problems	7.0	4.8
Usual activities		
No problems	77.3	77.4
Some problems	22.7	22.6
Pain/discomfort		
None	39.9	31.2
Moderate or above	60.1	68.8
Anxiety/depression		
None	79.4	73.2
Moderate or above	20.6	26.8

Euro-Qol expresses health status as a numerical value (the functional value or Tariff Score), providing a health indicator that is used internationally. Health status is assessed on a scale from +1.00 to -0.594, with perfect health scored as 1.0, death as 0.0, and "worse than death" as -0.594. In addition, since the survey sheet consists of the 5 separate categories of ① mobility, ② self-care, ③ usual activities, ④ pain/discomfort, and ⑤ anxiety/depression, patient responses can give an insight into health status in each of these different categories.

The surveys by Takano et al.[4] and by Ishizaki et al.[5] show that pain and discomfort play a major role in the health status of many patients who seek out acupuncture and/or moxibustion treatment. This suggests that a primary use of acupuncture and moxibustion in Japan is for relief from pain and discomfort.

A review of the patient's objectives in acupuncture/moxibustion treatment showed that 81.6% of complaints involve the musculoskeletal system. The next most common reasons for seeking treatment were malaise (6.9%), relaxation/wellness (5.1%), and headache (4.8%). The review by Yamashita

et al. [3] showed musculoskeletal complaints accounting for 79.1% of the total. The review by Takano et al. also showed a preponderance of musculoskeletal complaints, particularly low back pain (59.8%), shoulder stiffness (59.1%), neck stiffness (43.3%), leg pain (24.8%), shoulder pain (22.7%), and knee pain (20.7%).

Most of the patients visiting acupuncture/moxibustion clinics were seeking relief from musculoskeletal complaints, or improvement in musculoskeletal symptoms. There were very few visits for other reasons. These findings suggest that awareness of the potential benefits of acupuncture/moxibustion is generally somewhat restricted in Japan. There are a number of factors that may contribute to this situation, including the fact that most of the current patients turn to acupuncture/moxibustion specifically for the complaints of low back pain, shoulder stiffness, and arthralgia, and the fact that all of the six conditions for which acupuncture/moxibustion therapy is covered by national health insurance fall under the category of musculoskeletal disease.

However, this is not all that acupuncture patients hope for when they seek out acupuncture/moxibustion therapy. According to a report by Yano and colleagues (based on the same materials as the Takano and Ishizaki reports)[6], the largest number of acupuncture/moxibustion patients hoped for "relief from symptoms" (70.4%), followed by "disease cure" (49.2%), "disease prevention (health maintenance)" (49.2%), "greater wellness" (32.5%), and "relaxation" (24.5%). These results suggest that, in addition to a desire for symptomatic relief and human from disease, many acupuncture/moxibustion patients are also interested in preventative medicine (health maintenance), wellness, and relaxation.

Goals such as these can be achieved in the process of acupuncture/moxibustion therapy. For example, there are reports that approximately 80% of patients "feel in a better mood" after treatment with acupuncture/moxibustion[7]. This suggests that acupuncture/moxibustion patients experience a range of beneficial effects from treatment, and that those effects can be expected to provide benefits in disease prevention (health maintenance), wellness, and relaxation.

However, regardless of these potential benefits, the situation remains that acupuncture/moxibustion is currently used in Japan almost exclusively for the treatment of chronic musculoskeletal complaints. In contrast, there are countries overseas where acupuncture is being used relatively widely in the treatment of allergic rhinitis and psychiatric complaints[8]. In the United States, acupuncture clinics report that musculoskeletal complaints account for only 33.9% of treatments[9]. This suggests that the focus primarily on musculoskeletal disorders may be specific to Japan.

7. New developments in acupuncture/moxibustion therapy

As noted above, in Japan the use of acupuncture/moxibustion tends to be limited to the treatment of musculoskeletal diseases that are characterized by regressive changes. However, a broad range of recent developments promises to add new life and direction to acupuncture/moxibustion therapy (Fig. 1).

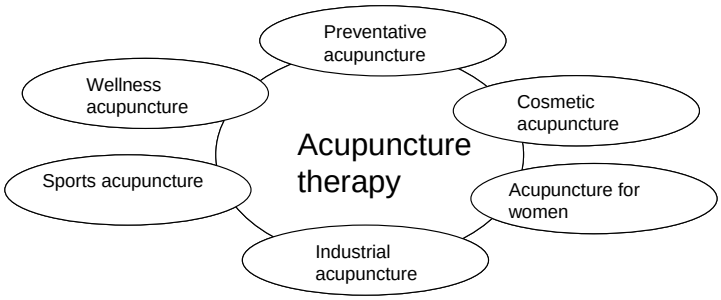


Fig. 1 Areas of Specialization for Acupuncture Therapy

Acupuncture and moxibustion use a holistic approach based on patient-centered medicine. The treatment does not involve drugs, but instead utilizes healing principles that encourage the body's innate power to heal itself. We are now approaching a point where applications based on acupuncture/moxibustion therapy could produce major developments in a variety of medical fields. Current areas of activity include sports acupuncture and acupuncture specifically addressing

women's health issues. Other areas with strong potential for development include pediatric acupuncture, industrial acupuncture (health keeper), cosmetic acupuncture, and acupuncture for presymptomatic conditions.

Sports acupuncture is a specialized field that focuses on preventing injuries and improving athletic performance through conditioning. There is currently a movement underway, in cooperation with regional health clubs and educational institutions, for Japan to establish its own "trainer system" to provide health management for competitive athletes through acupuncture/moxibustion therapy. Also, recent advances in gender-specific medicine have brought into sharp relief the need for treatment methods designed specifically to match the various stages of a woman's life cycle. This includes child-rearing, and the need for robust mental and physical development of the child along with good health for the mother.

Other areas where we expect to see development are industrial acupuncture (health keeper), cosmetic acupuncture, and presymptomatic medicine acupuncture. Industrial acupuncture (health keeper), still in the testing stage at present, will be a specialized field focusing on the maintenance and promotion of good health and the prevention of disease in working populations. This is a newly developing area intended to complement industrial medicine and traditional mainstream medicine. The specialized area of cosmetic acupuncture, now being developed in collaboration with esthetic treatment, is based on healing and health management, in conjunction with the long-standing interest in the promotion of good health in this area, and is designed to be incorporated into a complete program. An area of particular interest is presymptomatic acupuncture. This area, which focuses on the prevention of lifestyle diseases and the maintenance and promotion of good health, is potentially the most important of all of the new areas.

There is thus great potential for growth in acupuncture/moxibustion therapy. It is to be hoped that these developments will occur in specialized fields and will be securely grounded in evidence-based medicine (EBM), and that further research to provide such evidence will be actively pursued.

References

1) Fujii R., Yubita T., Yoshiizumi T., et al.: Employment trends and issues for the visually impaired in the acupuncture, moxibustion, and massage industries -- research into economic self-reliance support for the visually impaired, National Institute of Vocational Rehabilitation, Japan Organization for Employment of the Elderly and Persons with Disabilities (independent administrative organization), Report of Research Review No. 69, 2005.
2) Ministry of Health, Labor, and Welfare: 2004 report on public health administration and service, number of workers in health-care-related occupations, URL: www.mhlw.go.jo/toukei/saikin/hw/eisei/04/kekka3.html
3) Yamashita H., Tsukayama H., Sugishita C.: Popularity of complementary and alternative medicine in Japan, a telephone survey, Complement Ther Med: 10;84-93, 2002
4) Takano M., Fukuda F., Ishizaki N., et al.: Cross-sectional research on extent of satisfaction with acupuncture/moxibustion treatment among patients of acupuncture/moxibustion clinics, Japan Society of Acupuncture and Moxibustion, 55(2); 562-574, 2002.
5) Ishizaki N., Takano M., Fukuda F., et al.: Using EuroQol ED-5D to assess health status among patients at acupuncture/moxibustion clinics, Health and Welfare Statistics, 49(8), 20-25, 2002.
6) Yano T., Takano M., Ishizaki N., et al.: Report of health survey and questionnaire on acupuncture/moxibustion therapy, Clinical Research on Wellness-focused Acupuncture/ moxibustion Therapy, Foundation for Training and Licensure Examination of Asian Medical Treatment Methods, 79-92, 2002.
7) Yano T., Mori K., Yukimachi T.: Acupuncture, moxibustion, and stress relief, Japan Society of Acupuncture and Moxibustion, 43(4): 1-11, 1993.
8) White A., Ernst E.: Public usage of Acupuncture in the West. In; Ernst E. and White A. (ed), Acupuncture, a scientific appraisal, Oxford Butterworth Heinemann, 5-7, 1999
9) Tsuru H., Ishizaki N., Taniguchi K.: Analysis of 2967 patients at Meiji College of Oriental Medicine (US) Clinic (1996-1999), Meiji Shinkyu Igaku (Journal of Meiji University of Oriental Medicine) 61-81, 2003.

Japanese Acupuncture Educational and Licensure System

Shuji Goto

The Japanese acupuncture educational and licensure system seems quite unique from a global and historical viewpoint. Considering the expected increase of important role in future health care, Japanese acupuncture and moxibustion therpy should be further improved and exemplified.

1. Licensing system

Only licensed physicians, licensed acupuncturists, and licensed moxibustionists may provide acupuncture and moxibustion treatment in Japan.

The license of an acupuncturist or moxibustionist is specific to that person and to that field of practice.

(Legislation No. 217, Article 1, December 20, 1947)

2. License requirements

Applicants must have graduated from an acupuncture and moxibustion school recognized by the Japanese Ministry for Health, Labor, and Welfare (MHLW) or from a university or college (or in the case of the visually impaired, from a school for the blind or a center for the visually impaired) recognized by the Ministry of Education, Culture, Sports, Science, and Technology. These graduates must also pass an examination by the MHLW.

3. Current status of the national examination

At present the national examination is given under the auspices of the MHLW, and is administered by the Foundation for Training and Licensing Examination in Amma Massage-Acupressure, Acupuncture, and Moxibustion.

Foundation for Training and Licensing Examination in Amma Massage-Acupressure, Acupuncture, and Moxibustion

http://www15.ocn.ne.jp/~ahaki/index.html

The first national examination was given in 1993, and examinations have been offered annually since then. The examination, which is given at 50 locations throughout Japan, consists of 160 multiple-choice questions. A score of 60 is required to pass.

The national examination does not include practicum testing which is left to the discretion of each school. A number of provisions are made to increase the fairness of this examination for visually impaired applicants who are permitted the use of Braille and tape recordings, and who are allowed extra time to complete the examination (1.5 times longer than for sighted students). The ratio of sighted to visually impaired examinees is approximately 9:1.

The examination covers the following areas.

Topics for the acupuncturist examination (general medical treatment, sanitation, public health, related legislation, anatomy, physiology, general pathology, introduction to clinical medicine, particulars of clinical medicine, rehabilitation medicine, general theory of Eastern medicine, general theory of the meridians and acupuncture points, clinical theory in Eastern medicine, and acupuncture theory)

Topics for the moxibustionist examination (general medical treatment, sanitation, public health, related legislation, anatomy, physiology, general pathology, introduction to clinical medicine, particulars of clinical medicine, rehabilitation medicine, general theory of Eastern medicine, general theory of the meridians and acupuncture points, clinical theory in Eastern medicine, and moxibustion theory)

Recent pass rates are shown below.

Year		No. of Examinees	No. Passed	Pass rate (%)
2005	Acupuncture	4271	3396	79.5
	Moxibustion	4271	3382	79.2
2006	Acupuncture	4707	3789	80.5
	Moxibustion	4704	3785	80.5
2007	Acupuncture	5275	4068	77.1
	Moxibustion	5261	4072	77.4
2008	Acupuncture	5561	4347	78.2
	Moxibustion	5539	4344	78.4
2009	Acupuncture	5354	4216	78.7
	Moxibustion	5320	4171	78.4

4. Current status of education

1) In April 2005, there were 71 acupuncture schools for the sighted in Japan, of which 43 (2 universities and 41 private vocational schools) were members of the Oriental Medicine College Association and 28 were unaffiliated. In 1999, there were only 28 schools throughout Japan, but this number has increased since the system was reformed in 2000.

There are 69 schools in Japan for the visually impaired (1 junior college and 68 publicly funded schools for the blind or centers for the visually impaired), with approximately 300 students.

These schools offer a 3-year program in preparation for the acupuncturist/moxibustionist examination, with the option of also studying simultaneously for the examination for Amma massage/shiatsu massage therapist. Students also have the option of enrolling in the program preparing for the Amma massage/shiatsu massage therapist examination only.

The schools for sighted students have an enrollment capacity of approximately 8000 students in programs preparing for the acupuncturist and moxibustionist examination.

The 3-year program includes the following required courses and credits (hours).

Basic studies

Basics of scientific thought, social studies 14 credits

Foundation for field-specific studies

Structure and function of the human body 13 credits (anatomy, physiology)

Advances in disease prevention and recovery 12 credits (pathology, sanitation, rehabilitation medicine, introduction to clinical medicine, and particulars of clinical medicine)

Philosophy of acupuncture and moxibustion in relation to health, medical treatment, and welfare 2 credits (general medical treatment, and related legislation)

Field-specific studies

Basic acupuncture 8 credits

Clinical acupuncture 12 credits

Acupuncture in society 2 credits

Practicum (including hands-on clinical experience) 16 credits

General studies 10 credits

Total 86 credits (equivalent to approximately 2800 hours)

Credits are calculated on the basis of specifications established for Japanese universities (1 lecture credit = 15 to 30 hours, 1 seminar credit = 30 to 45 hours, 1 practicum credit = 45 hours).

The current curriculum was expanded in 2004, and at the same time the credit system was introduced and the former lists of categories and detailed descriptions of course contents were eliminated. These changes were made in order to encourage original thinking, creativity, and independence in each school.

The Oriental Medicine College Association and the National Association of Presidents of Schools for the Blind are working together to develop educational guidelines, publish standard textbooks, standardize educational content, and maintain high standards of quality.

Oriental Medicine College Association
http://www.toyoryoho.or.jp/index.php

5. Current status of students and graduates

Results of two surveys performed by the Oriental Medicine College Association

First survey performed in 1998

Second survey performed in 2001

1) The ratio of women students rose in 2001 (male-female ratio 1.67:1, in comparison to 1.97:1 in 1998). The most common age range for male students was 25 to 29 (61.4% in 2001, down from 72.8% in 1998). The ratio of male students was lower for all age groups in the 2001 survey. The most common age range for female students was 21 to 24 (43.1% in 2001, in comparison to 36.1% in 1998). The ratio of women also rose in the group 25 to 29 years of age (from 26.6% in 1998 to 30.9% in 2001), while decreasing in all other age brackets. The largest number of students was in the group 25 to 29 years of age, with the largest number of men in their late 20s and the largest number of women in their early 20s. Mean age of students was 32.9 years in the second study, nearly the same as the first study (32.6).

2) The 2001 survey showed 84.5% of graduates practicing professionally, nearly the same as the 1998 study (84.2%). A higher percentage of male graduates (87.3%) were in professional practice than their female counterparts (80.4%). The most common age group represented was 40 to 44 years of age (87.2%).

Graduates not in professional practice accounted for 14.7% of the total, down slightly from the first survey (15.1%). A major change was noted in working circumstances. Considerably more graduates were running their own practice in 2001 (32.4%) than in 1998 (21.4%). Those working alone accounted for 71.5% of the total in 2001, down from 86% in 1998, while the percentage with 1 employee rose from 5.6% in 1998 to 12.3% in 2001. The average number of patients treated per day by self-employed practitioners was 9.6, down from 11.1 patients per day in 1998.

Graduates who were employed by a clinic or hospital accounted for 30.4% of the total, up significantly from 19.4% in 1998.

Acupuncture Practice in Dentistry in Japan

Atushi Fukushima
Director of Acupuncture-Moxibustion Center
Fukushima Dental Clinic
Guest Lecturer at Oriental Medicine
Toho University Medical Center

1. History of Acupuncture-Moxibustion in Dentistry in Japan

In 1972, James Reston of New York Times, a reporter on President Nixon's trip to China reported to the world the beneficial effects of acupuncture anesthesia. This led to an increased awareness of acupuncture treatment in Japan, further leading to advances in researches and the introduction of acupuncture-moxibustion in various clinical sites.

The Japan Dental Society of Oriental Medicine serves as a major center for providing education on the use of oriental medicine and practical acupuncture-moxibustion training in dentistry Some dental universities include this education in their curriculum. The Society was formed in 1979 when WHO issued the statement of recommendation to its member states for positive use of acupuncture as part of modern medicine. Kunio Matudaira, the first chairman of the Society was the first dental surgeon who introduced acupuncture into clinical dentistry, practicing acupuncture in the form of anesthesia and pain relief in patients undergoing dental extraction or those with other dental problems. Akira Fukuoka, the second chairman of the Society promoted further clinical applications of oriental medicine in dentistry. Michizo Matsuo, the third chairman of the Society, made a great contribution in nurturing the Society to the present nationwide organization. Koichi Okamura, the fourth president of the Society, deepened ties with China from the viewpoint of integration of traditional Chinese and Western medicine. The Society's history is now taken over by incumbent president Koichi Okamura. The membership is comprised mainly of clinicians (as of 2008, 900 members), many of whom are trying to willingly administer acupuncture treatment.

2. Indications for acupuncture-moxibustion in dentistry

The use of acupuncture is not limited only to anesthesia for dental extraction and analgesia in patients suffering dental pain. It is now extended to the treatment of oral diseases as shown below.

1) Diseases of oral mucosa: Recurrent stomatitis, stomatitis herpetica, herpes zoster, oral candidosis, lichen planus, leukoplakia
2) Diseases of lips: Angular stomatitis, chronic cheilitis
3) Diseases of Tongue: Geographical tongue, median rhomboid glossitis, glossalgia
4) Diseases of salivary glands: Salivary calculi, dry mouth
5) Diseases of nervous system: Trigeminal neuralgia, facial nerve paralysis
6) Disease of jaw joints: Jaw (temporomandibular) joint disorder, jaw joint dislocation
7) Oral and maxillofacial inflammation: Pericoronitis of wisdom tooth

Acupuncture-moxibustion treatment exerts its efficacy especially for the diseases for which therapeutic modalities of modern medicine have not been established, such as diseases of oral mucosa, nerves, dry mouth, and jaw joints.

