

Japanese Acupuncture - Current Research

Japanese Acupuncture for "Hie" Symptoms (excessive sensitivity to cold)

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1. Introduction

In Japan excessive sensitivity to cold is a social common place and defined¹⁾ as "a pathologic condition where a decrease in environmental temperature that does not produce any discomfort to ordinary people elicits an abnormal feeling of cold in regions like the low back, the tips of hands and feet, both legs, or also the entire body, and this abnormal feeling generally persists for more than a year. In many cases the affected persons consciously perceive the condition as a disease." Such a decrease in various physical functions is considered to be a generalized phenotype characterized by individual differences in severity and used to be considered a constitutional problem. However, in recent years fact-finding surveys related to this excessive sensitivity to cold indicated correlations to specific diseases, so that the importance of prevention and treatment of this condition is beginning to be acknowledged.

Relying on the two pillars of both acupuncture / moxibustion and Kampo medications Kampo medicine now uses imbalances related to Qi, Blood and Water or anomalies in viscera, bowels and meridians as an important indicators for the diagnosis of excessive sensitivity to cold and as therapeutic guidelines, simultaneously attempting to achieve improvements of the associated symptoms.

In this work we discuss Japanese clinical research pertaining to excessive sensitivity to cold and in conjunction with presenting its results would like to evaluate both the current position and future tasks.

2. Methods

The "Japana Centra Revuo Medicina" (a Japanese searchable database of medically related documents) served as the data source that was searched over the entire period (from 1983 to 2010) during which articles pertaining to the acupuncture and moxibustion treatment for excessive sensitivity to cold had been published and as far as possible among these, articles presenting a high level of evidence credibility were extracted.

3. Results

The extracted articles were summarized classified by years to present an outline of the research.

1) Fact-finding surveys related to patients with excessive sensitivity to cold and the effects of acupuncture and moxibustion treatment Kawana published from 1988 to 1989 three papers³⁻⁵.

In the first report³⁾ he examined 92 women (51.1% of whom were in their 40s to 50s) with excessive sensitivity to cold of the feet regarding the actual presence of indefinite symptoms, blood pressure and the presenting abdominal patterns. The results showed, that (1) tinnitus, low back pain, shoulder stiffness and irregular menstruations were common complaints and often appeared to be partial manifestations of generalized indefinite complaints. At the root of the onset of these symptoms existed autonomic dysfunction, (2) blood pressure was in many cases normal, but tended among the younger patients to be rather low and conversely in the higher age groups high. (3) Among the abdominal patterns a high incidence of Blood stagnation, tense abdominal skin and hard glomus below the heart were observed. For the acupuncture and moxibustion treatment administered to new patients we used stainless steel needles with a

diameter of 0.2 mm that were usually retained for about 10 minutes, while for chronic cases this treatment was combined with low frequency electro-acupuncture therapy (EAT) and a total of 15 to 20 treatment sessions administered in 1-week intervals. Treatment points included the various acupoints on the level of the second sacral vertebra along the "S2" line: [Ciliao (BL32), Panguangshu (BL28), Baohuang (BL53), Zhongji (CV3)].

For an evaluation of the effects the application of a classification using 50% subjective and 50% objective findings a ratio of symptom alleviation of more than 80% was defined as highly effective, more than 60% as effective and more than 40% as slightly effective. The results showed that the treatment was highly effective for 4 patients, effective for 23 patients, slightly effective for 21 patients and thus more than slightly effective for a total of 48 patients (52.1%).

The second report⁴⁾ is a fact-finding examination related to the correlation between excessive sensitivity to cold and menstruation, pelvic circumference and abdominal pattern. Subjects were 30 women (aged between 19 and 30 years) complaining of constant excessive sensitivity to cold. The results showed that patients with excessive sensitivity to cold had a tendency (1) toward low blood pressure, (2) a narrow pelvis and abdominal patterns tended to be Blood stagnation (70.0%), tense abdominal skin (66.6%) or hard glomus below the heart (63.3%) in that order. The summary that was also based on the results of the first report showed, that there are many common findings between younger patients with excessive sensitivity to cold and menopausal patients with excessive sensitivity to cold. Moreover, circulatory disturbances of the pelvic organs apparently have a marked influence on the excessive sensitivity to cold in women.