3. Future Vision for Acupuncture-Moxibustion in Dentistry

Acupuncture-moxibustion currently practiced in Japan, which was introduced to Japan from ancient China, is classified into three groups:

(1) traditional acupuncture-moxibustion advanced in Japan with its own style;
(2) acupuncture-moxibustion of Western medicine nature based on anatomy, physiology, and pathology; and
(3) acupuncture-moxibustion of traditional Chinese medicine. In order to respond to a variety of intractable oral diseases, it is desirable that remedial procedures with acupuncture-moxibustion be established based on scientific grounds built by the integration of advantages of oriental-Western medicine.

Sports Acupuncture & Moxibustion - Reviews

Eiji Furuya, Ph.D.
Director of Kuretake College
Oriental Medicine Clinical Laboratory

1. Introduction

Sports are most often played for the simple fact that people need exercise to stay in good physical condition and/or promote health. In fact, sports encompass a broad range of activities from the ones that are played just for fun to the competitive ones that are performed to athletes' potential limits of physical as well as mental abilities. However, injuries and other adverse effects resulting from overuse and/or improper training, should not be overlooked. Acupuncture and moxibustion treatment have a history with sports injuries in the Japanese sports field. They have been used as a supportive measure for alleviating pain or discomfort associated with sports activities. Despite this history, no organization exists in Japan to handle matters of sports acupuncture and moxibustion. Present practitioners treat sports injuries on their own accord.

The firm positioning of sports acupuncture and moxibustion started when their usefulness were introduced in a presentation entitled "Application of Acupuncture and Moxibustion to Enhance Competitive Abilities" which was presented at the preparatory meeting set up in 1992 for the conference of sports acupuncture and moxibustion, medical science given at the 95 Fukuoka Conference of the 18th Universiade and the University Sports Research Conference held as part of Universiade. The therapeutic effects of acupuncture treatments presented in these conferences and the fact-finding surveys on the treatment of sports injuries with acupuncture and moxibustion for each event were published as a book of literature abstracts[1]. On this occasion, the Japan Society of Acupuncture and Moxibustion has became actively involved in various activities aiming to build up clinical evidence and many symposiums have been held to discuss a variety of topics: administering treatment for the state of pre-symptomatic condition before onset of a disease ("mibyo"), exercises, acupuncture and moxibustion[2], the current status and problems of sports acupuncture and moxibustion[3], and research on sports acupuncture and moxibustion. Introducing practitioners to appropriate information to help the "condition adjustment" for athletes has become a therapy movement for National Sports Festivals and the National High School Championships' since 1998. This gives the *practitioners more opportunities to be active.*

2. What ae Sports Acupuncture and Moxibustion?

Sports acupuncture and moxibustion can be considered as one of the conditioning tools that provide athletes the optimum physical condition including quick recovery from fatigue and the application to training as well as alleviate symptoms they complain[6] . The use of the procedures is dependent on the intensity of trainingthe trainers give in competitive sports, but it is intended for all persons engaged in sports. If acupuncture and moxibustion treatment are used to keep athletes at their best, leading to the prevention of sports injuries, it will help to enhance quality of sports. This is an important role of sports acupuncture and moxibustion and is an inherited concept of oriental medicine of "treat mibyo", or the concept of preventive medicine[3), 4)].

3. Clinical Research

The National Sports Festival is Japan's largest sports competition. The author et al. developed the condition adjustment for athletes with acupuncture treatment at the sailing competition sites upon request from the Japan Sailing Federation. The conditioning levels were compared before and after the treatment using the visual analog scale (VAS). The treatment, which was administered as desired by the athletes regardless of before or after the competition, alleviated myofascial low back pain and muscle fatigue of cervix shoulder and back[7]. After the treatment, they said "this is the way to go" and showed enthusiasm for the competition.

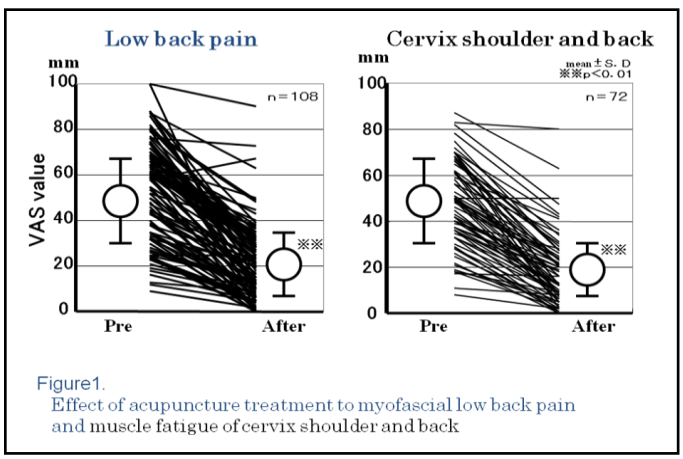


Figure1.
Effect of acupuncture treatment to myofascial low back pain and muscle fatigue of cervix shoulder and back

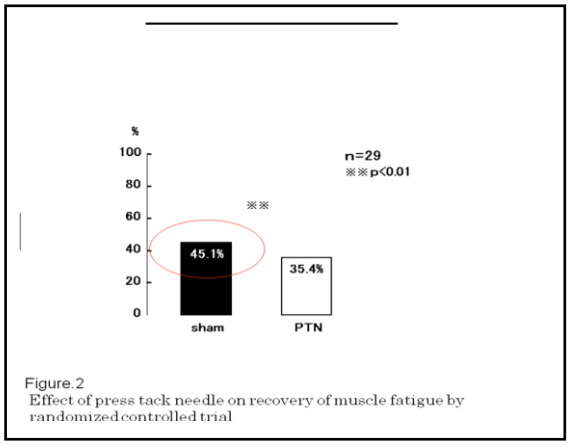


Figure.2
Effect of press tack needle on recovery of muscle fatigue by randomized controlled trial

Aside from this, the effects of press tack needle (PTN) were investigated against sham needle in a randomized control trial. PTN, a very short needle with a shape similar to a thumbtack, has the advantage that athletes can continue their sports with the PTN in place. The effects against the model of muscle fatigue were investigated through isotonic exercise of the upper arm flexor muscle group.The exercises were carried out two times with a break taken in between and the decreased number of repeated motions gained from the exercises was compared between the two groups (PTN group and sham group). After the first exercise, PTN was left indwelled and then the exercise was resumed, which showed less decrease in the number of repeated motions compared to a sham needle[8]. In regard to the effects of PTN for muscle soreness developing a day after the race, investigations were made with PTNs indwelled during the race in the lower back region for a triathlon race, and in lower extremities for a marathon race. Needles were indwelled just before the start of the race. The occurrence of muscle soreness on the following day was suppressed in two groups[9),10)]. The results suggest that PTN be used for conditioning for athletes.

4. Education System

The education system for sports acupuncture and moxibustion is yet to be established. This is because there is no comprehensive program available for the subjects from elite athletes to amateur athletes. The basic of sports is to move the muscles in the body to a greater or lesser extent. Therefore, analysis of body movements and corresponding acupuncture and moxibustion treatments are applicable for all persons who play sports. What is required for the education is the content that enables practitioners to achieve accountability on safety, mutual interactions, and adverse effects.

5. Conclusion

Scientific validation of sports acupuncture and moxibustion is not adequate. Validation is needed in cooperation with all medical fields for each of the sports fields. As well as the evidence of the effects of acupuncture and moxibustion, those of sports injury prevention and sports conditioning need to be accumulated. They will provide valuable input for the use of acupuncture and moxibustion treatment in sports medicine. Expertise in Western medicine, physiological changes with physical activity, and the mechanism of acupuncture and moxibustion together with treatment techniques are also necessary for sports acupuncture and moxibustion.

Referense:

1) FISU/CESU Conference The 18th Universiade 1995 Fukuoka. Acupuncture in Sports-Abstracts.
2) Moriyama T.: Treatment to Protect Health, Physical Fitness for the Health, Acupuncture & Moxibustion. JSAM, 2000; 50(1):59-82.
3) Miyamoto T, Katayama K.: Present State and Problem of the Sports Acupuncture and Moxibustion.JSAM.2000; 50(1):83-102.
4) Miyamoto T, Furuya E, et al.: Symposium Research on Acupuncture and Moxibustion in the Sports Field. JSAM, 2008;58(2):166-178.
5) Asahiyama K.: Oriental Sports Therapy Handbook. In: Hukubayashi T(ed). Kanagawa. Ido no Nippon. 2001:289-295
6) Matsushita M, Asahiyama K, et al.: Usefulness of acupuncture / Moxibustion in the activities of sports trainers. Osaka Journal of Clinical Acupuncture and Moxibustion, 2007; Vol.23.No.1:9-32.
7) Furuya E, Kaneko Y, et al.: Examinetion of Condition Adjustment following Acupuncture Treatment for Competitive Sailors at the National Sports Festival. JSAM, 2006; 56(2):166-174.
8) Furuya E, Kaneko Y, et al.: Effect of Press Tack Needle on Recoverry of Muscle Fatigue by Randomized Controlled Trial-sham contlloed study-2009; 59(4):68-76.
9) Kaneko Y, Furuya E, et al.: The Effects of Press Tack Needle Treatment on Muscle Soreness after Triathlon Race- Sham-controlled Study-. JAM 2009; 1: 22-30.
10) Miyamoto T, Hamada J, et al.: Effect of Acupuncture using Press Tack Needle on Muscle Pain and Stiffness after Marathon Race-Double Blind Randomized Control Trial-. Kanpo Med. 2003; Vol.54(5):939-944.

Treatment of Local and Distance Sites for Diseases of the Locomotor System –Indications and limitations of local therapy, indications and limitations of distant therapy–

Coordinator: **Takayoshi Ogawa**
Tokyo Eisei Gakuen
Shuichi Katai
Tsukuba University of Techonology
Shoji Shinohara
Meiji University of Integrative Medicine

I. Introduction

Phrases like "simultaneous treatment of root and tip" regarding acupuncture and moxibustion therapy indicate that in almost all cases treatment of the region where the symptoms are located (treatment of the incidental = locally) and treatment of acupoints on meridians located at a distance where there are no symptoms, or that are used for the regulation of qi and blood (treatment of the fundamental), or treatment of acupoints known through experience to be effective for the particular condition are combined. While in cases of diseases of internal organs or metabolic diseases determination of specific locations is difficult, therefore, the function of distant needling therapy and local treatment of diseases of the locomotor system may be the subject of debate. Moreover, in order to examine which of these different treatment forms is safer and more efficient, symposia were held on the 51st annual conference of the Japan Society of Acupuncture and Moxibustion (in Ibaragi), the 52nd conference (in Kagawa) and the 53rd conference (in Chiba), spanning the period of these three years.

II. Efficiency of distant needling

Local treatment is performed on the soft tissues in the region of the symptoms, making the mechanisms of the therapeutic effects easy to understand., For example, the relief of excessive muscle tension is easy to understand. However,mechanisms in the case of distant needling and its efficacy still remain difficult to understand. At the 52nd conference a symposium was held to examine the efficacy of distant needling. Mr. Shinohara from the Meiji University of Integrative Medicine, conducted an experiment using intradermal needles on spring points of the relevant meridians versus sham acupuncture and spring points of other meridians, demonstrating the efficacy of channel sinew and distant needling therapy. Dr. Katai from the National University Corporation Tsukuba University used the point Chikuhin (zhubin KI9) as well as treatment of the arms and legs in patients with low back pain or cervical pain and showed that distant needling alone is also highly effective. Dr. Shiraishi from the Oriental Medical Research Institute used the point Ichu (weizhong, BL40) among the four command points and showed that the reactions it elicited at Jinyu (shenshu, BL23) were even more marked than those obtained by direct stimulation of Jinyu directly, suggesting the effectiveness of distant needling. Mr. Keiji Yoshikawa from the teaching staff training institute within the Department of Physical Therapy of the National University Corporation Tsukuba University, reported the effectiveness of local treatment and its contraindications, indicating that distant needling therapy is associated with a high degree of unreliability and low reproducibility, and therefore did not acknowledge its necessity.

Regarding the question of whether to perform both "local treatment and distant needle therapy" Mr. Shinohara, while selecting mainly distant sites, performed local treatment in cases,when manifestations of blood stasis and phlegm were restricted to certain regions. Dr. Katai used ocal treatment in case distant needling therapy had been ineffective and Mr. Yoshikawa had decided not to use distant needle therapy at all. Dr. Shiraishi did not deny the benefits of local therapy, but emphasized his opinion, that depending on the selected region stimulation of distant sites is capable of modulating the elicited reactions. In particular the effects obtained by stimulating distant sites would be enhanced, if the retained needles are in addition stimulated electrically, indicating that an explanation based solely on distant needling effects mediated via the nervous system would be difficult. Mr. Tomomasa Moriyama of the National University Corporation Tsukuba University reported results, suggesting that the treatment at distant sites may be effective from a point of view of movement physiology because of the regulation of muscle force alignment.

Therefore, the consensus isthat "stimulation of distant sites" is also effective for the treatment of diseases of the locomotor system. Mr. Yoshikawa considered the reported evidence of the other three speakers insufficient and thought, that the definition of local and distant sites needs to be revised. Even if the site at which the symptoms are located is considered local, the contact of the needles with skin and muscles may also be considered a local contact, or could it be considered to be a stimulus of the entire dermatome, muscle bundle or even the entire muscle? Also, when the needle stimulation is considered to be transmitted to the central nervous system after being picked up by some form of receptor sensory nerves, it may be related in some form or other to the autonomic nervous system etc. If that is true, then what used to have been considered local mechanisms could possibly be the mode of action initiated by distant sites.

III. Definition of local and distant needling therapy

A questionnaire was conducted among members of the society,who have been enrolled in it for many years to investigate the definitions and the mechanisms imagined to be underlying the therapeutic effects as well as the basis for choosing different treatment modalities. Mr. Ogawa of the Tokyo Eisei Gakuen College reported that there were no significant differences pertaining to the definition of local and distant schools of thought. The concept of "local sites" was imagined mostly as meaning the location of tenderness, sites at which a radiating sensation may be elicited or the affected sites themselves, while "distant sites" referred to regions, from where reactions in meridians, nerves, reactive spots, tender spots, or even systemic reactions may be induced or some other form of active sites.

Moreover, based on the results of the above mentioned questionnaire, the definition of local and distant sites was determined as follows.

Local sites:

Sites of tenderness accompanying the manifestation of the symptoms, sites of injury, or from where a radiating sensation (like the conduction of a nerve impulse) can be elicited and the site of lesion itself. Stimulation applied for therapeutic purpose at these sites provides relief of excessive muscle tension, thereby alleviating nerve entrapment, triggers axon reflexes and has in addition, psychological effects associated with the provision of treatment of affected parts.

Distant sites:

Not restricted to the site of symptom manifestation, treatment applied to sites located along the course of the meridians can be expected to elicit a generalized reactions (autonomic nervous system regulation, central nervous system response etc.), where the stimulation of the relevant sites may not only have therapeutic purpose, but can be expected to have generalized effects.

IV. Mechanisms of distant needling therapy

At the 52nd and 53rd conferences the mechanisms underlying therapeutic effects were examined. Mr. Shinohara investigated the effects of intradermal needles for the treatment of delayed pain based on a channel sinew model and observed that exercise load of the biceps brachii muscle lowered the tenderness threshold along the lung meridian, indicating the possibility of the appearance of selective peripheral reactive spots during the development of delayed muscle pain that can be used as therapeutic points. He also mentioned that at clinically useful acupoints it might be highly likely that hypersensitivity phenomena emerge during the generation of experimentally induced pain, which provides experimental evidence for the distant needling therapy. Dr. Shiraishi showed, following his line of thought from the previous conference, that experimental results of distant needling applied to stimulate Ichu (weizhong, BL40), Shozan (chengshan, BL57), Hiyo (feiyang, BL58), Konron (kunlun, BL60), Yoryosen (yanglingquan, GB34) are capable of producing a variety of changes in the reaction observed at Jinyu (shenshu, BL23) in patients with low back pain. This does not necessarily require stimulation of points located on the same meridian, but showed that it is possible to modify the reactivity within certain zones. Furthermore, the needling effects from the skin modifying the input system neuroanatomically are not specific or selective. This indicated that local treatment

is not necessarily required and the treatment at distant sites can be expected to have sufficient clinical effects.

Mr. Akihiro Ozaki from the Meiji University of Integrative Medicine made a presentation based on results from human and animal experiments showing that needling both in close proximity and at distant sites have the effect of inhibiting kinetic reflexes, so that both local and distant sites were found to be effective. The stimulus information provided both in close proximity of the lesion and at distant sites then converges onto the same neuron and is thereupon subject to modulation, so that the differences in information processing at the neuronal level may be strongly involved in the manifestation of different effects. Investigations of the differences in the effects obtained through local and distant treatment may thus also need to take into account differences in the input forms other than the site of stimulation, symptom patterns etc. They need to be discussed comprehensively. Mr. Moriyama expounded on the basis of biomechanics indicating that a poor condition at a certain distant location may influence prevailing local conditions. He introduced the meridian test as one useful method to find poor local conditions that may be difficult to be realized by the patient him/herself, but nevertheless could lead to the development of disorders. That means that the microscopic observation employed during examination and treatment may require a macroscopic point of view including the entire body into its field of vision, so that the above mentioned two different ways of looking at a certain object should not be separated.Only together can they represent the essential concept of treatment. From the audience, questions were asked and discussed, indicating that the mechanisms of analgesia in case of needling nerves and muscle cannot yet be understood, or that the effects of both local and distant treatment are based on the same mechanisms, thus making their clarification a task for the future.

Mr. Katsuhiro Yamada of The Japan School of Acupuncture, Moxibustion and Physiotherapy reported that treatment of distant sites in cases of inflammatory lesions associated with tissue injury, localized muscle spasms or structural causes seems to have little potential to improve the condition, while local treatment is effective here. Yet, the local treatment may in certain cases also aggravate the condition.

Mr. Kawakita from the Meiji University of Integrative Medicine reported that regarding inhibition of pain the DNIC (diffuse noxious inhibitory controls) phenomenon and involvement of humoral factors like endorphin in the manifestation of pain phenomena are both activated regardless of where on the entire body the stimulation is applied, while axon reflexes occur only locally at the site of the stimulation.

Mr. Ozawa from the National University Corporation Tsukuba University explained that the needling stimulation produces locally at the site of the stimulation via axon reflexes an increase in blood flow and at the same time via spinal reflexes or supraspinal reflexes various responses in various internal organ effectors. Also, he stated that the mode of action varies depending on differences in the site of stimulation and type of effector.

V. Pathologic conditions for which treatment at local and distant sites is effective:

A questionnaire was conducted among 41 authoritative people in this field representing the different treatment styles. The results showed that local treatment was considered to be effective for conditions including diseases of the locomotor system, bruises, sprains, external injuries etc. where the local symptoms are clearly defined and the site of the lesions is often restricted locally, whereas stimulation at distant sites seemed to be effective for conditions other than diseases of the locomotor organs, like diseases of the viscera and bowels, and employed in case local treatment had been ineffective, or in cases where the point selection was based on more than 70% on classical meridian theory.

VI. Conclusions

Throughout the three symposia, treatment of local and distant sites was considered separately while common concepts were thought to have been found. The effectiveness of local treatment for diseases of the locomotor system and its clinical significance was recognized. The mechanisms of distant needling

therapy and its effectiveness were also acknowledged. In particular, it was acknowledged that needling of the arms or legs induces systemic responses through supraspinal reflexes, so that in case the affected areas is located on the arms or legs, the locally placed needles do not only elicit a local, but also a generalized response. Moreover, in case the affected region is located on the trunk, it was generally agreed that there is a high probability for the need to also needle the arms and legs. However, while researchers in the field of basic research emphasized the common aspects (non-specific responses), suggesting just needling anywhere, even if performed by beginners, would still be effective, because this can be called an inherently human physiologic response. Because of the very presence of this response, acupuncture and moxibustion therapy has been used continuously over several thousand years. Further in-depth research is required in order to enhance the effectiveness of acupuncture and moxibustion specific effects superimposed on the above mentioned non-specific response, or else to establish still more effective therapies.

The differences between the conditions for which either the treatment of local or distant sites is effective or specific could also be clarified to a certain extent, but it cannot be denied, that this is still only the beginning. For example, in case of low back or leg pain needling of Ichu (weizhong, BL40) or similar points on the legs has a completely different significance, even if the results were the same, depending on whether this site is needled, because it is the site of symptom manifestation, or whether a reactive spot has been needled in order to cure the low back as the causative site for the low back or leg pain. Although these symposia helped to clarify this point, the expectations based on the initially planned scope, covering not only the muscular and skeletal systems, but that also included internal organs or metabolic systems in the scope to be clarified were not met. In-depth research is going to be continued and similar symposia will be held.

Responsibility for the wording:
Takuro Ogawa, Major course of clinical education, Tokyo Eisei Gakuen College,

Japanese Minimal Acupuncture

Noboru Mitsuhata
Tokyo Eisei Gakuen College

Currently, the most popular form of acupuncture therapy uses filiform needles inserted a few centimeters so that the needle tip reaches the muscle layer, but there are also other therapy forms, where the needle is inserted only up to the subcutaneous layer or does not penetrate the skin at all and stimulates only the skin, which are nevertheless able to produce therapeutic results for a variety of symptoms. Among these therapy forms those that stimulate superficial skin layers, namely the "intradermal needle therapy", the "thumbtack needle therapy" or "pediatric acupuncture therapy" use specially shaped needles. Here I would like to introduce the application of their widespread use among Japanese acupuncturists.

1. Intradermal needle therapy

Intradermal needles were developed around 1952 by Kobe Akabane based on his daily clinical experience with needles for mild stimulation of the skin surface over a prolonged period of time. These needles have a thickness of approximately 0.14 mm and a length of about 5 mm. The handle of these small, thin needles is formed either in the shape of a small ring (ring type) or as a plate (flat type) and designed in such a waythat they do not advance further into the body by error (Figure 1).

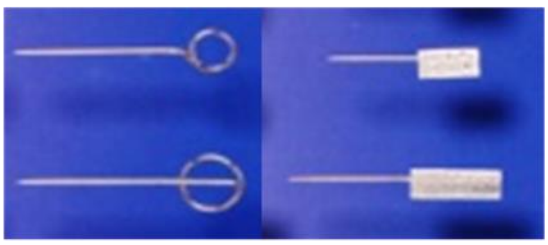


Figure 1 Intradermal needle

The needle handle is grasped with a pair of tweezers, the portion of the skin where the needle shall be inserted stretched a little and the needle then inserted parallel to the skin surface for a length of about 2-3 mm. After that, a little cushion is placed between the needle handle and the skin and the entire intradermal needle covered and fastened with adhesive tape (Figure 2). Although there are differences based on symptoms and hygienic conditions, the needles are generally retained for periods of time varying from a few hours to a week.

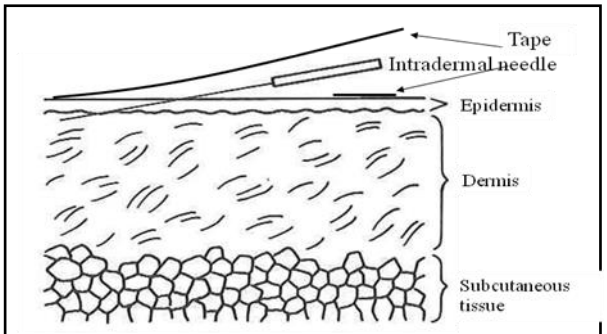


Figure 2 Insertion of an intradermal needle (from reference #16, partially revised)

This treatment form is often combined with ordinary treatment using filiform needles, but there is also research[4] into the independent use of intradermal needle therapy for osteoarthrosis of the knee or periarthritis humeroscapularis and similar complaints relating to the locomotor system. Again, there have also been case reports dealing with the treatment of obstetric diseases[5], depression and other conditions. Moreover, thanks to the simplicity of the insertion method physicians perform this intradermal needle therapy in conjunction with the prescription of Kampo medicines and report it to be effective[7].

2. Thumbtack needle therapy

Thumbtack needles are also considered to be a form of intradermal needle, but are thus named, because their shape which resembles that of thumbtacks (Figure 3). Thickness of the needle is about 0.2 mm and length about 1 mm. The insertion technique for these needles is similar to that of intradermal needles and they are also fastened with adhesive tape, but in some products the needles are already incorporated in the tape.

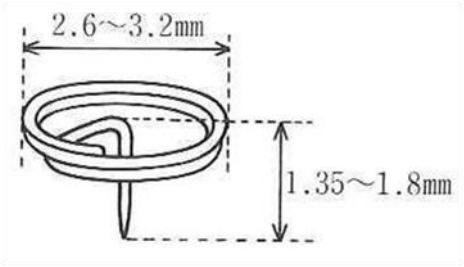


Figure 3 Press tack or thumbtack needle (from reference #16)

Since the insertion technique is even simpler than that of the intradermal needles, thumbtack needle therapy has been frequently used in sports and reportedly achieved a significant inhibition of the development of muscle soreness following sports events[8].

Reportedly, they also have been used for the treatment of collateral symptoms like low back pain etc. in patients on maintenance dialysis[9] and to promote lactation in puerperal women[10].

3. Pediatric acupuncture therapy

It is not clear when pediatric acupuncture therapy was first performed as a special treatment form, but it was mentioned in texts dating back about 250 years[11]. Today specialized pediatric acupuncture therapy is performed mainly in the Kansai region. Moreover, activities are conducted promoting skin stimulating methods based on the concepts of pediatric acupuncture therapy using a spoon that can easily be applied by the parents.

There are various systems of, and methods employed, in pediatric acupuncture therapy (Figure 4), all of which use only light tapping or stroking of the skin surface as stimulation and avoid penetration of the skin. The stimulated regions often include the entire body, but predominantly stimulated areas vary depending on the symptoms. Treatment requires considerations to prevent overstimulation and is usually of short duration of about 10 minutes.

This kind of treatment is performed in children from infancy to school age. It is used in particular for fretfulness (pediatric neurosis), respiratory symptoms accompanying rhinitis or pharyngotonsillitis, maldigestion or diarrhea and similar gastrointestinal symptoms, enuresis etc.[11-15].

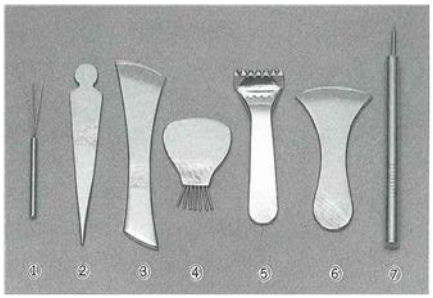


Figure 4 Pediatric needles (from reference #16)

4. Conclusion

Currently the use of filiform needles constitutes the usual form of "acupuncture therapy" and is, I believe, associated with an established image of "inserting" needles or being pricked. However, about 2,000 years ago the "round-pointed needle" (round needle) or the "spoon needle" were acknowledged among the nine classical needles mentioned in China. Cearly they were not meant to be inserted. Treatment forms using such slight stimulation of the skin as intradermal needle therapy and pediatric acupuncture therapy are performed as an integral part of modern Japanese acupuncture and moxibustion therapy. Thus, this should make clear that acupuncture therapy is not restricted to the practice of inserting needles to a depth of a few centimeters into the body.

In recent years, treatment with shallow needling sometimes serves as a control (placebo) group during clinical and basic research into acupuncture, but in Japan minimal acupuncture stimulation too is considered to be effective, so that the above mentioned research design cannot really be considered a suitable means for detecting the effects of acupuncture.

Reference

1) Akabane K., Method of Hinaishin, Ido no Nippon Sha, 1964
2) Suzuki S. et al.: Useful acupuncture and moxibustion therapies (only in Japanese), Ido no Nipponsha, 2006
3) Tanioka M.: The Daishi style pediatric acupuncture, (only in Japanese), Rokuzen Publishing, 2005

4) Shinohara S.i, Clinical Effects of Acupuncture (Intradermal Needles) based on the Muscle Meridians for the Complaints on the Joints and Muscles during Movements, The Bulletin of Meiji University of Oriental Medicine, Vol.26, p65-80, 2000
5) Eda M., TANIGUCHI S.: Shortening of labor time using intradermal needles), (only in Japanese), Ido no Nippon, No.592, p12-18, 199
6) Murata K.: A case or recurrent depression – a trial with intradermal needles), (only in Japanese), Ido no Nippon, No.729, p62-67, 2004
7) Kawachi A., Intra-Dermal Needling approach to urinary calculus, Osaka journal of clinical acupuncture & moxibustion, Vol.21 No.1, 2005
8) Kaneko Y., Furuya E. et al., The Effect of Tack Needle Treatment on Muscle Soreness after Traiathlon Race — Placebo-controlled Study — Journal of the Japan Society of Acupuncture and Moxibustion Vol.56 No.2, P158-165, 2006
9) Okuno Y. et al.: Effects of acupuncture treatment in patients on maintenance dialysis – therapeutic experiences using thumbtack needles in 32 patients, (only in Japanese), Journal of The Japan Society of Modern Acupuncture and Moxibustion Research, Vol.3 No.1, p19-27, 2003
10) Tatsunami T. et al.: Acupoint therapy for the promotion of lactation, (only in Japanese), The Japanese journal for midwives, Vol.50 No.7, p84-87, 1996
11) Ozaki T et al.: Pediatric acupuncture therapy – the practice of Yoneyama style pediatric acupuncture, (only in Japanese), Clinical acupuncture & moxibustion, Vol.16 No.2, p38-44, 2001
12) Okuda I.: Summary of pediatric acupuncture, (only in Japanese), Osaka journal of clinical acupuncture & moxibustion, Vol.14 No.1, p34-38, 1998
13) Yamagata Y.: Impressions of pediatric acupuncture, (only in Japanese), Osaka journal of clinical acupuncture & moxibustion, Vol.14 No.1, p41-43, 1998
14) Sugihara Y.: Pediatric acupuncture starts with the education of the mother, (only in Japanese), Osaka journal of clinical acupuncture & moxibustion, Vol.14 No.1, p44-47, 1998
15) Ozaki T.: Examples of therapeutic effects using mainly pediatric acupuncture for the treatment of enuresis, (only in Japanese), Osaka journal of clinical acupuncture & moxibustion, Vol.14 No.1, p48-50, 1998
16) Japan College Association of Oriental Medicine: Acupuncture and moxibustion techniques < Basics >, Ido no Nippon Sha, p98-104, 1992
17) Japan College Association of Oriental Medicine: Acupuncture and moxibustion theory, Ido no Nippon Sha, p15-17, 2002

Safety Issue on Acupuncture and Moxibustion in Japan

Hitoshi Yamashita[1], Hiroshi Tsukayama[2]

1) Department of Acupuncture, Morinomiya University of Medical Sciences, Osaka, Japan
2) Center for Integrative Medicine, Tsukuba University of Technology, Tsukuba, Japan

1. Introduction

Evidence-Based Medicine (EBM) became popularized in the medical field in 1990s when substantial randomized control trials (RCT) on efficacy were actively performed. Against this positive trend, even in these years, methodology showed the least development in clinical research on safety of acupuncture and moxibustion. For example, although it has been publicized that "the incidence of side effects from the practice of acupuncture and moxibustion is none", data of side effects based on well planned and systematic research have not been presented. There are, indeed, various case reports on infections that developed after acupuncture treatments. There are, however, almost no papers released that clearly show the evidence of these causal relationships.

Generally, arguments of safety of acupuncture and moxibustion often took place on the basis of anecdotal evidence, such as case reports on adverse events and various experiences of individuals. It was only after the latter half of the1990s that clinical research other than case reports on safety of acupuncture and moxibustion, began to appear in medical journals on a full scale and actively discussed.

This report will provide case reports, prospective surveys and data from RCT on the basis of the strength of evidence and discuss safety of acupuncture and moxibustion in Japan.

2. Case reports

We have reviewed case report papers in order to grasp the incidences in Japan of adverse events associated with acupuncture treatment. Our review results showed that medical journals carried 120 articles reporting about 150 adverse events associated with acupuncture treatment in Japan during the period of the latter half of 1980s and 2002 (Table 1) [1,2] (Note: An adverse event is defined as an unfavorable medical event which occurred during or after the treatment *regardless of causal relationships*)[3]. The most reported adverse event was pneumothorax. In the recent years, however, pneumothorax does not have novelty for a journal article and the number of the case reports relating to the adverse event has been reduced. In contrast, the number of cases handling liability insurance to compensate pneumothorax resulted from the acts of acupuncture and moxibustion in Japan is as highest as ever in Japan[4]. As far as infections are concerned, a diversified range of infections from abscess, bacterial infections to hepatitis B were reported; although for most of these adverse events, cause-effect relationships have not been clarified..

As for "embedding needles" practiced by a few acupuncture and moxibustion therapists, the Japan Acupuncture & Moxibustion Association submitted a request to the then Ministry of Health and Welfare in 1976 to issue its directions to prohibit embedding needles. However, fragments of needles embedded before the order of prohibition (some after the order) caused unique adverse events such as organ injury, foreign body, localized argyria and others. On the other hand, many reports on accidents of needle breakage and organ or spinal injury were seen until the first half of 1990s. In recent years, reports of these cases and liability compensation cases have

decreased[1,2,4]. It can be considered that the decrease is closely related to the wide use of disposable needles in Japan.

Cases of adverse events resulted from moxibustion are shown in Table 2[2,5]. Moxibustion is, of course, performed by acupuncture and moxibustion therapists in Japan. However, there is a significant number of cases in Japan in which patients use moxa cones at home according to the instructions by acupuncture and moxibustion therapists or people do self-treatment by using large moxa cones (mass of moxa) according to the oral tradition without seeing acupuncture and moxibustion therapists. In many serious cases of malignant tumor or pulmonary edema, moxa cones were used excessively on patients' own judgment. It is highly controversial that self-treatment that does not have guidance from, or is not practiced by the therapist of acupuncture and moxibustion, should be called "moxibustion treatment"

3. Prospective surveys

As introduced above, it will not be appropriate from the view points of publication bias, retrospective descriptions, recall bias, and an unknown total number of treatment sessions, to argue the safety of acupuncture and moxibustion based on case reports. With these points in mind, since 1992 we have required reports on adverse events to be submitted to Tsukuba College of Technology Clinic (present Center for Integrative Medicine, Tsukuba University of Technology) in order to obtain more reliable data on safety of acupuncture and moxibustion. In this prospective information gathering system, a semi-structured report form has been used, enabling the collection of necessary information for studying cause-effect relations and recurrence prevention measures. The total number of recipients of acupuncture and moxibustion treatments was known, which facilitated the calculation of incidence frequencies of adverse events. As a result, adverse events were reported・recorded as Table 3 shows[6,7]. If the denominator or the total number of recipients of acupuncture and moxibustion treatments is taken into account, it can be said that serious adverse events will rarely occur in the standard acupuncture practice.

Subsequently, we conducted a thorough prospective survey over four months to gain the frequencies of mild adverse reactions (side effects) that patients can experience in daily acupuncture practice. The results are shown in Table 4[8]. Fatigue and drowsiness occurred most frequently at the initial treatment and bleeding and subcutaneous bleeding had higher rates of frequency when applying current to needles[8]. Pain when pricking was claimed at a high rate of frequency among younger subjects or women[9]. Any of these adverse reactions were transitory and no medical procedures were taken. It has been confirmed in this survey that most of the side effects, which were frequently encountered in the acupuncture treatments, were mild cases.

4. RCTs

There could be many cases of adverse events recorded in the prospective surveys that actually did not have any causal association with the acupuncture treatment. In order to assess how many specific adverse reactions to penetration of the skin are included in reported adverse events in case reports and prospective surveys, we performed a literature review of published RCTs on acupuncture for osteoarthritis of the knee (knee OA) by way of example[10].

We searched for papers on RCT of acupuncture for knee OA, using two data sources: *PubMed and Japana Centra Revuo Medicina* (Igaku Chuo Zasshi). Of the twelve RCT papers located, seven included information on adverse events. Joint swelling, local inflammation, hematoma and back pain occurred more often in the dummy electroacupuncture or minimal acupuncture group. Therefore, it is likely that many non-specific or unconnected "adverse events of acupuncture"are reported in published case reports and prospective surveys[10].

5. Conclusion

In a series of surveys introduced above, it has been confirmed that the incidence of serious side effects (adverse reactions) is rare in the acupuncture and moxibustion clinic. On the other hand, since mild side effects are common, it is essential to inform patients about information relating to these side effects. Moreover, it is fact that serious adverse events exist, such as pneumothorax and spinal injury, although limited, likely due to therapists' negligence. Thus, as well as education and training[26], it is also important to develop error-prevention system, like incident reporting, to prevent avoidable adverse events[30].

The Japan Society of Acupuncture and Moxibustion (JSAM), a largest academic body of acupuncture and moxibustion in Japan has established the Committee for Safe Acupuncture to study safety of these treatments and promote education. We consider that a professional body like JSAM should assume roles of undertaking analyses of reported individual adverse events, verifying their causal relationships, giving feedback of the results to members, and shaping the safety education before and after graduation.

References

1) Yamashita H., Tsukayama H., White A.R., Tanno Y., Sugishita C., Ernst E.: Systematic review of adverse events following acupuncture: the Japanese literature. Complement Ther Med 2001; 9: 98-104.