The third report⁵⁾ is a fact-finding study related to physical conditions, menstrual status and mental complaints of 105 young women (aged between 19 and 30 years). The results showed that (1) a marked tendency towards presenting a physical condition classified according to oriental medicine as Blood deficiency, colic pain from overindulgence in cold foods (han shan) or marked Blood stagnation pattern and the patients would often be classified according to modern medicine as asthenic, characterized by a hypersensitive constitution with a tendency towards low blood pressure; (2) the menstrual cycle was normal, but the patients tended to be mentally very tense and became easily upset; (3) loneliness, timidity, impatience and slow reaction to all matters were reported as mental complaints. Basically the same acupuncture treatment as described for the first report was performed and the treatment was markedly effective for 7 patients, effective for 28, slightly effective for 66 patients, so that it was more than slightly effective in 66 patients (62.9%).

2) Effects of the acupuncture and moxibustion treatment for patients with excessive sensitivity to cold associated with some underlying disease

Nemoto et al.^{6,7)} published two articles in 1998 and 1990. In the first of these reports⁶⁾ 21 patients (9 men and 12 women, average age 58.0 years) had underlying diseases and at the same time complained about excessive sensitivity to cold of the hands and feet. The treatment of the roots as well as local and symptomatic treatment had the purpose of activating circulation and inducing systemically altering effects. Concretely low frequency electro-acupuncture with a frequency of 1 Hz was applied to PC4 (Ximen), PC6 (Neiguan), ST36 (Zusanli) and SP6 (Sanyinjiao) for 30 minutes; indirect moxibustion using 2 cones each was performed on BL23 (Shenshu), ST36 (Zusanli), KI7 (Fuliu) and KI1 (Yongquan) and this treatment carried out twice a week for a total of

10 sessions. The effects were evaluated in the same manner as described for the Kawana's report. The results showed an efficacy ratio of 55.9% where the associated symptoms were alleviated in conjunction with the improvement of the excessive sensitivity to cold.

In the second report 23 patients⁷⁾ with excessive sensitivity to cold and underlying diseases were grossly divided into 13 patients with hemiplegia (9 men and 4 women, average age 57.2 years) and 10 patients (2 men and 8 women, average age 55.5 years) with diseases other than cerebral stroke and then the acupuncture and moxibustion treatment compared. Treatment method, frequency and evaluation of the results were the same as described above. The results showed an efficacy rate of 60.9% where the ratio of improvement classified by diseases was 53.8% for patients with hemiplegia and 70% for patients with diseases other than cerebral stroke.

3) Effects of single acupuncture and moxibustion treatments for excessive sensitivity to cold

Kitamura et al.⁸⁾ (1994) administered a single acupuncture and moxibustion treatment to 7 healthy people (2 men, 5 women, aged 31-52 years) and 10 people complaining of excessive sensitivity to cold (3 men, 7 women, aged 29-65 years) and examined the results using variations in the subjective findings as well as core and surface temperature of the sole of the feet. The treatment used filiform needles that were retained at BL32 (Ciliao), BL23 (Shenshu), BL25 (Dachangshu), BL52 (Zhishi), KI3 (Taixi), warming needle at SP6 (Sanyinjiao) and electro-acupuncture as required. The results showed therapeutic effects in 70.0% of the patients with excessive sensitivity to cold.

4) The effects of the acupuncture and moxibustion treatment when combined with root (general) treatment based on the Akabane method and treatment targeted at overcoming Blood stagnation

As reported in 1995 by the authors⁹⁾, it showed that the patients presented with subjective feelings of cold of the feet. Five women (aged 19-30 years, average age 23.6 years) responding to the item "Do you have cold feet even in summer?" in a CMI health check questionnaire covering 37 items received the Akabane style general adjusting treatment with needles retained at Xuefu, BL32 (Ciliao), BL33 (Zhongliao), irradiation with far infrared for 15 minutes and additionally intradermal needles attached to SP6 (Sanyinjiao), ST36 (Zusanli), CV4 (Guanyuan). A total of 5 treatments were administered once a week. The effects were evaluated after the first and fifth treatment sessions, using the Terasawa's Blood stagnation score and a Visual Analogue Scale (VAS) for evaluating variations among the Blood stagnation items, associated complaints and subjective symptoms. The results showed that (1) all of the patients with an excessive sensitivity to cold also had a marked degree of Blood stagnation, (2) the acupuncture and moxibustion treatment lowered the average Blood stagnation score from 71 to 47 points, (3) the acupuncture and moxibustion treatment resulted in an improvement of the VAS in 3 patients, (4) the improvement of the VAS induced by the acupuncture and moxibustion treatment suggested, that among the Blood stagnation items alleviation of the tenderness and resistance in the ileocecal region had contributed to improvements of the menstrual disorders.