2) Yamashita H., Egawa M., Umeda T., Miyamoto T., Ishizaki N., Katai S.: Update of adverse events associated with acupuncture and moxibustion in Japan (1998-2002) and controversy over infection control in acupuncture treatment. J Jpn Soc Acupunct Moxibust 2004; 54: 55-64.

3) Beam Jr T.R., Gilbert D.N., Kunin C.M.: General guidelines for the clinical evaluation of anti-infective drug products. Clin Infect Dis 1992; 15(Suppl 1): S5-S32.

4) Fujiwara Y.: Shinkyu massage ni okeru Iryo Kago Genba kara no Houkoku. San-No Shoji, Osaka, 2004.

5) Yamashita H., Egawa M., Miyamoto T., Umeda T., Tani M., Nabeta R., et al.: Japanese literature survey on risks and safety of acupuncture and moxibustion (4) - adverse events in moxibustion treatment -. J Jpn Soc Acupunct Moxibust 2000; 50: 713-718.

6) Yamashita H., Tsukayama H., Tanno Y., Nishijo K.: Adverse events related to acupuncture. JAMA 1998; 280: 1563-1564.

7) Yamashita H., Tsukayama H., Tanno Y., Nishijo K.: Adverse events in acupuncture and moxibustion treatment: a six-year survey at a national clinic in Japan. J Altern Complement Med 1999; 5: 229-236.

8) Yamashita H., Tsukayama H., Hori N., Kimura T., Tanno Y.: Incidence of adverse reactions associated with acupuncture. J Altern Complement Med 2000; 6: 345-350.

9) Yamashita H., Tsukayama H., Sugishita C.: Local adverse reactions commonly seen in Japanese-style medical acupuncture practice. Clin Acupunct Orient Med 2001; 2: 132-137.

10) Yamashita H., Masuyama S., Otsuki K., Tsukayama H.: Safety of acupuncture for osteoarthritis of the knee – a review of randomised controlled trials, focusing on specific reactions to acupuncture. Acupunct Med 2006; 24(Suppl): S49-52.

Table 1 Published case reports of adverse events associated with acupuncture in Japan[1,2)]

Type	Diagnosis or symptom (Number of cases in parentheses)	Comments
Organ injuries or foreign bodies	*Organ injuries* Pneumothorax (26), arterial injury (3), cardiac tamponade (3), renal injury (2) and pseudoaneurysm (1). *Foreign bodies* Needle fragment(s) in the urinary tract (3), retroperitoneum (2), paravertebral muscle (2), ventricle (1), lung and diaphragm (1), liver (1), maxilla (1), cervical interspinous ligament (1), hip joint (1), abdominal aortic aneurysm (1) and nucha (1).	Many of the cases were caused by accidental needle breakage or prohibited embedding needles.
Infection	*Bacterial infections* Abscess (6), septicaemia (6), spinal infection (4), erysipelas (3), streptococcal toxic shock-like syndrome (2: one fatal), pyothorax or pyohemothorax (2: one fatal), skull tuberculosis (1), infected atrial myxoma (1) and local redness (1). *Viral infections* Acute hepatitis B (12).	Causal relationship with acupuncture and infection is not established.
Neurological problems	*Central nervous system* Spinal cord injury (18), subarachnoid hemorrhage (5), subdural hematoma (1), epidural hematoma (1), and medullary lesion (1),. *Peripheral nerves* Peripheral nerve injury (3).	Many of the cases were caused by embedding needles.
Dermatological problems	*Pigmentation* Localized argyria (15) and cutaneous chromatosis (1). *Others* Contact dermatitis (4), lichen planus (2), nodular lesion (2), growth of tumor (1), and skin sarcoid (1).	Localized argyria was caused by embedding silver needles.
Other problems	Subcutaneous bleeding (2), syncope (1) and asthmatic death (which might have been associated with emotional stress of the first-time acupuncture treatment) (1: fatal).	

Academic Societies related to Japanese Acupuncture and Moxibustion

Shuichi Katai
Department of Acupuncture and Moxibustion
Tsukuba University of Techonology

I. Introduction

In contrast to China and Korea, oriental medicine in Japan requires independent licenses for Kampo (pharmacotherapy), acupuncture, moxibustion, anma-massage-shiatsu (Anma). Kampo, using decoctions, can only be performed by physicians with a western medical doctor's license, while acupuncture and moxibustion can only be administered by people who graduated from senior high school and later completed a 3-year education at one of the educational facilities specified by either the Ministry of Education, Culture, Sports, Science and Technology; or the Ministry of Health, Labor and Welfare. Subsequently, practitioners must successfully pass the relevant state examinations to obtain their licenses. Acupuncture, moxibustion and anma are classified within the framework of the Japanese medical care system (that is treatment using western medicine) as “quasi” medical actions.

Academic societies related to Japanese acupuncture and moxibustion reflect this situation in Japanese acupuncture and moxibustion and cover several different fields of learning.

For example, there are academic societies pursuing general academic research on acupuncture and moxibustion; but there are also societies that focus on academic research and on acupuncture and moxibustion pertaining to certain specific fields and related areas. Moreover, among some of these societies, acupuncturists play the predominant role, and in others, physicians do so. Additionally, the research into acupuncture and moxibustion covers a wide range of topics ranging from clinical application to basic research. The basic research covers a wide variety of topics ranging from bibliographic research of classical texts specific for acupuncture and moxibustion, to physiologic research performed on animals. Thus, there are a significant number of acupuncturists that are affiliated with academic societies covering various areas of Western and Asian medicine. Also, some societies maintain an academic society with an official name, some of these groups are not formally recognized organizations. Some exist solely for research in a specific area. This is a reflection of the historical circumstances pertaining to acupuncture and moxibustion. Taking these facts into consideration, an accurate description of the situation pertaining to academic research into Japanese acupuncture and moxibustion requires that the study groups calling themselves academic societies are also included in this report.

II. Academic Societies related to Japanese Acupuncture and Moxibustion

(1) Academic societies pursuing academic research on acupuncture and moxibustion

1. The Japan Society of Acupuncture and Moxibustion
2. Society for Traditional Japanese Medicine
3. Japan Traditional Acupuncture & Moxibustion Society
4. Japan Society of Ryodoraku Medicine
5. Japan Society of Oriental Medical Physical Therapy
6. Japan Eastern Medical Association
7. Japan Conference of Clinical Acupuncture Moxibustion
8. The Japan Society of Acupuncture & Moxibustion History
9. Oriental Medicine and the Pain Clinic

(2) Academic societies pursuing academic research, including acupuncture and moxibustion

1. The Japan Society for Oriental Medicine
2. Japan Dental Society of Oriental Medicine
3. Japan Society of Veterinary Acupuncture
4. The Japanese Society of Balneology, Climatology and Physical Medicine
5. Japan Society of Neurovegetative Research
6. Japanese Society of Psychosomatic Medicine
7. Physiological Society of Japan

III. Japanese Acupuncture and Moxibustion Societies

Japanese acupuncture moxibustion societies in Japan consists mostly of members who are engaged in research relating to acupuncture and moxibustion. These societies hold an annual conference in which members are given opportunities to present papers on the results of their research. The regulations of these societies provide a clause concerning the publication of a journal as a place for presenting research results.

1. The Japan Society of Acupuncture and Moxibustion (members: 3100)

Regarding acupuncture and moxibustion, the Japan Society of Acupuncture and Moxibustion is the only corporate academic society. Organizations are approved by the Ministry of Education, Culture, Sports, Science and Technology and meet certain criteria. This society has 3,100 members, which makes it the largest society among individual academic societies and research groups for acupuncture and moxibustion. When its former organizational form is included, the society can look back on a 55-year history.

Members include university researchers who research the classics, acupuncture and moxibustion from the point of view of modern physiology, and others that use the Chinese medical approach. As a result, the fields under investigation span a very wide spectrum. This society can rightfully be considered to assume core responsibility for research on Japanese acupuncture and moxibustion.

As of June 2008, Shuji Goto assumed responsibilities of the Chairman. The publication of “Journal of The Japan Society of Acupuncture and Moxibustion” is available to its members 5 times a year.

2. Society for Traditional Japanese Medicine (members: 1,500)

The Japan Traditional Acupuncture & Moxibustion Society was established in 1940 by Sorei Yanagiya, Keiri Inoue, Sodo Okabe, and others. This society is based on the theoretical and practical foundations of channel therapy. In the same year, Keiri Inoue, Shohaku Honma and others established “The Acunpunture and Moxibustion Classics Study Group. Also, in 1943, Hakko Baba established the Japanese Society for Research into Acupoints.

The "Su Wen", "Ling Shu" and "Nan Jing" served as the original texts, pulse diagnosis was the central examination method and the therapy was based on Kampo diagnosis (zuisho chiryo = sui zheng zhi liao). Clinically, the instruction given in sections 69 and 75 of the "Nan Jing" provide the theoretical basis for the therapy, point selection for reinforcement or reduction depending on states of deficiency or excess in the twelve channels; and thus are the foundation of the therapy. The channel or Meridian concept is considered to be of the greatest importance, and the existence of "qi", on which this concept is based, is included in this explanation. The understanding of human beings and views regarding the significance of the relevant concepts differ somewhat from modern scientific perspectives. After the war, this group provided the leading theories for, and support of, Japanese acupuncture and moxibustion.

“The Journal of Traditional Japanese Medicine” is published quarterly.

3. Japan Traditional Acupuncture & Moxibustion Society (members: 800)

This society, which forms the center hub for the activities of groups like the Society for Traditional Japanese Medicine, the acupuncture and moxibustion classics study group, or the "Meishin Kai" for the purpose of cross-school academic research into traditional acupuncture and moxibustion, was established in 1973.

The Japan Traditional Acupuncture & Moxibustion Society deals mainly with academic and clinical research into Japanese acupuncture and moxibustion based on a classical point of view. There are approximately 20 different groups studying

classical Japanese acupuncture and moxibustion and more than half of these are affiliated with this society. Many of these groups center their activities on clinical research, but there are also groups that pursue the study of historical texts like the "Koten acupuncture and moxibustion study group" or the "Japan Naikei Medicine Study Group". Since the 1970s, acupuncture and moxibustion have been researched in a scientific way and has been affected by Chinese medicine, leading to the formation of new groups. This trend placed great importance on traditional comparative pulse diagnosis, or a system based mainly on the "Nan Jing", concentrating on pulse differentiation, diagnosis and abdominal diagnosis.

As from April 2009, Shuichi Katai, Associate Editor of this journal, has assumed responsibilities of the Chairman.

The bi-annual journal of “Traditional Acupuncture and Moxibustion” is published for its members.

4. Japanese Society of Ryodoraku Medicine (members: around 800)

This society is engaged in research based on the theory discovered by Yoshio Nakatani in 1950 demonstrating that low electrical resistance points demonstrate special affinity with the acupuncture meridians. The Society was established in 1960. For a time, the Society was divided into two: one managed by physicians, and the other managed by acupuncturist and moxibustionists. Now the 800 members’ activities are organized as one society. Approximately half of the members are physicians and the other half are acupuncturists and moxibustionists.

Nakatani is a physiologist, and his Ryodoraku is said to be based on a physiological theory, involving especially autonomic neurology. The concepts of acupuncture channels, acupuncture points in the science of acupuncture and moxibustion have greatly influenced the Ryodoraku theory. Modalities of treatment in Ryodoraku are the use of acupuncture and moxibustion. However, aiming to make the physiological interpretations based on modern western medicine (especially neurophysiology), the Society engages in scientific research.

The “Journal of The Japanese Society of Ryodoraku Medicine” is issued quarterly.

5. Japan Society of Oriental Medical Physical Therapy

The Society was initially named the Japan Society of Practitioners in Acupuncture, Moxibustion and Massage (Japan Society for All Acupuncturists). In the establishment, Katsusuke Serizawa, Professor Emeritus at University of Tsukuba played an important role. Serizawa’s effort to try to define acupuncture and moxibustion stimulation as a kind of physical stimulation led to the addition of “Physical Therapy” in the Society’s official name. The Society is run mainly by members with impaired vision, notably membership of acupuncturists and traditional Japanese masseurs with impaired vision is high compare to the total membership and compared to other academic societies.

As the wording of Physical Therapy indicates, the Society uses thermograph in their attempts to elucidate the efficacy of acupuncture and moxibustion and has published many reports on the effects of acupuncture and moxibustion in terms of physical therapy.

The annual “Journal of the Japanese Society of Oriental Physical Therapy” is issued to its members.

6. Japan Eastern Medical Association

The predecessor organization was inaugurated in 1973 mainly for physicians who had completed an acupuncture and moxibustion seminar. At the time of the establishment, Yoshio Manaka served as president. In 1983, the organization took the form of the current Japan Eastern Medical Association. The purpose of the Association is to provide opportunities to present the results of general academic research that includes the integration of the three following elements:

traditional Chinese medicine, Japanese Kampo, and modern Western medicine. The Association holds an annual academic conference providing an appropriate venue for the members` research.

The Association is characterized by active support in scholarly training and professional guidance especially for the activities of The Promotion Foundation of Oriental Medicine. The Promotion Foundation of Oriental Medicine defines its mission as conveying information and educating physicians and healthcare personnel education on oriental medicine. The Association publishes the journal of "Eastern Medicine."

7. Japan Conference of Clinical Acupuncture Moxibustion

"Nihon Shin-Kyu Hiden (cutaneous electrical potential) Study Group" has developed into the present Japan Conference of Clinical Acupuncture and Moxibustion. The regulation of the Conference maintains "the purpose of contributing to the improvement in the quality of acupuncturists and moxibustionists engaged in clinical practice and to the advancement and dissemination of acupuncture and moxibustion treatments through studying clinical cases, conducting clinical research, and exchanging information". The Japan Conference was initially formed as a study group of Nihon Shin-Kyu Hiden in 1960, and changed its name to Nihon Shin-Kyu Hiden Gakkai in 1975 and then became the present Japan Conference of Clinical Acupuncture and Moxibustion in 1983.

The Conference issues the tri-annual journal of "Clinical Acupuncture and Moxibustion" which includes seminar information and articles of case reports.

8. The Japan Society of Acupuncture & Moxibustion History

This society is engaged in research on classical writings by means of philology. The Society was inaugurated in 1993 as the Japan Society of Acupuncture & Moxibustion Clinical Philology and renamed as The Japan Society of Acupuncture & Moxibustion History in 2004. Research subjects are drawn from classical writings of oriental medicine in China and Japan, especially those of acupuncture and moxibustion. In regard to the Yellow Emperor's Classic of Internal Medicine (Huangdi Neijing), and the Ling Shu, new studies and discussions are conducted every year. The Society issues the annual journal of "The Japan Society of Acupuncture & Moxibustion History.

9. Oriental Medicine and the Pain Clinic

Oriental Medicine and the Pain Clinic were established by Masayoshi Hyodo of Osaka Medical College. Initially this society was a study group in the Medicine of Acupuncture & Moxibustion of the Department of Anesthesiology at Osaka Medical College, but is now conducting activities as an academic body. Hyodo noticed the pain relieving efficacy of needles as an anesthesiologist and made various investigations concerning the action. The activities of the organization used to focus essentially on headaches. Currently, however, its main activities are research on the relationship between Western medicine, oriental medicine and on mutual integrative research.

The society issues the annual journal of "Oriental Medicine and the Pain Clinic".

10. The Japan Society for Oriental Medicine (members: 8600)

This society represents Japanese Kampo medicine and is the most authoritative society concerning herbology in Japan. Established to broaden communication among practitioners and to foster cooperation among researchers, its primary goal was to advance Kampo medicine in 1950 by medical doctors, pharmacologists, and acupuncturists who were practicing this medicine. Its sphere of activity includes Kampo Medicine, acupuncture and most areas related to Kampo Medicine.

The official journal, "Kampo Medicine" features dissertations, theses, case reports, records of lectures about Kampo Medicine and articles on acupuncture; and is published 4 times a year.

Journals of Japanese Acupuncture and Moxibustion

Noboru Mitsuhata
Tokyo Eisei Gakuen College

Journal of the Japan Society of Acupuncture and Moxibustion

Published five times a year for members of The Japan Society of Acupuncture and Moxibustion. Deals with basic and clinical research results pertaining to evidence for the efficacy of acupuncture and moxibustion as well as case reports. Moreover, as an online journal it offers the journal's content in English. http://www.jsam.jp/

Oriental Acupuncture and Moxibustion Medicine Meridian Therapy

Published four times a year for members of Society for Traditional Japanese Medicine. Contents for beginners dealing with case reports about meridian therapy or ways to study pulse diagnosis as well as methods to study the classics. The text is not available in English.

Traditional Acupuncture and Moxibustion Journal of the Japan Society

Published twice a year for members of Japan Traditional Acupuncture & Moxibustion Society. Publishes research into medical classics, clinical research etc. and contents based on the topics of academic conferences held by this society. The text is not available in English.

Journal of the Japan Autonomic Nervous System Society

Published four times a year for members of Japanese Society of Ryodoraku Medicine. Publishes research into physiologic vital reactions elicited by Ryodoraku therapy and case reports. http://www.jsrm.gr.jo/

Journal of the Society of Physical Therapy of the Japan Eastern Medical Association

The contents of the conferences hosted by Japan Society of Oriental Medical Physical Therapy is published in this magazine once annually for its members. The text is not available in English.

Oriental Medicine

Published four times a year for members of Japan Eastern Medical Association. Publishes basic research into acupuncture and moxibustion and Kampo as well as case reports. The text is not available in English.

Clinical Acupuncture and Moxibustion

Published three times a year. Publishes the contents of the seminars held by Japan Conference of Clinical Acupuncture Moxibustion and case reports based on modern medical views. The text is not available in English.

Collection of academic papers of the Japan Society of Acupuncture & Moxibustion History

Published once a year for members of the Japan Society of Acupuncture & Moxibustion History. Publishes the texts prepared for lectures held at academic conferences of this society. The text is not available in English.

Oriental Medicine and the Pain Clinic

Publishes mainly Kampo medicine, acupuncture and moxibustion for painful affection, and research and case reports of nerve block injection. The text is not available in English.

http://www.osaka-med.ac.jp/~ane013/TOPEINDEX-J.html

Kampo Medicine

Official journal of the Japanese Society for Oriental Medicine. The most authoritative journal in this field. Includes dissertations, theses, case reports, record of lectures about Kampo Medicine, and some articles on acupuncture.

Articles written in Japanese with attached English summary. Started in 1949, published 4 times a year.

Ido no Nippon

Monthly magazine published by "Ido no Nippon Sha", a publisher that has the longest history in Japan for therapeutic professionals of acupuncture, moxibustion, anma, massage and shiatsu. This magagine carries job information as well as case reports and research reports. No English introductory explanations are available.

Shinkyu OSAKA

Journal published quarterly by Morinomiya University of Medical Sciences, a training school in Osaka for acupuncture and moxibustion professionals. This magazine carries articles of round-table talks and case reports.

No English introductory explanations are available.

Chui Rinsho

Journal published quarterly to introduce current TCM in China. The magazine carries articles written by authorities in China, theoretical research by Japanese, case reports, explanation of Kampo prescriptions, and latest news from China (for example, the therapy of SARS).

No English introductory explanations are available.

Keiraku Shin Ryo

Monthly magazine published by Toyo Hari Medical Association for the members of this association. The magazine carries articles covering introduction of lectures relating to classics of such as "Nangyo" and case reports. No English introductory explanations are available.

Kikan Naikei

Journal published quarterly by Nihon Naikei Igaku Kai. The articles cover classic research mainly of "Kotei Naikei". No English introductory explanations are available.

Henseki

Published by Classic Acupuncture and Moxibustion Research Group (Koten Shinkyu Kenkyukai) for the members. Articles cover contents of research and trainings held by this group. No English introductory explanations are available.

Toyo Ryoho Gakko Kyokai Academic Journal

Articles cover the contents of research papers presented at the academic conference of Japan College Association of Oriental Medicine. Contents of research were prepared by students before obtaining license, but cover a wide range of basic research to classics. No English introductory explanations are available.

Bulletin of Meiji University of Integrative Medicine

Yearly bulletin published by Meiji University of Integrative Medicine. Articles cover the contents of research performed in the university. It has been made to an online journal since 2009. English introductory explanations are available.

Bulletin of Kansan University of Health Sciences

Yearly bulletin published by Kansai University of Health Sciences. Articles cover the contents of research performed in the university. The bulletins were previously published by Kansai Shinkyu Daigaku (University) and Kansai College of Oriental Medicine.

Oriental Medical Journal of Acupuncture & Moxibustion

This bimonthly journal was first published in February 2008 by Midori Shobo. The journal covers not just case reports but also acupuncture and moxibustion techniques and various trends in the field. Contents introduction in English is not included.

Weekly "Ahaki World"

"Ahaki World" is an e-mail newsletter issued weekly by Human World. This is the first e-mail newsletter offered in the acupuncture and moxibustion world. Free registration is accepted. The newsletter introduces the clinical practice, the insurance coverage, and a series of acupuncture and moxibustion related articles of such as in-home care, as well as news on the industry.

http://www.human-world.co.jp/

Medical Insurance in Japan

Naoya Ono
L. Ac., M. Med. Sc., Ph.D. Candidate, Department of Health Informatics, Division of Health Administration,
School of Public Health, Graduate School of Medicine, Kyoto University

Foreword

The practice of Kampo medicine in Japan is sustained by the country's medical system. The reason that Kampo medicine is so widely used for medical purposes is due to its acceptance by medical insurance. The medical system in Japan is not the same as that in other countries. With a unique Japanese framework, and operated through the political support of the Health, Labor and Welfare Ministry; the Japanese medical system has sustained the health of the Japanese people. When considering the role played by Kampo medicine in Japanese healthcare, it is extremely important to look at how Kampo medicine is managed within the medical system.

As noted in other parts of this journal, the reasons that physicians educated in Western medicine can practice Kampo medicine are (1) drugs used in Kampo medicine can be dispensed easily, and (2) the existence of 148 types of these drugs which have a high level of compliance in their use. After learning a certain degree of traditional medical concepts, physicians introduce these drugs into their own clinical practice. Utilizing these drugs, and the insurance system that sustains their operation, they perform clinical tests and independent research, including research based on the accumulation of case studies and comparative studies.

Meanwhile, there are medical institutions, though not many, which provide medical treatment based on Kampo medicine, at their own expense. In particular, there are many places that use herbal medicine as therapeutic drugs. While more than 160 types of herbal medicine are accepted by healthcare insurance, it is financially difficult for herbal medicine to be used with health insurance treatment. This is due to such problems as their excessively low cost, the fact that they require a great deal of manpower and shelf space, and the difficulty in securing pharmacists who posses a high degree of knowledge in this area. While providing medical treatment at one's own expense is much simpler than providing health insurance treatment, it is another form of Kampo medicine practiced in Japan.

This article, written by Ono, explains the medical system in Japan. The overall theme is much larger than Kampo medicine, and has very little to do with clinical Kampo medicine. Nevertheless, we have included it to let readers know that medical treatment is based on this system. This article also contains information that will be useful to people who intend to study about the Japanese medical system.

Editorial Staff

1. History of Development of the Medical System

(1) Medical Security System and Social Security

Broadly defined, Social Security in Japan includes protection and pensions for victims of war. Narrowly defined, it means public assistance (livelihood assistance), social welfare (for the physically disabled, mentally disabled, elderly, children, single mothers, etc.), social insurance (medical insurance, annuity insurance, nursing insurance, unemployment insurance, industrial injury insurance, etc.) and public health (tuberculosis, infectious disease, drug-related measures, waterworks and drainage, waste management, etc.). Other than exceptional cases such as people who receive livelihood assistance based on low income (0.8% of the total Japanese population), all Japanese citizens currently have a form of medical insurance, which is one of the medical services guaranteed to all Japanese citizens.

(2) History of the Medical Security System

① Structure of Universal Health Insurance System

The history of medical insurance in Japan dates back to the establishment of the Health Insurance Law in 1922. This law became institutionalized for employees at factories and elsewhere, amid the rise of the labor movement during the development period of capitalism at the beginning of the 20th century. Subsequently, in 1938, the system of national health insurance was established for individual proprietors and farmers. As a result, in 1945 approximately 60% of the Japanese population had medical insurance.

However, with the chaos of World War II, it became impossible to provide sufficient healthcare to people, and the system was in danger of collapsing. With the economic and social reconstruction after the war, the construction of a genuine system of social security began. And the system of medical insurance, which had been on the brink of collapse, was also reconstructed.

The national treasury assumed the burden of government-managed health insurance in 1954. In 1963 a 3-year period of health insurance provision which had been in place thus far was abolished, the time limitation on insurance during recuperation was eliminated, and plans to improve health insurance were discussed.

Meanwhile, based on revisions in 1954, the management of national health insurance was revamped from the regular Blue Cross system conducted by individual cities, towns and villages, to public management by municipalities. In addition, it became compulsive for municipalities managing national medical insurance to make this insurance available to residents. In order to stabilize the finances of national health insurance, based on revisions in 1955, a system of national treasury assistance equivalent to 20% of recuperation expenses became law.

Under such conditions, the National Health Insurance Law was completely revised in 1958, and a yearly plan was decided for the realization of universal health insurance over a period of four years. In 1961, a system of national health insurance was put into effect in all municipalities for individual proprietors and farmers who did not have employee's health insurance. The result was universal health insurance in Japan, based on employee's health insurance and national health insurance. After that, it became compulsive for all Japanese citizens to have either employee's health insurance or national health insurance – both of which are forms of social insurance.

② Establishment of Healthcare System for the Retired

It is a qualification requirement that people receiving employee's health insurance in Japan be employed at a place of business enumerated in the law. After an employee retires because he or she has reached retirement age or for another reason, that employee is no longer employed at the place of business, and as a general rule will no longer receive employee's health insurance – but instead will receive national health insurance.

The level of health insurance for such aged retirees drops at a time when their need for healthcare is on the rise, resulting in the problem whereby they must depend on the national treasury and national health insurance premiums to pay their healthcare expenses. For this reason, a medical care system for the retired was established in 1984 to ensure fairness in the provision of healthcare and the burden of its costs throughout the lifetime of people who receive employee's health insurance, and to correct irrationality between medical care systems. While the rate increases at which healthcare is provided to aged retirees who formerly had employee's health insurance but who have since begun receiving national health insurance, this system pays for that healthcare by the insurance premiums from retirees who had been receiving employee's health insurance and by contributions from employee's insurance.

③ Establishment of Health Insurance System for the Elderly

As mentioned above, due to the relationship between employee's insurance and National Health Insurance, the percentage of elderly people who have National Health Insurance increases as society ages. Furthermore, as the structure of employment in Japanese society changes from primary industry to secondary industry, and from secondary industry to tertiary industry, the younger segment of society switches to employee's insurance rather than National Health Insurance. As a result, the age composition of insurants with National Health Insurance has gradually risen. In 1998, the average age of people with an insurance policy was 51.3 years for National Health Insurance through municipalities, 36.9 years for government-managed health insurance, and 33.6 years for union-managed health insurance. The percentage breakdown for elderly people with health insurance is 25.3% for National Health Insurance through municipalities, 5.7% for government-managed health insurance and 2.8% union-managed for health insurance.

If the situation by which the age composition of insurants is made light of is projected into insurance area of finance, if there were no system of adjustment between types of coverage, the higher the age composition in a system of insurance the more difficult it becomes to finance that system. And overall the insurance premium revenue obtained from elderly people is not as large as that obtained from the younger segment. Meanwhile, as far as expenses are concerned, since the per-person healthcare costs for the elderly is five times that of the younger segment, as the percentage of elderly people increases so increase healthcare costs. (As a result, in 1999, healthcare costs for the elderly accounted for 38%, or 11.8 trillion yen, of the total of 30.9 trillion yen in national healthcare costs. What's more, the percentage of healthcare costs for the elderly increases each year.)

Also, in 1973, based on revisions in the Elderly Welfare Law, a system was established whereby so-called free healthcare costs for the elderly (the amount for which the individual elderly person is responsible under healthcare insurance), are paid for at public expense. With the subsequent rapid increase

in healthcare costs for the elderly, there has been more pressure for the financing of National Health Insurance.

For this reason, the difference in age composition among insurers that comes with the aging of society has been corrected – and from the viewpoint of spreading the burden of healthcare costs for the elderly fairly among the Japanese people a health service system for the elderly was established in 1983.

Also, health and medical treatment measures provide for the treatment of disease – and based on the knowledge that comprehensive measures for the health of the elderly have been lacking, not only does the health service system for the elderly deal with problems of finance, but it also has to do with comprehensive insurance for the elderly, which includes measures for preventing and detecting disease early on, during the prime of life, so that the increasing number of elderly people can live healthy lives.

④ Establishment of a System of Nursing Insurance

As society ages there has been a sudden increase in the number of people who require nurses, including those who are bedridden and those who suffer from dementia. Meanwhile, changes in social conditions, including the growing number of nuclear families and the social advancement of women, have witnessed a decrease in the function of nursing provided by families.

However, since nursing service for the elderly was formerly provided under two different types of coverage – welfare coverage for the elderly and insurance coverage for the elderly – there was a disproportion in the burden of cost and usage procedure, so that the situation was inadequate for comprehensive nursing measures. For this reason, so that elderly people who require nursing or care will be able to lead meaningful lives in accordance with their own ability, a system of nursing insurance coverage was established in April 2004, to provide comprehensive service, including insurance, healthcare and welfare services, based on user selection.

⑤ Maintenance of the System for Healthcare Provision

The modern healthcare system in Japan began in 1874 with the establishment of the medical system. The National Healthcare Law was subsequently established in 1942, and with the difference between hospitals and clinics being clarified, a system for permitting physicians to establish clinics was put into effect.

After the war, in 1948, the Healthcare Law, on which the system for healthcare provision in Japan is based, was established. Also, with the Doctor and Dental Practitioner Law being gradually put into place, there has been a quantitative expansion of healthcare provision for acute medical treatment.

Subsequently, with changes in the structure of disease and the aging of society, there has been a review of the system of healthcare provision.

In 1985, a healthcare planning system by prefecture was introduced for the purposes of revising the system of healthcare provision locally as part of the first round of revisions of the Healthcare Law, and obtaining the cooperation of healthcare facilities. Also, an adequate number of hospital beds have been realized.

In 1992, the Healthcare Law was revised a second time for the purposes of (1) realizing conceptual regulations for providing healthcare, and (2) the systemizing the function of medical facilities with technologically advanced hospitals and extended care units having been systematized.

Furthermore, when the Healthcare Law was revised for a third time in 1997, (1) informed consent regulations were realized, (2) extended care units were expanded into clinics, (3) community health support hospitals were systematized, and (4) the system of healthcare planning was reviewed.

When the Healthcare Law was revised for a third time in 2000, (1) a distinction was made between beds for general patients and beds used for the purpose of recuperation, and the provision of healthcare was promoted to suit the condition of the individual patient; (2) there was an easing of required regulations; (3) there was a securing of the observance of hospital arrangement standards; and (4) measures were adopted for easing advertising regulations.

2. Structure of Disease

The structure of disease in Japan has changed from acute infectious disease to chronic lifestyle disease, based on such things as improvement in nourishment, higher hygienic standards, advances in medicine and medical technology, and changes in health awareness. In view of the annual transition in the percentage of cases of hospitalized treatment, there has been a remarkable decrease in infectious and parasitical diseases, with a drastic increase in disease of circulatory organ systems, including cerebrovascular trouble, as well as neoplasm such as cancer. Also, death ratio according to cause of death indicates a sudden decrease in the death rate from

tuberculosis, and an increase in the death rate from cerebrovascular disease and malignant growths.

3. Healthcare Costs

(1) Total Healthcare Costs and Their Breakdown

National healthcare costs in Japan are on an upward trend, even under conditions of slumping economy. Healthcare costs reached 30,933,700 million yen in 1999, or 244,200 yen per person.

This notion of national healthcare costs represents the cost for treating ailments among the Japanese population at medical facilities over a 1-year period. These costs are calculated based on expenditures for public healthcare insurance. Included in national healthcare costs are medical treatment fees, the responsibility of patients to pay for a portion of the costs, the cost of providing medicine, nursing costs, and transportation costs. However, expenses for normal birth, expenses required for medical checkups for the maintenance and promotion of health, expenses for amenity bed, and a portion of the construction costs for public medical institutions are not included. Also, as a general rule, since healthcare costs are free of consumption tax, there are no taxes for their expense. In Japan, the details of medical practice, the administering of medication and medical examinations appear in statements submitted by medical institutions as the foundation of a progress payment system based on a nationally standardized medical treatment fee bill used by both hospitals and clinics. And so, by totaling up the amount paid based on medical fee statements, the particulars and monetary amounts of medical treatment performed at medical facilities are understood on the national level. And based on such social insurance statistics, national healthcare costs are determined with the addition of data other than social insurance, including healthcare costs paid for at public expense.

Including the cost of purchasing medicine, public health expenses (including medical checkups and vaccinations), managerial and operational costs, and research and development costs, this corresponds to the total healthcare costs of the OECD. Total healthcare costs in Japan (1998) are 7.4% of the GDP, which ranks number 18 among nations belonging to the OECD. However, in terms of monetary amount, this represents 283,558 million dollars, second only to the 1,125,555 million dollars of the United States. The per-capita healthcare cost is 2,242 dollars for Japan (ninth), with Germany at 2,697 dollars (fifth), France at 2,324 dollars (eighth), and the Netherlands at 2,172 dollars (tenth) – which means that there is not such a big difference in per-capita healthcare cost among these nations.

Looking at the breakdown of healthcare costs in Japan in terms of national healthcare costs (fiscal 1999) by consultation type, general consultation costs involving admittance to the hospital account for 36.8%, dental clinics account for 8.2%, dispensing pharmacies account for 7.8%, costs for meals and medical preparations when patients are admitted to the hospital account for 3.5%, health service facilities for the recuperation of the elderly account for 2.5%, and home nursing and medical costs for the elderly account for 0.3%.

Breaking things down by category of expense at medical institutions (fiscal 1998), personnel costs involving healthcare attendants account for 50.9%, the cost of medical supplies accounts for 19.4%, the cost of medical materials accounts for 6.1%, and consignment expenses account for 5.2%. By fiscal resources (fiscal 1999), public expenses account for 32.9%, the cost of insurance premiums accounts for 52.5%, with other costs accounting for 14.7%.

(2) Healthcare Costs for the Elderly

Healthcare costs for people of the age of 70 and older (including bedridden people between the ages of 65 and 70) (hereinafter referred to as "healthcare costs for the elderly") reached 11,804 billion yen in fiscal 1999. The trend for increasing healthcare costs for the elderly is remarkable, with these costs accounting for 38% of total national healthcare costs.

Breaking down national healthcare costs by main causes for this increase, increase in population accounted for 0.2% of the 3.7% increase in fiscal 1999, the aging population (change in the population composition by age level) accounted for 1.6%, with other increases (change in the structure of disease, advances in healthcare, etc.) accounting for 1.9% of the total increase – which means that the effect of aging is great. Also, while the total cost of national healthcare increased by 3.7%, the increase in healthcare costs for young people was 1.0%, with the increase in healthcare costs for the elderly at 8.4%.

The reasons that the cost of healthcare for the elderly causes healthcare costs to increase are because of the increase in the population of elderly people, and because of the fact that per-capita healthcare costs for the elderly are five times greater than the costs of healthcare for young people. When comparing the difference between healthcare costs for the young and old in Japan to that in American and European countries based on data from the OECD, the difference in Germany is 2.68 times (1994) and the difference in France is 3.00 times (1993), so that the difference between the young and old is generally between 2 and 4 times – which means that this difference is higher in

Japan than in Western countries. In Japan consideration must be given to the fact that the costs of nursing have traditionally been calculated as healthcare costs, due to so-called "social hospitalization," whereby people are hospitalized at medical institutions due to such factors as outdated nursing services provided to the elderly, although medical treatment might not be necessary.

The cause of high healthcare costs for the elderly has to do with each of the three elements of healthcare cost per capita. Among the three elements, the "consultation rate" is an index indicating how often a person with healthcare insurance is seen at a medical institution per month. In this case, the number of instances of consultation is the same as the number of bills for medical treatment issued by medical institutions, with one bill per patient issued by each medical institution. The consultation rate for the elderly is 6.2 times that of young people for patients who are hospitalized, and 2.6 times that of young people for outpatients.

The next element, "number of days per instance," is the average of the actual number of days of consultation per month as indicated in the consultation fee statements from medical institutions. The number of days per instance for elderly people is 1.3 times greater than that number for young people who are hospitalized, and 1.4 times greater than that number for young people who are outpatients.

The "per-day consultation cost," which is the consultation cost (billed to the medical insurance each month) divided by the actual number of days of diagnosis and treatment, means the unit price of healthcare service. This per-day consultation cost for the elderly is 0.9 times greater than that for young people who are hospitalized, which means that it is less for the elderly than for the young. The per-day consultation cost for outpatients is 1.2 times greater for the elderly than it is for young people.