5) Skin temperature distribution over the whole body as an indicator of the effectiveness of acupuncture and moxibustion treatment for excessive sensitivity to cold

Mori et al.¹⁰⁾ (1998) used acupuncture on the abdomen at CV14 (Jujue), CV12 (Zhongwan), ST27 (Daju), CV4 (Guanyuan), CV2 (Qugu), SP12 (Chongmen) and on the back BL20 (Pishu), BL23 (Shenshu), BL25 (Dachangshu), BL32 (Ciliao),

and on the legs SP10 (Xuehai), ST36 (Zusanli) SP6 (Sanyinjiao) and KI3 (Taixi) to treat 6 women (aged 20-40, average age 30.2 years) with excessive sensitivity to cold for a total of 16 times twice per week. For an evaluation of the effects of the treatment the degree of excessive sensitivity to cold before treatment and 8 weeks later (classified into 4 grades: 3 = very disturbing, cannot be endured; 2 = is bothersome, but can be endured; 1 = somewhat bothersome; 0 = no excessive sensitivity to cold) and whole body skin temperature distribution were examined. The results showed that the degree of the excessive sensitivity to cold improved by more than 2 levels 1 case and by more than 1 level in 5 cases, while thermography of the legs too showed improvement in 4 cases.

6) Randomized controlled trials regarding the effects of acupuncture and moxibustion treatment for excessive sensitivity to cold

The authors¹¹⁾ (2008) conducted the first randomized controlled trials regarding the effects of acupuncture and moxibustion treatment for excessive sensitivity to cold in Japan.

The study included 19 female volunteers (aged 18-32, average age 20.5 years) with excessive sensitivity to cold. Following stratification into the relevant numbers based on the questionnaire the subjects were randomly divided into an "acupuncture and moxibustion treatment group" and a "control group". In the "acupuncture and moxibustion treatment group" the subjects were treated in supine position by needling SP6 (Sanyinjiao) and ST36 (Zusanli) on both the left and right side and then cut pieces of indirect moxibustion attached to the needle handles and burnt. Moreover, simultaneously with the warm needling 4 stick-on moxa cylinders attached to a lotus-shaped pedestal were placed on CV4 (Guanyuan) to perform warming moxibustion. Later, in prone position far infrared was applied

to the lower back, while applying using the same lotus-shaped pedestal that was also used on the abdomen, to perform warming moxibustion centering around BL32 (Ciliao) on both sides. A comparison showed no significant differences for any of the items observed in both groups prior to the intervention, with the exception of remnant lipoprotein cholesterol (RLP-C). Regarding the degree of suffering before and after the intervention, Blood stagnation score, Ht values, RLP-C values and 10 RPM values there was neither any interaction between the two groups nor any differences.

7) Effects of low frequency electro-acupuncture applied to the lower extremities for excessive sensitivity to cold using postural change test

The authors¹²⁾ (2010) applied low frequency EAT to the lower extremities at SP6 (Sanyinjiao) for excessive sensitivity to cold and investigated the effects.

The effects of low frequency electro-acupuncture treatment for excessive sensitivity to cold in young women presenting with postural change test induced vasomotor disturbances. The study included 20 women (aged 18-26 years, average age 20.6 years), who were aware of their excessive sensitivity to cold and in whom the toe skin temperature increased after lying down following a 5-minute standing stress or else showed left-right differences. For the acupuncture treatment 40 mm long stainless steel needles with a diameter of 0.2 mm were inserted into left and right SP6 to a depth of about 15 mm and then used as needle electrodes, while on the outside of the tibial tuberosity on both sides indifferent electrodes were attached, applying a pulsed current with a frequency of 1Hz for 20 minutes. After a total of 5 treatments given once a week the stress test was repeated. Thermograms were obtained of both lower extremities covering from the medial aspect of the foot to the tibial aspect

with a medical thermography device and then the average skin temperature was calculated for the toe, metatarsal, ankle and lower extremity areas. A 100 mm wide Visual Analogue Scale (below abbreviated VAS) was used for our original evaluation of the degree of the excessive sensitivity to cold and the categorical scale of 14 other symptoms including the excessive sensitivity to cold. A diary was kept starting one week prior to the treatment and continued until one week after the treatment, noting for all days during this period a "chilly score", a total score for the 14 symptoms, the VAS values and served subsequently to calculate the average valued. Variations in health related quality of life measures due to the acupuncture treatment were evaluated using the standard edition of the MOS 8-Item Short-Form Health Survey(SF-8). The results showed that through the acupuncture treatment the skin temperature of the toes following the postural change test did not rise as markedly as it did during adaptation, while 20 minutes after the end of the orthostatic stress test there was a more significant increase in skin temperature on the medial side of the lower extremity than during adaption. The chilly score, VAS values and the SF-8 heading and summary scores did not show any significant differences between before and after the acupuncture treatment, but the total score for the 14 symptoms decreased significantly.