As indicated above, the reason that the cost of healthcare for the elderly is higher than it is for young people is due to the fact that the consultation rate for the elderly is much higher than it is for young people, both for patients who are hospitalized and for outpatients. Amid this situation it is surmised that elderly people, who have numerous adult lifestyle diseases such as diabetes and high blood pressure, frequently consult physicians at medical institutions. Furthermore, with the free access in the Japanese healthcare system which enables patients to choose the medical institution where he or she will consult a physician, it is believed that other reasons include the fact that there is a smaller percentage of elderly people who take the responsibility of healthcare costs upon themselves, and the fact that the excessive number of hospital beds and outdated nursing services promote so-called social hospitalization.

Of course, the average life expectancy in Japan is 77 years for men and 84 years for women, both of which are the highest in the world. With the average healthy life for men and women in Japan at 74.5 years, the WHO, both in quality and equality, ranks the Japanese insurance and healthcare systems number one in the world. However, with the further advance of aging in the future, it is estimated that national healthcare costs will reach 81 trillion yen in 2025, 45 trillion yen, or 56%, of which will be accounted for by healthcare costs for the elderly. These national healthcare costs account for 12.5% of the national income, for an increase of approximately 1.7 times that of the 7.5% figure for 2000.

Before there is a sudden rise of healthcare costs for the elderly, it is important for Japan to establish measures for the prevention of disease and general healthcare, keeping in mind the matter of lifestyle disease. In addition, Japan faces the urgent task of reforming the system of healthcare for the elderly.

4. System for Providing Healthcare

(1) Amnesty for the System of Providing Healthcare in Japan

The system for providing healthcare in Japan has the following nine features. (1) There is a system in place by which physicians and dentists are free to establish clinics if they notify the prefectural governor of that establishment. (2) Hospital doctors are working doctors. (3) There are no restrictions on consultation fees. (4) There is a high percentage (approximately 80% of the number of facilities) of private hospitals (medical corporations); there is a high percentage of small and mid-sized hospitals with 200 beds or less (approximately 70% of the number of facilities). (5) Some clinics have beds, and clinics are equipped with medical equipment and facilities. (6) Hospitals take outpatients, and the consultation rate for those patients is high. (7) It is prohibited for hospitals or clinics to operate for profit. (8) People are free to choose the medical institution where they will consult a physician. (9) On the average, patients in Japan remain hospitalized for more days than patients in many of the other countries belonging to the OECD; Japanese hospitals have more beds per patient than many of the other countries belonging to the OECD; Japanese hospitals have a fewer number of physicians and nurses on staff per bed than many of the other countries belonging to the OECD.

(2) Medical Facilities

Broadly speaking, medical facilities can be divided into three categories: hospitals, clinics and maternity clinics.

Hospitals are medical facilities that have at least twenty beds, and must receive permission from the prefectural governor to be established.

Some hospitals, known as "technologically advanced hospitals," provide advanced healthcare, and based on an application submitted by the individual hospital are individually approved by the Ministry of Health, Labor and Welfare to perform development, evaluation and training in advanced healthcare. Specifically speaking, these include university hospitals and national cancer centers, with 82 such facilities having been approved as of April 2002.

Also, from the viewpoint that family doctors and dentists should be supported in order to ensure healthcare in local regions, there exists a system of "hospitals supporting local healthcare," approved by the prefectural governor. As a condition for being approved, hospitals supporting local healthcare must provide healthcare to referred patients, provide support to local healthcare facilities by such means as the joint-utilization of facilities and equipment and making facilities and equipment openly available, provide emergency medical care, and train healthcare attendants in the local region. As of April 2002, there were 35 facilities that had been so approved.

Clinics either are medical facilities that have no beds at all or have hospitalization facilities of 19 beds or less. If a physician or a dentist opens a clinic, he or she must notify the prefectural governor (the mayor of the city or special district where the public health center is set up). If a person other than a physician or a dentist opens the clinic, he or she must receive permission from the prefectural governor (the mayor of the city or special district where the public health center is set up).

Maternity clinics are medical facilities that either have no beds at all or have hospitalization facilities of 9 beds or less, and where midwives work. If a midwife opens a clinic, she must notify the prefectural governor (the mayor of the city or special district where the public health center is set up). If a person other than a midwife opens a clinic, that person must receive permission from the prefectural governor (the mayor of the city or special district where the public health center is set up). The prefectural governor must grant permission to a facility that so applies if its structural equipment and stationed personnel conform to a certain standard. However, the prefectural governor might not grant permission for the establishment of such a facility if the person applying for permission intends to operate that facility for profit.

(3) Healthcare Attendants

The number of doctors and dentists in Japan is on an upward trend each year, and as of 2000 there were 255,792 doctors and 90,857 dentists. While this is less per capita than those numbers for other advanced nations, Japan achieved the target of having "150 doctors and 50 dentists per 100,000 people by 1985," which was set in 1970. In order to ease the excessive number of personnel in the future, the university admission capacity has been decreased.

And in efforts to improve quality and raise the level of clinical ability, clinical training for graduates was systemized and enhanced.

The number of nursing personnel per capita in Japan is on the same level as that in other advanced nations, but the number of nurses per hospital bed remains low. According to the forecast regarding recipients of nursing services in December 2000, demand at the end of 2001 will exceed supply by approximately 35,000 people due to such factors as the realization of a more cordial system of nursing, improvements in working conditions, and the carrying into effect of a system of nursing insurance coverage. However, it is forecasted that supply and demand will balance out at about 1,300,000 people by 2005.

There are two types of nurses. One is the so-called associate nurse, who receives a license after passing a test offered by the prefectural governor. The other is the regular nurse, who receives a license after passing a test offered by the minister of health, labor and welfare. The former changing to the latter and the improvement of quality have become issues.

(4) Healthcare Corporations

According to the Healthcare Law, a hospital, or a clinic where doctors and/or dentists work, or a corporation or foundation that intends to establish a health service facility for the elderly may make that facility into a healthcare corporation. The approval of the prefectural governor (or the minister of health labor and welfare, for two or more businesses) is required to establish a healthcare corporation. As conditions for approval to establish a hospital, the establisher must have a capital adequacy ratio of 20% or more, and there must be three directors, one inspector, and as a general rule the chief director must be a doctor or a dentist.

A healthcare corporation is prohibited from having a dividend of surplus, and any contingent business is

limited to being within the scope of the training of healthcare practitioners. What's more, as a general rule business for profit is prohibited.

Healthcare corporations are subject to the following taxes: corporation tax (the same tax rate as a joint stock company) and enterprise tax (anything having to do with social health insurance treatment rewards is tax-free, and tax rate reductions apply to anything having to do with diagnosis and treatment chosen at the discretion of the patient).

Included among healthcare corporations are "specified healthcare corporations" which, based on the Special Taxations Measures Law, are approved by the minister of finance as a corporation which meets certain conditions, including operating a business which has a high level of public interest, and/or which is publicly managed. Also included among healthcare corporations are "special healthcare corporations" which, based on the Special Taxations Measures Law, are approved by the prefectural governor for meeting the same conditions. Special healthcare corporations receive corporation tax rate reductions. And special healthcare corporations are allowed to operate certain types of business for profit.

(5) Evaluation of Medical Practice

Against a backdrop of increased popular awareness for healthcare and rising concern among affiliates for the quality of healthcare, the Project for the Evaluation of Hospitals by a Third Party was carried into effect in 1997.

Through this evaluation project, the quality of diagnosis and treatment, nursing, and other care provided by a medical institution, patient satisfaction and the situation of management are evaluated by the Japan Council for Quality Health Care, as a third party from a neutral standpoint, based on a request from the hospital. If the results of the evaluation are of a certain standard or above, a certificate of approval is issued to the hospital. Although hospitals are not required to undergo this evaluation, 725 hospitals had received a certificate of approval as of August 2002.
From the viewpoint of improving the quality of healthcare, progress can be expected from the evaluation of medical practice by a third party. But in order to promote this trend hospitals are now allowed to publicize the results of their healthcare evaluation. And through revisions of healthcare fees in 2002, the inclusion of palliative care has become a condition for approval by the Japan Council for Quality Health Care and for ISO certification.

5. Healthcare Insurance Coverage

(1) Classification of Coverage

① Employee's Insurance

A) Beneficiaries and Insurers

Depending on the beneficiaries to whom the coverage applies, types of healthcare insurance are roughly divided into employee's insurance (occupation insurance) for employees and their families, and National Health Insurance (regional insurance) for people engaged in the agriculture and fishing industries and individual proprietors.

And depending on the difference in beneficiaries, employee's insurance is divided into health insurance (union-managed health insurance and government-managed health insurance), seaman's insurance and insurance for the different kinds of mutual aid unions. Health insurance coverage for general employees is the biggest, accounting for approximately 55% of all subscribers. Under the system of health insurance coverage, offices of the national government, corporate offices (including offices), and private offices engaged in certain types of business which regularly employ five or more people are offices of compulsive application, and all employees who work at those offices are compulsion application insurants. Nearly all types of businesses are deemed businesses to which this insurance applies. Classifying health insurance coverage from the point of view of insurers, this insurance can be divided into government-managed health insurance that is managed directly by the government, and union-managed health insurance that is managed by a health insurance union established individually or jointly by the owner or owners of the business.

Union-managed Health Insurance

Health insurance unions are public corporations not affiliated with the government, and are established individually or jointly by the owner or owners of businesses which employee 300 people or more per one or two or more places of business. (Actually an individual union has 700 or more people, while an integrate union has 3,000 or more people – in order to secure its ability to diffuse risk.) Health insurance unions are made up of business owners, employees of places of businesses who have employee's insurance, and people who have arbitrary insurance. Health insurance unions manage the union members who are insured and the heath insurance itself. Since a certain number of subscribers are needed to establish a health insurance union because of the necessity to diffuse risk, union-managed insurance is mainly for people who are insured through large corporations. The number of health insurance unions at the end of March 2001 was 1,756.

Government-managed Health Insurance

The government manages the health insurance of people with insurance that is not managed by a union. Government-managed health insurance is mainly for employees of small and medium-sized businesses who have insurance.

Other Types of Employee's Insurance

The mutual aid union is a system of healthcare insurance coverage that was established for special occupations to serve people with seaman's insurance and civil servants.

People insured under the system of seaman's insurance include captains and crewmembers of vessels which meet certain requirements. This type of insurance, which is managed by the government, accounts for 0.2% of all subscribers (as of the end of March 2000).

Mutual aid unions provide coverage for workers in specific occupations, including civil servants. This coverage is divided according to specific occupation. Currently there are three types of mutual aid unions. These are mutual aid unions for employees of the national government, mutual aid unions for employees of local governments, and mutual aid unions for personnel of private schools. Mutual aid unions account for 7.9% of all subscribers (as of the end of March 2000).

B) Benefits

Details of Benefits

Healthcare insurance is a system of coverage against financial loss, including that resulting from illness, injury, death and birth, and is provided for the purpose of treating ailments. The scope of these insurance benefits is stipulated to include medical examinations, medicine and materials used in medical treatment, medical treatment such as surgery and other procedures, the management of the recuperation of patients at home as well as nursing and other forms of care required for that recuperation, and admittance to a hospital or clinic as well as nursing and other forms of care required for recuperation. There is no time limit involved. Employee's insurance is provided not only to the employee who has the insurance, but also to a specified range of nonworking dependents.

Benefits are broadly divided into healthcare benefits and cash benefits. Healthcare benefits are the healthcare services provided through healthcare insurance. In Japan a person with insurance receives healthcare services at a medical institution designated by the Ministry of Health, Labor and Welfare as an insurance medical institution. As a general rule, that insurant only needs to pay a co-payment, while the rest of the healthcare cost is paid by the insurer to the medical institution as a benefit in kind. When an insurant cannot receive a benefit in kind – for example, in a circumstance when he or she has had no choice but to receive medical treatment overseas – the insurant pays the entire medical bill and is later reimbursed for that amount by the insurer. Cash benefits include cash benefits for sickness and maternity benefit money as compensation for taking off from work, transportation expenses as a benefit for compensation of actual expenses, lump-sum payments for childbirth and childcare, and funeral costs. Childbirth expenses are not only paid as healthcare benefits, but also as cash benefits in lump-sum payments for childbirth and childcare.

Benefit Rate

The benefit rate for healthcare benefits is 80% for the insurant, 80% if a family member is hospitalized, and 70% for outpatient treatment. However, after April 2003, all of these will be 70%, with 30% as a co-payment. (The benefit rate for infants under three years old is 80%.)

For union-managed health insurance, in order to reduce the co-payment of insurants, authorization has been granted by the Ministry of Health, Labor and Welfare to arbitrarily apply fringe benefits beyond the benefits stipulated by law, according to the financial situation of each individual union.

Responsibility for Pharmaceutical Expenses

If a patient who regularly goes to a medical institution receives medication, he or she pays a portion of that cost as a co-payment, based on the type and quantity of the medication. However, after April 2003 there will be no co-payment.

Meals During Hospitalization

Regarding the cost of meals during hospitalization, for all forms of coverage the patient pays a standard amount determined by the cost of food for the average household (780 yen per day; and for people with low income 650 yen per day for the first three months of hospitalization, and 500 yen per day after four months), and the rest is paid through the healthcare insurance as meal recuperation expenses during hospitalization.

High Medical and Recuperation Cost Coverage

Furthermore, in order to ease the effect of high healthcare costs on household finances, all types of insurance coverage have incorporated a system whereby if a patient's co-payment exceeds a certain amount, he or she is afterwards reimbursed for the excessive amount through health insurance coverage. The general limit on co-payment is 72,300 yen +

(healthcare costs – 361,500 yen) x 1%. However, the amount is determined by a person's income.
Based on the reimbursement afterwards for high medical and recuperations cost, the effective benefit rate is 80.2% for union-managed insurance, and 78.8% for government-managed insurance.

Specific Recuperation Cost

It is prohibited for healthcare service which exceeds the level provided for by the medical treatment fee point table to be claimed by being added to the usual co-payment, or to combine insured diagnosis and treatment with diagnosis and treatment outside the realm of insurance coverage and collect from the patient the cost of the diagnosis and treatment outside the realm of insurance coverage (principle of the prohibition of combined diagnosis and treatment). In other words, for diagnosis and treatment, or for the administering of medicine, which are not covered by healthcare insurance benefits – that is to say, those which are not listed in the medical treatment fee point table or among the standard prices of medicine – all of the healthcare treatment regarding the patient in question shifts from the object of the insurance claim and becomes outside the realm of insurance coverage, and the patient is responsible for the entire amount. However, a system of specified healthcare coverage has been adopted to address the emergence of new technology and the diversification of patients' needs, against a backdrop of remarkable advances in medical technology in recent years. Among the costs for lifestyle service and having a pleasant environment (amenities) (for example, special costs for private rooms, and services including special dental materials such as gold teeth), and the healthcare costs accompanying advancements in technology and research and development, the costs for normal service and healthcare are paid for through healthcare insurance as specific recuperation costs, with other costs being outside the realm of insurance coverage.

C) Fiscal Resources

Insurance premiums and the national treasury cover health insurance business costs.

Insurance Premiums

Insurance premiums are calculated by multiplying the premium rate by the standard monthly salary (determined regularly once every year) paid to an employee, and are collected monthly. Standard monthly salaries are classified from Grade 1 (98,000 yen) to Grade 39 (980,000), and each insurant falls under one of those grades depending upon his or her salary.

Premium Rates for Union-managed Insurance

Premium rates for union-managed insurance are determined by the various health insurance unions, within the range of 3.0% to 9.5%, with the approval of the Ministry of Health, Labor and Welfare. The average premium rate for all unions in March 2003 was 8.514%. As a general rule, the responsibility for the payment premium is split between the employer and the insurant. However, the maximum percentage that the insurant can be responsible for is 4.5%, and the amount that the employer are responsible for may be increased to more than half of the premium amount. As of March 2003, the average premium rate for all unions was 4.787% for business owners, and 3.727% for insurants. The premium amount for which an insurant is responsible is withheld by the employer from the insurant's pay, and the employer are obligated to make the premium payment. The level of premium payment responsibility (fiscal 1998) is 159,000 yen for insurants (364,000 yen when the amount for which business owners are responsible for is included).

Premium Rates for Government-managed Insurance

Premium rates for government-managed insurances range from 6.6% to 9.1%, and can be changed by the minister of health, labor and welfare through deliberation of the Social Security Council. In 2001 the rate was 8.5%. The insurance premium is split between the insurant and the employer. The level of premium payment responsibility (fiscal 1998) is 152,000 yen for insurants (333,000 yen when the amount for which business owners are responsible for is included).

Special Insurance Premiums

Bonuses are normally paid in Japan. The proportion of the bonus to total salary varies from individual to individual. In order to ensure fairness in premium payment responsibility, a special insurance premium is collected from the bonus, which is separate from the monthly insurance premium. Health insurance unions can set the rate of premiums for union-managed health insurance within the 1.0% range and collect those premiums accordingly. However, it is left up to the unions to decide whether to collect the premiums. The rate for special insurance premiums of government-managed health insurance is 1%, and the responsibility of paying these premiums is split between the employer and the insurants. The insurants' responsibility is exempted by 2/5, and the national government pays the difference. After April 2003, a total salary system for levying insurance premiums against bonuses as they are levied against standard salary will be introduced.

Responsibility of National Treasury
Since union-managed health insurance is left to the autonomous management of health insurance unions, as a general rule the national treasury is not responsible for making those payments, with the exception of a portion of the clerical expenses. However, Blue Cross, which faces a stringent financial situation, receives assistance for an extremely small fixed amount.

For government-managed health insurance, in addition to clerical expenses the national treasury is also responsible for paying 13.0% of benefit costs, and 16.4% of the health contributions for the elderly (to be discussed later). The reason that union-managed health insurance is so generously subsidized at public expense is because since the insurants are mainly employees of small and medium-sized business their salary level is lower than that of employees of large corporations. And so the relative burden of paying their insurance premiums is eased by the national treasury.

② National Health Insurance Coverage
A) Beneficiaries and Insurers
National Health Insurance coverage is a compulsory system of healthcare insurance for individual proprietors, people engaged in the agriculture and fishing industries, and retirees who are not eligible for employee's insurance. It represents the last opportunity for universal health insurance. Even foreigners can receive this insurance as long as they are registered as an alien and are expected to stay in Japan for a period of one year or longer.

Insurers of National Health Insurance are mainly cities, towns and villages which are basic municipalities, of which there are 3,242 nationwide. They cover 33.4% of all subscribers. In addition to this are National Health Insurance unions, which are made up of health insurance groups of individual proprietors of the same industry. Currently, the main professions and industries which have National Health Insurance unions are physicians, dentists, pharmacists, the food sales industry, the engineering and construction industries, cosmetology, the bathing industry, and lawyers. There are 166 of these unions nationwide. These do not cover all individual proprietors; and some of them cover the whole nation, while others cover individual prefectures. These unions account for 3.4% of all subscribers.

B) Benefits
There are benefits for recuperation costs. There are also benefits required by law, including those for meals and recuperation costs during hospitalization, specific recuperation costs, recuperation costs, at-home nursing and recuperation costs, high cost healthcare, lump-sum payments for childbirth and childcare, funeral costs, and transportation costs. In addition there are arbitrary benefits in the form of cash benefits for sickness and cash benefits for childbirth which may be arbitrary according to municipal ordinances or union regulations. Each of these types of insurance benefits are similar in content too those of health insurance coverage.

The rate of healthcare benefits is 70% (30% is the responsibility of the insurant). With the reimbursement that is received afterwards because of high healthcare costs, the effective benefit rate is 78.4% for National Health Insurance through municipalities.

C) Fiscal Resources
Insurance Premiums
The method and level of insurance premiums differs from municipality to municipality, and are determined by individual ordinances and/or rules. However, it is common among all municipalities to collect premiums directly from insurants. There are two types of systems of insurance premiums: one is collected as a premium literally as a National Health Insurance premium; the other is collected as a National Health Insurance tax as a type of local tax. Currently, many municipalities use the tax type of system, but aside from the difference in their legal characteristics, the calculation methods for both are basically the same.

There are two types of National Health Insurance premiums. One is the portion that an insurant is responsible for paying, based on what he or she is capable of paying (capable percentage), calculated as a levy standard on the amounts of his or her income and assets, which are determined based on the municipal citizens tax levied by the municipality in which he or she resides. The other is the portion that an insurant is responsible for paying, based on the profit that he or she earns (profit percentage), calculated by a fixed amount for each insurant or for his or her household, which is based on the amount of profit that the insurant receives. As a general rule the ratio between the capable percentage and the profit percentage is fifty-fifty. However, in actuality, in many municipalities the ratio accounted for by capable percentage is higher. Individual premiums for each insurant in a household are paid in one lump sum by the head of that household, adding together the capable percentage and the profit percentage of each insurant. The responsibility level for insurance premiums per household (fiscal 1998) was 154,000 yen for National Health Insurance through municipalities.

Since the premium imposed on low-income earners is sometimes too burdensome, measures have been taken to reduce the burden of those premiums. Those eligible for these measures are households whose income of the previous year was below the basic exemption equivalent value, and households who fell below the basic exemption equivalent value when a fixed amount was deducted per insurant, excluding the head of the household. In each case, the portion that an insurant is responsible for paying, based on the profit that he or she earns, is reduced to 60% and 40%, respectively.

Responsibility of National Treasury

The national treasury is responsible for paying 50% of health insurance contributions for elderly people. In addition, the national government also pays one half of the portion of reductions on insurance premiums of low-income earners carried out by municipalities, with the remainder being the responsibility of prefectures and municipalities.

Generally, many of the people with National Health Insurance are low-income earners, and many of those people are only capable of paying a small amount in premiums. Also, since their employer is not responsible for paying their premium as is the case for people with employee's insurance, a sound means of insurance financing is made possible through assistance by the national government for high rates and large amounts of money. In other words, in order to assure fairness regarding the benefits and responsibilities between types of coverage, the lower the financial capability of the insurance system, the higher the rate of assistance.

③ Healthcare Coverage for Retirees

Basically speaking, since elderly retirees subscribe to National Health Insurance after retirement, the level of their benefits drops at a time when their need for healthcare increases, and the burden of paying those healthcare costs lies mainly with the national treasury and other subscribers to National Health Insurance. In order to correct this irrationality, a system of healthcare coverage for retirees was established in 1984.

The entities enforcing this system are municipalities, which are the insurers of National Health Insurance. The beneficiaries are people who have National Health Insurance (except for elderly people who receive healthcare), elderly people who receive pensions based on pensioners laws (for the right to receive a total pension for an elderly, the person must have subscribed for 20 years or more; or for people beyond the age of forty, for 10 years) and their nonworking dependents.

The fiscal resources needed for this system of insurance coverage are comprised of the premiums (tax) that retired insurants pay for National Health Insurance, and recuperation benefit expense grants covered by donations of insurers of employee's insurance. The amount of the recuperation benefit expense grants is the amount remaining after deducting the National Health Insurance premiums for retirees who had employee's insurance (tax) from the amount which is half of the costs required for healthcare benefits for retirees who had employee's insurance and the contributions for the healthcare cost for the elderly who had employee's insurance, and this is delivered each year to municipalities from the Social Insurance Medical Fee Payment Fund. The costs of paperwork regarding the healthcare of retirees for the recuperation benefit expense grants and the Social Insurance Medical Fee Payment Fund are covered in part by the recuperation benefit expense contributions collected from insurers of employee's insurance through this fund, and by clerical work expense contributions. For this, the amount that each insurer must contribute is the amount of the total contributions divided by the total of the standard compensation amount paid by each insurer.

The healthcare benefit rate is 80% for retirees who had employee's insurance. For their nonworking dependents, it is 70% for outpatient care, and 80% for hospitalization. However, after April 2003, all of these benefit rates will be 70%.

④ Health Insurance Coverage for the Elderly

Under the Elderly Health Law, comprehensive health-related business, including the prevention and treatment of disease, and function training thereof, is carried out to ensure sound health maintenance and adequate healthcare for Japanese citizens in their old age, for the purpose of improving the health of Japanese citizens and improving the welfare of the elderly. And based on the spirit of self-help and unity among Japanese citizens, in addition to constantly endeavoring to maintain and improve their health, with an awareness of the physical and mental changes which accompany aging, and distributing the burden of healthcare costs for the elderly fairly, the basic philosophy of this law is to provide adequate health services to the elderly at the place of work, locally and at home, in accordance with one's age, and mental and physical condition, in order to maintain people's health in old age.

In addition to healthcare benefits, the health-related business based on this law includes the delivery of health notebooks, health education, health counseling, health checkups, function training and at-home or on-site instruction, all of which are carried out by municipalities.

Municipalities are in charge of healthcare-related matters for the elderly under the Elderly Health Law. The beneficiaries of this healthcare for elderly residents of the municipality in question are those who have healthcare insurance, and who are 75 years of age or older, or who are 65 years of age or older but have been recognized by the mayor of the municipality in question as being disabled (so-called bedridden) as prescribed by government ordinance.

The healthcare benefits received are the same as those received under the healthcare insurance laws, and the costs charged for this healthcare are based on medical fees for the elderly.

The responsibility for a portion of elderly patients has been fixed since the establishment of the Elderly Health Law in 1988, and the level of that responsibility differs from the responsibility for a portion of young patients, with a 20% or 30% portion of the responsibility being set at fixed rates lower than those for young people who require it.

The amount has been raised based on revisions to the law, and a system has been introduced for revision based on the rate of fluctuation of consumer prices since 1995. Currently, while the ability of elderly people to pay for healthcare costs has increased due to maturation of pensions, the sense of responsibility for this payment has increased among young people. An appropriate relationship of responsibility that takes root in the unity between generations is a precondition for maintaining Japanese Social Security in the future. For this reason, rather than the uniform assumption that the elderly are weak, the idea is becoming more prevalent that elderly people should be responsible for the portion of their healthcare costs that is suited to their financial ability.

With the reforms in the healthcare insurance system in 2000 came the idea that elderly people should be responsible for a suitable portion of their healthcare costs, and revisions were made to change the fixed 10% rate of responsibility for a portion of patients who had thus far been paying a fixed amount. However, so that the responsibility of elderly people would not increase to an excessive amount, a maximum monthly amount has been established, with preferential measures being established for physicians running their own practices to allow them to choose the system of fixed amount from the viewpoint of the required paperwork load.

Furthermore, with the reforms in the healthcare insurance system in 2002, the age of elderly people eligible for this healthcare increased from those 70 years of age or older to those who are age 75 or older, for a gradual increase in the rate of the public expense load from 30% to 50% over a 5-year period. Also, the percentage for which the patient himself or herself is generally responsibility was increased to 10% (20% for people whose income exceeds a certain amount). However, starting from the age of 70 patients are generally responsible for paying the same 10% as patients who are age 75 or older.

Thirty percent (to gradually increase to 50% over the 5-year period starting in January 2002) of fiscal resources for the necessary benefit costs for healthcare for the elderly are covered at public expense, with the national government responsible for 2/3, prefectures for 1/6 and municipalities for 1/6. The remaining 70% is donated by insurers of government-managed health insurance, union-managed health insurance and National Health Insurance through municipalities. In addition to the above-mentioned portion paid for at public expense, the donated funds are the responsibility of the national treasury, with 16.4% for government-managed health insurance and 50% for National Health Insurance through municipalities. This results in tax fiscal resources of about 50% of benefit costs for healthcare for the elderly, when the 30% which is paid for at public expense is combined with the donations from the national treasury.

(2) Healthcare Covered at Public Expense

Healthcare covered at public expense is a system of coverage by which the national government or local authorities compensate patients for the cost of medical treatment and/or other healthcare expenses, using taxes as a fiscal resource. In healthcare covered at public expense, for diseases which require treatment from the point of view of the national government, including tuberculosis, mental disease and legal communicable diseases, patients are compensated for the cost of medical treatment, while economically- and/or socially-disadvantaged people, including low-income earners, the physically disabled, elderly people, children, people wounded in war, and atom-bomb survivors, are compensated for all or a portion of their healthcare expenses.

Some healthcare covered at public expense includes healthcare costs for which the priority of the responsibility is with the public expense and healthcare costs for which the priority is with healthcare insurance. All or a substantial amount of healthcare costs for which the priority of the responsibility is with public expense is covered by the national government or local authorities, with the remaining portion being applied to insurance. The remainder of the insurance benefits (the portion for which the patient is responsible) or a certain amount of healthcare costs for which the priority is with healthcare insurance is covered at public expense.

(3) Nursing Insurance System

In the past there were two different types of coverage – welfare for the elderly and healthcare for the elderly. But there were disproportions in the usage procedures and the responsibility of users, and problems occurred in the provision of service based on government measures for welfare for the elderly. In addition to restructuring both types of coverage, a system of nursing insurance was established in April 2000 as a system of social health insurance which would allow users to use the service that they themselves chose.

Under the nursing insurance system, the insurers are municipalities, with the national government, prefectures, healthcare insurers, and pension insurers providing important support. The insurants are divided into two categories: first insurants, who are age 65 or older, and second insurants, who are healthcare insurance subscribers between the ages of 40 and 64. The benefit rights and responsibility for paying premiums differ between the two categories.

Benefits from nursing insurance are provided for a first insurant if it is determined that he or she requires nursing or another form of support. Benefits from nursing insurance are provided for a second insurant if it is determined that he or she is bedridden with a specific disease, as stipulated by the Nursing Insurance Law, or otherwise requires nursing or another form of support.

To obtain these insurance benefits an elderly person who is determined to require nursing or a member of his or her family applies with the municipality for these benefits, and that person might then be recognized as requiring these benefits by the nursing recognition examination committee of that municipality. Those committees are made up of people with academic backgrounds in health insurance, healthcare or welfare. The committee findings are based on results from a computer based on an examination of the physical and mental condition of the elderly person (first judgment), and a written report by the physician in charge. Then, after the applicant is notified by the municipality of the results of recognition for the requirement of nursing, if he or she has any objections to those results, that person may challenge those results with the prefectural government or the nursing insurance examination committee.

After being recognized as requiring nursing, if the nursing is to be provided at the patient's home, the patient or his or her family member may then submit a request to a company that provides at-home nursing care for a care plan to be drawn up, taking into consideration the recognized degree of nursing required, the wishes of the patient and the situation of his or her family. If the nursing care is to be provided at a nursing facility, the facility will draw up the care plan.

Service provided to patients who require care at home include home help service and day service. One of these types of service are then provided based on the care plan, with the user responsible for paying 10% of the cost. It is the same for nursing care provided at a nursing facility, with the patient responsible for paying 10% of the cost all services provided, with the exception of meals. If the user desires special services which he or she has chosen, these services may be provided if the user pays the entire cost of the services.

Fifty percent of the cost of the required nursing benefits is covered by the public expense, with the exception of that portion which is the responsibility of the user at the time that the service is rendered. The breakdown is that national government pays 25% of the total, with the prefecture or municipality paying for 12.5%. The 50% of the cost other than the portion covered at public expense is covered by the insurance premiums paid by the insurant. The breakdown between 2000 and 2002 was 17% for first insurants and 33% for second insurants.

Insurance premiums for first insurants are determined for each municipality in accordance with income level. People whose pension exceeds a certain amount have the premium deducted from their pension. All others pay the municipality on their own. Insurance premiums for second insurants are determined based on the method of calculation of the healthcare insurance to which they subscribe. The healthcare insurer collects these premiums in one-lump payments with the healthcare insurance.

(4) Financial Conditions of Healthcare Insurers

Financial conditions of the systems of healthcare insurance have shown deficits across the board.
Taking a look at the closing of accounts of government-managed healthcare insurance, net losses have appeared continuously since 1995, with losses of 316.3 billion yen in fiscal 1999. If things continue as they are, it is believed that the 803.9 billion yen reserve fund from the end of fiscal 1999 will bottom out in fiscal 2002.

Union-managed healthcare insurance has also recorded total losses of 203.3 billion yen (forecast for the end of fiscal 1999), with the total number of unions showing losses at approximately 70%. With this increase in the number of unions showing losses, insurance premiums of healthcare insurance unions

are at an average of 8.51%, which is higher than the 8.5% for government-managed healthcare insurance. There has also been an increase in the number of unions which have been dissolved.
The difference between revenues and expenditures in fiscal 1999 for National Healthcare Insurance through municipalities showed an overall loss of 119 billion yen. Amid this worsening financial situation, with individual insurers which are municipalities showing losses of an approximate 61%, many municipalities are carrying over their fiscal resources for deficit financing from general accounting to special accounting for National Healthcare Insurance.

6. Medical Treatment Fee System

(1) Mechanism of Health Insurance Treatment

A distinguishing feature of the Japanese health insurance system is that rather than the insurer concluding a contract directly with the medical institution, the medical institution is specified by the secretary-general of the local social insurance based on an application by the medical institution.

The specified medical institution is obligated to provide the insurant with recuperation benefits, including medical treatment, as a health insurance medical institution, with the medical fees being paid by the insurer to the health insurance medical institution through an examination payment organization as the cost of the examination.

When receiving medical treatment, insurants pay the portion of the cost for which they are responsible at the payment desk of the health insurance institution.
What's more, not only the medical institution but the physician who is actually in charge of the recuperation must be registered with the secretary-general of the local social insurance as a health insurance physician (double specified system of health insurance treatment). Accordingly, when receiving health insurance treatment, insurants must go to the specified insurance medical institution and receive this treatment by a registered health insurance physician.

Presently, this applies to almost all medical institutions in Japan.

Although all of the medical treatment activities for the same patient are performed by the same medical institution, the reason that insurance medical treatment is specified as double is because all of the medical treatment is administered to the patient by the physician, and based on this, that physician must personally decide what medication, injections or treatment to administer, and bear the responsibility thereof.

(2) Summary of Medical Treatment Fee System

As the cost of recuperation benefits provided by insurance medical institutions, the specified amount that must be paid to the healthcare institution is the medical treatment fee – and the amount remaining after subtracting (from the total medical treatment fee) the portion which is the responsibility of the patient is paid to the healthcare institution. The medical treatment fee is made up of those diagnostic fees specified in detail, including those for examinations, administered drugs, injections, treatment, surgery and tests, as well as the basic fees for hospitalization. The medical treatment fee is revised just about every two years. The medical treatment fee is indicated in points, with 1 point equaling about 10 yen.

Or the medical treatment fee is determined when the minister of health, labor and welfare asks the Central Social Insurance Medical Council* for its views.

In the guaranteed healthcare of Japan, as a general rule healthcare services provided for the purpose of curing disease are not for the cost of healthcare, but rather they are provided as a benefit to the insurant as healthcare services for direct diagnosis and treatment, under the principal of benefit in kind. However, aside for some exceptions, there are two systems of coverage: the system by which the recuperation costs are paid in cash afterwards, and the system of cash benefits.

The Social Insurance Medical Fee Payment Fund and the National Health Insurance Federation, after received payment consignment, pay medical fees to the insurance medical institutions for the value of healthcare treatment provided. The amount is calculated by the physician's medical treatment fee point table for physicians, the dentist's medical treatment fee point table for dentists, and the pharmaceutical fee point table for pharmacies. These point tables are characterized as unit price tables for diagnoses, used to evaluate diagnoses.

Medical fees are revised as part of the Survey in Economic Conditions on Health Care which is conducted once every two years. This revision is made to ensure sound medical business management overall, heeding the deliberation of the Central Social Insurance Medical Council, and giving overall consideration to trends in prices and wages, advances in medical science and healthcare, and the various situations surrounding medical treatment, including the financial situation of insurers.

* Central Social Insurance Medical Council: This council is made up of people involved in diagnosis and treatment (8 committee members representing physicians, dentists and pharmacists), people involved in payment (8 committee members representing insurers of health insurance, seaman's insurance, and National Health Insurance, as well as business owners and ship owners), and people representing the public interest (4 committee members representing the public interest). Appointment of committee members representing the public interest must be approved by both Houses of the National Diet.

Sources

1) Trends in National Hygiene (edited by the Health and Welfare Statistics Association, 2003)
2) White Papers on Public Welfare and Labor, 2003 edition (supervised by the Ministry of Health, Labor and Welfare); Gyosei, 2003
3) White Papers on Healthcare, 2003 edition (supervised by the Medical Treatment Economic Research Organization); planned by the Japan Medical Treatment Project, 2003
4) White Papers on Medical Business (edited by the Editorial Committee of Medical Business); planned by the Japan Medical Treatment Project, 2003
5) Introduction of Social Security 2004 (edited by the Editorial Committee of Introductive Social Security); Chuohoki Publishers, 2004
6) Problems and Perspectives for Reform of Medicare System (edited by the Office of Reform of Elderly Medicare System, the Ministry of Health, Labor and Welfare); Gyosei, 2001
7) Introduction of Medical Insurance and National Health Insurance Drug Price System (edited by the Research Committee for NHI Price System, Association of Tokyo Medical Products Manufacturing Industry); Tokyo Medical Products Manufacturing Company, 2001

An Additional Writing about Kampo Medicine and Health Insurance

Japanese Kampo medicine can be broadly divided into Kampo extracts and herbal decoctions. Kampo extracts can be further divided into prescription Kampo formulations, which are manufactured industrially under established standards and regulations. These are covered by National Health Insurance (NHI) when dispensed under a doctor's prescription, and over-the-counter formulations that are sold through retail drugstores and can be purchased without a doctor's prescription.