Discussion

A series of articles by Kawana deals with the pathology of women with excessive sensitivity to cold and the conduction of fact-finding investigations classified by age indicated in modern medical sense a disorder of autonomic nervous function and from an oriental medical point of view a strong correlation to Blood stagnation. Moreover, the accumulation of cases

showed that ordinary acupuncture treatment and low frequency EAT were used separately depending on the course and through treatment along the S2 line improvement of the circulation of the pelvic organs, referring to the intended pursuit of eliminating Blood stagnation, was achieved.

Research into patients with underlying diseases presenting with excessive sensitivity to cold receiving both root (general) as well as local (partial) and symptomatic acupuncture treatment patterns showed, that it is possible to achieve certain effects by using the same indicators of effects that Kawana used. Moreover, associated with an improvement in the excessive sensitivity to cold shoulder stiffness, general lassitude, constipation and similar associated symptoms improved also and notable changes in the abdominal pattern could be observed. Again, in the second report patients were divided into hemiplegia and other than cerebral stroke patients and a comparative investigation of the therapeutic effects reportedly showed, that the improvement ratio in hemiplegic patients was lower. The additional presence of local circulatory insufficiency due to functional disorders of the central autonomous nervous system was surmised as possible reasons. This conceivably suggested that the manifestation of acupuncture treatment effects are mediated via central factors.

The research into the effects of single treatments Kitamura et al. conducted, used retaining filiform needles and warm needling of acupoints in the lumbar region and on the legs and thereby achieved a high ratio of improvement. Presumably the mechanism for this improvement involves raising core temperature in the regions affected by the excessive sensitivity to cold through acupuncture and moxibustion treatment of the lumbar region. Moreover, follow-up studies verified that this effect continued from several hours to several days.

For an evaluation of patients with excessive sensitivity to cold the Cornell Medical Index was used and regarding the treatment the authors conducted research pertaining to the intradermal needles originally developed in Japan, that were used for adjusting the back Shu points within the framework of the Akabane method. A Blood stagnation score was used for this evaluation and showed, that certain effects had been obtained. Further, there was an apparent correlation to improvements in the VAS and the Blood stagnation items.

Mori et al. used thermography as an indicator of the effects of acupuncture treatment for excessive sensitivity to cold and found in their research using whole body distribution of skin temperature, that an improvement of the subjective symptoms showed a high concordance with an increase in the skin temperature of the legs. Regarding the evaluation method the use of thermography for wide area assessment (whole body) rather than only the variations in skin and core temperature of the regions affected by the excessive sensitivity to cold is extremely interesting.

In the randomized controlled trial (RCT) the authors conducted to investigate excessive sensitivity to cold, warm moxibustion was performed on the sacral region and the lower abdomen to eliminate Blood stagnation, the effects of treatment with warm needling applied to the legs was investigated in addition to the common assessment using subjective symptoms and Blood stagnation score with the new parameter of blood viscosity. The results showed that acupuncture and moxibustion treatment led to a reduction of the suffering and an improvement in the Blood stagnation score, but these effects did not exceed those observed among the controls. Although a correlation between excessive sensitivity to cold and Blood stagnation had been verified, no such

correlation to the findings of hematologic examinations was observed, which suggests that the evaluation parameters need to be reconsidered.

The authors investigated among the accumulated cases the effects low frequency EAT with a frequency of 1 Hz applied for 30 minutes had on toe skin temperature variations induced by postural change tests in persons with excessive sensitivity to cold. The results showed that AET produced a shift towards normalization of lower extremity vascular responsiveness through postural vascular reflexes, so that the excessive sensitivity to cold does not become worse even if the ambient temperature decreases, suggesting that the treatment had improved the general condition. Stress thermography instead of the so far common simple thermography as an evaluation index and the inclusion of an original evaluation chart for subjective symptoms (the chilly diary) can also be applied to future clinical research.

4. Conclusion

Many factors contribute to the onset of excessive sensitivity to cold, but among these autonomic dysfunction from a modern medical point of view and the pathologic condition of Blood stagnation from an oriental point of view seem to be most deeply involved. Acupuncture and moxibustion treatment in the form of warm needling and intradermal needle, low frequency EAT stimulation etc. applied to acupoints in the lumbar, sacral and lower abdominal regions as well as on the legs to improve autonomic nervous function and eliminate Blood stagnation is a treatment form developed in Japan. It causes subjective variations in the associated symptoms of excessive sensitivity to cold and additionally has also been observed using thermography and similar objective indicators. This verified a clinical effectiveness among the accumulated cases of as high as 50-70%. However, there is only little

research using high evidence level RCTs, so that these effects have still not sufficiently been demonstrated and therefore the conductance of multi-center clinical studies would be desirable to make these results publicly known.

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