In 1960 herbs that made up the raw ingredients of Kampo were placed in the NHI drug price listing. In 1976 Kampo medications were made eligible for NHI coverage. Initially, 43 categories of Kampo formulation were listed in the NHI drug price standards and were eligible for NHI coverage. In 1987, NHI coverage of Kampo medicine was expanded to 148 categories of prescription Kampo formulations (147 types of extract for oral administration and 1 topical ointment), with 177 types of herbal decoction and 242 individual products listed in the NHI drug price standards. There are additional categories for certain Kampo products that are not eligible for NHI coverage when taken alone. As a growing number of Kampo formulations have come under NHI coverage, more physicians have become willing to use these formulations in a clinical setting. In recent years, it has been reported, more than 70% of Japanese physicians are using some form of Kampo medicine in routine clinical practice.

With the exception of off-label use, the Kampo formulations prescribed by physicians after examining the patient are covered by NHI. However, Kampo formulations that are prepared directly by a drugstore pharmacist are not eligible for NHI coverage.

Acupuncture Therapy and Health Insurance

Health insurance coverage for acupuncture therapy is handled under a somewhat more complicated system than general medical services. The Japanese system of

health insurance benefits consists of medical care benefits through treatment at authorized insurance medical institutions and to facilities other than authorized insurance medical institutions.

When someone who is covered by health insurance becomes ill, and health insurance is accepted by ordinary authorized insurance medical institutions insurers such as the national government, municipal government, or insurance cooperatives do not pay the money for medical care directly to the insured person. Instead, the payment is made to the authorized insurance medical institution(s) that provided the medical services to treat that illness, covering expenses such as hospital care and prescription drugs. These benefits that are provided to a person who becomes ill are generally termed "benefits in kind." The insured person presents his or her health insurance certificate at the reception desk of the authorized insurance medical institution, and receives benefits in kind in the form of treatment.

However, there are some special cases in which, for example, care cannot be obtained from an authorized insurance medical institution under the health insurance system due to unavoidable circumstances, and must be covered by the individual. In such cases, those medical expenses will be reimbursed. Under the National Health Insurance system, the category of "medical expenses" applies in situations where there is no appropriate physician-provided therapeutic modality and the appropriate medical care is not available from authorized insurance medical institutions but can only be obtained through facilities other than those authorized institutions. This category is used for acupuncture therapy treatment and for treatment obtained when an insured person becomes ill while traveling overseas. In such cases, the insured person is compensated for medical expenses by the insurance provider.

Under the medical expenses system, the patient pays the full amount due for medical treatment to the authorized insurance medical institution, and then the patient applies to the insurer for medical expenses and is reimbursed by the insurer in cash. This form of payment of medical expenses is generally termed "reimbursement." Basically, the medical expenses system focuses on self-payment for medical services. Medical expenses apply to the following types of payments.

● Types of payments covered by the category of medical expenses

・ When treatment was obtained from a medical facility other than an authorized insurance medical institution, and the insurer acknowledges that there is an unavoidable reason that [appropriate medical care] could not be obtained through the health insurance system.

・ When in-home treatment required nursing care by a trained nurse

・ When insurance notification was delayed and no proof of insurance was available at the time of treatment

・ When medical care was obtained from an overseas medical institution while traveling

* Does not apply if the travel was undertaken for the purpose of obtaining medical care

・ When an incident such as a sudden illness occurred while traveling, and it was unavoidably necessary to obtain treatment through a medical institution that was not a participant in the insurance plan

・ The cost of blood in cases where transfusion (whole blood) was ordered by a physician

・ The cost of therapeutic devices such as corsets, casts, or artificial eyes, when ordered by a physician

・ The cost of massage therapy, acupuncture, moxibustion, or judo therapy, when ordered by a physician

Acupuncture and moxibustion are not accepted as forms of medical treatment that can be conducted under National Health Insurance at authorized insurance medical institutions. As a result, acupuncture and moxibustion are not covered under medical care benefits available through those ordinary authorized institutions. Under the present NHI system, acupuncture therapy is positioned as treatment

conducted in facilities other than authorized insurance medical institutions, and the cost of acupuncture therapy is handled under a system whereby medical expenses are paid directly by the patient. If the insured person is able to claim the cost of acupuncture therapy from his/her insurance provider, that reimbursement will be paid directly to the insured person, in cash. This is considered a "cash reimbursement system."

In such cases, the patient receives acupuncture therapy from an acupuncturist and pays directly for that treatment. The Ministry of Health, Labor, and Welfare (MHLW) has provided a number of restrictions in the form of notifications, which offer guidance on the types of treatment that qualify for reimbursement. If the patient suffers from chronic disease for which physicians cannot provide appropriate medical therapy, and the patient is receiving acupuncture therapy with the permission of his or her physician, the patient will be reimbursed for the medical expenses of that therapy. If the patient is diagnosed by a physician with any of the following conditions that are associated with chronic pain and that are eligible for coverage of medical expenses, a written permission form or written diagnosis based on this permission form is required. The permitted duration of treatment is 3 months. If additional extended treatment is required, it is necessary to again obtained permission for treatment from the physician who issued the initial permission form.

● Conditions for which medical expenses are covered

・ Neuralgia: sciatic neuralgia, etc.

・ Rheumatoid arthritis: acute or chronic, with joint swelling and pain

・ Low back pain: chronic or acute low back pain

・ Frozen shoulder: painful shoulder joint with inability to raise the arm

・ Cervicobrachial syndrome: numbness and tingling from the neck into the shoulder and arm

・ Cervical sprain sequelae: Neck injury, whiplash, etc.

If a patient receives medical expenses to cover acupuncture therapy, that patient is not eligible to receive concomitant treatment from a medical institution for that same condition. Many acupuncturists do not provide acupuncture therapy under the rubric of "medical expenses," and the most common method for payment for such treatment is self-payment for medical services. The amount that will be reimbursed for medical expenses is determined by the MHLW according to an official formula. An amount equivalent to the traditional insurance co-pay will not be reimbursed.

The insured person pays for treatment expenses at the clinic where he or she receives treatment, and then applies directly to the insurer for reimbursement. However, in actual practice it is quite difficult and time-consuming for the insured person to apply individually for these medical expenses. Thus, the acupuncturist often applies for these medical expenses on behalf of the insured person. At present, it is most common for acupuncturists and representatives of acupuncture associations to act as the representative of the insured person in applying for medical expenses. As of September 2008, the details for provision of acupuncture therapy are as follows.

・ Targeted for payment: Insured persons and their families

・ Amount of payment: The amounts are calculated by adding supplementary benefits to the base statutory benefits, which are set at 70% of the standard price as established by the MHLW. These supplementary benefits amount to 90% of the standard price for insured persons 70 years of age or older and their families (70% for those persons having income above a specified level), and 80% for families of preschool-age children.

・ Standard price established by the Ministry of Health and Welfare

(1) For 1 procedure (either acupuncture or moxibustion), ¥1195/treatment (¥2330 for initial treatment)

(2) For 2 procedures (combination of acupuncture and moxibustion), ¥1495/treatment (¥2680 for initial treatment)

・ Additional fees: Additional fees must be paid if the patient receives treatment for conditions or symptoms other than those for which a doctor's permission has been obtained.

・ Number of treatments and time frame: There are no restrictions on the number of treatments or the time frame within which those treatments must be administered. However, 3 months after the date of first treatment, the physician's consent for this treatment must be obtained again.

・ Travel expenses: Where truly necessary (if the patient has difficulty in walking or must remain at rest), travel expenses will be provided for a maximum of 16 km, at a rate of ¥1860 for the first 2 km and ¥800 for each additional 2 km. For a one-way trip of more than 8 km, an additional flat fee of ¥2400 will apply. For a one-way trip of more than 16 km, transportation costs will not be covered except for reason of absolute necessity.

Other points regarding acupuncture therapy and health insurance are detailed below. For a patient who wishes to receive treatment for injuries or sequelae of a traffic accident, insurance coverage of acupuncture therapy will be determined by provisions for accidents in the patient's contract with his or her insurance company for mandatory vehicle liability insurance.

When acupuncture therapy is needed by patients who have conditions that are covered under Workers' Accident Compensation Insurance, workers compensation will apply if the patient goes to a designated clinic (under the Workers' Accident Compensation Insurance Act). If an acupuncture clinic has contracted with a prefectural government or with social services, then social services will cover acupuncture therapy for those patients under social services. Additionally, some municipalities have independently established autonomous subsidy systems for patients utilizing acupuncture therapy.

References

1. Japan Pharmacopoeia, 15th Edition
2. Hoken Yaku Jiten (NHI drug price standards, listed by drug effects), Jiho, April 2009
3. Japanese Health Insurance Act, Article 63
4. Japanese Health Insurance Act, Article 87
5. The Civil Code of Japan, Article 643
6. Notification from the Director of the Health Insurance Bureau, MHLW (HIB No. 0526003), dated May 26, 2008
7. Notification from the Director of the Medical Economics Division, HIB, MHLW (HIB No. 0526002), dated May 26, 2008

Welcome to the Museum of Traditional Medicine!

Morinomiya College of Medical Arts and Sciences

Tatoos in red and black on the white colored face?!

The unusual shaped five-head manikin with round shoulders (forward head posture) exposing the collarbones and drooping hands is a douningyo or meridian doll, which attracts popularity as a symbol of the Museum. Photo 1 shows the manikin that has been handed down in the Takeda family in Saga prefecture, Kyushu.

This kind of meridian doll is called tong ren or douningyo (bronze doll) because it was first made of bronze in China. Many ancient meridian dolls made of paper or wood still remain in Japan. The Museum of Traditional Medicine houses a collection of four other meridian dolls made of paper and wood.

はりきゅうミュージアム Museum of Traditional Medicine

Photo 1: Meridian Doll handed down in the Takeda family (Height 80 cm, Breadth of Shoulder 17cm (circa 1700)

The photo of Meido-zu (meridian chart) with a unique expression illustrated beautifully with the style of the 17th century. This inspired Hidetaro Mori to begin his collection. Hidetaro Mori collected many of the historical materials displayed in the Museum.

When he encountered this Meido-zu about 30 years ago, he was impressed that old material relating to acupuncture and moxibustion remained. The Museum of Traditional Medicine houses many other Meido-zu's he collected.

Photo 2. Meido Douningyo (Meridian Chart)

Acupuncture and moxibustion originating in China are said to have been introduced into Japan in the year 562 when Buddhism first arrived in Japan. Subsequently, mainstream medicine was Kampo, acupuncture, or moxibustion until western medicine was adopted.

Kampo, acupuncture, and moxibustion of Chinese medicine, however, have not been used literally in Japan. Instead they developed to their present form with the addition of modifications, theories, and techniques unique to Japan. Among other things, advanced metallurgical technology has allowed the manufacture of very fine acupuncture needles. Furthermore, this has enabled delicate needle manipulations distinctive to Japanese acupuncture, providing subtle stimulation with effectiveness.

Special techniques that are not seen in China have been developed, such as the Sugiyama method of "Kanshin-jutsu" inserting a needle using a guide tube and the Misono method of "Dashin-jutsu" inserting a needle using a hammer tapping the head of the needle. In the Edo period, many schools of thought emerged and developed providing techniques that are used to this day.

On the other hand, moxibustion that uses moxa or mugwort herb to burn directly on the skin of a patient was by far the most popular in the Edo period. This took root in the life of the common people as a means of treatment or self-care to prevent disease. Books on moxibustion points and ukiyo-e woodblock prints depicting a scene where a patient is receiving moxibustion provide us with rich historical information.

We can learn much of the history of acupuncture and moxibustion from the historical materials including Meido-zu (meridian chart), douningyo (meridian doll), ukiyo-e, and the book of secrets and tips.

These historical items are on display for the public at the Museum of Traditional Medicine.

Please visit the Museum and enjoy exploring our collections.

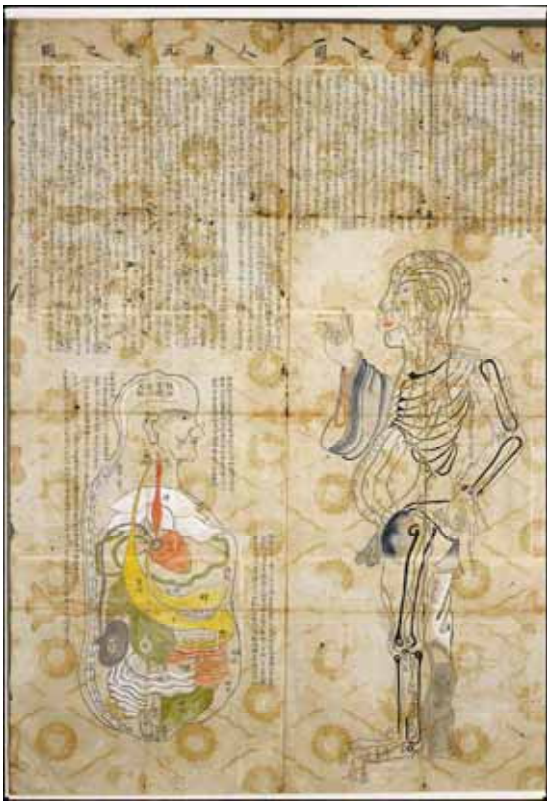


Photo 3. Illustration of Meido (Meridians) and Manikin with Five Visceral Organs

Photo 4. Old Picture of Workman (acupuncturist), work in the early Edo period

In the right upper part of Photo 4, a scene where a patient receiving tapping acupuncture is depicted. The tapping technique, which is a needle insertion method unique to Japanese acupuncture, was widely popular in around 1600.

Photo 5. Tapping apparatus of the Mubunryu Needling Method

Photo 6. Filiform Needle and Needle Box

Photo 7. Ukiyo-e "Atsusou (seems hot)" (1888)

Photo 8. Scene of Pediatric Moxibustion (A woman is holding a child using her legs with her left hand taking hold of the right hand of the child to give moxibustion for her jian (second space on the radial side of the index finger distal to the 2nd metacarpo-phalangeal joint), san jian (third space on the radial side of the index finger, proximal to the head of the 2nd metacarpal bone), he gu (union valley in the middle of the 2nd metacarpal bone on the radial side) of the large intestine meridian points. (Picture drawn between 1832 and 1842)

Photo 9. Moxibustion Box

Old oil lamp stand type of moxibustion box used by the domain lord of Matsumoto. The box contains all

the necessary items for administering moxibustion, such as moxa, incense sticks, charcoal container, and ink brush・stone.

Photo 10. Books on Falconry by Nezu Family (1577)

Rolled books handed down in the falconer family, describing the moxibustion points of a falcon. Horses and cows received acupuncture or moxibustion therapy in these days. Old books on meridian points for the treatment of disease are on display at the Museum.

Introduced above are a part of the collections that are on display.

Opening Times: 13:30 – 18:30 Closed on: Saturdays, Sundays, National Holidays, and Official School Holidays Admission fee: Free for all visitors Access: By Osaka Municipal Subway Chuo Line,
Nearest station: “Midoribashi”, Exit No. 3 (seven minute walk to the Museum area) By JR Kanjou-sen, Osaka Municipal Subway Chuo Line/Tsurumi Ryokuchi-sen, the nearest station: “Morinomiya” (twelve minute walk to the Museum area)
Address: Museum of Traditional Medicine
4-1-8, Nakamoto, Higashi-Nari-ku, Osaka, 537-0022 Morinomiya College of Medical Arts and Sciences, Main building 3F.
TEL 06－6976－6889 FAX 06－6973－3133 URL：http://www.harikyumuseum.com

Access Map

References:

Hitoshi NAGANO, et al.: Museum of Traditional Medicine Vol. 1 Bronze Doll, Meido-zu; Publishing Department at Morinomiya College of Medical Arts and Sciences, 2001.

Hidetaro MORI and Hitoshi NAGANO: Museum of Traditional Medicine Vol. 2 Nihon-no Dentou to Iryou to Buka-hen; Publishing Department at Morinomiya College of Medical Arts and Sciences, 2003

Hitoshi NAGANO: Hari-kyu Museum no tanjyo to kongo-no-tenbou, Acupuncture and Moxibustion OSAKA Vol.16-4, p.111-118, 2000

Hidetaro MORI: Shin-setu shita hari-kyu Museum, THE SHIBUNN No.110, p.69-81,2002

THINK WITH US

ともに考え、ともに学ぼう

GOTO

College of Medical Arts & Sciences

我々の学ぶ技術は、芸術であり、科学であり、職業でもある。

The Skills we are learning . . . are Art . . . and Science . . . and a Profession.

Unsere lernende Fertigkeit somd Kunst, Wissenschaft und auch eine Facharbeit.

L'habilete que nous apprenons, est un Art, une Science, et aussi nue Profession.

Goto Gakuen, in order to build an international medical network of both East and West, has established academic exchange programs with the Beijing University of Traditional Chinese Medicine, Tienjing College of Traditional Chinese Medicine, California State University at Long Beach, and American post graduate School of Oriental Medicine. The new system of medical knowledge created from this worldwide network of specialists will make a valuable contribution to the future of medicine and healthcare. Our college is growing together with seekers of knowledge who look to the world for interdiciplinary exchanges and research crossing over boundaries of convention.

TOKYO EISEI GAKUEN *4-1-1 Omori-kita Ohta-ku, Tokyo 143-0016 Japan TEL (03)3763-6621*

KANAGAWA EISEI GAKUEN *2-35-4 Minamikamomiya Odawara 250-0875 Japan TEL (0465)48-3929*

ACUPUNCTURE & INTEGRATIVE MEDICINE COLLEGE - BERKELEY

2550 Shattuck Avenue, Berkeley, CA 94704-2724, U.S.A. TEL (510)666-8248

http://www.gto.ac.jp

Comfort.

When I see new clients I make certain their first treatment is a comfortable experience. The quality and consistency of SEIRIN acupuncture needles help me achieve that result. That's why I use SEIRIN products, everytime.

SEIRIN®
The Painless One™

SEIRIN Corporation
1007-1 SODESHI-CHO SHIMIZU-KU
SHIZUOKA-CITY SHIZUOKA 424-0037 JAPAN
URL▶http://www.seirin.tv