

Japanese Acupuncture - Current Research

Japanese Traditional Medicine Text (3) – Internal Medicine

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C Maintenance Dialysis (Chronic Renal Failure)

1. Introduction

As of 2008, there were more than 290,000 people on maintenance dialysis in Japan, that is 1 in 438.7 people. There are more than 280,000 people on Hemodialysis (HD) and between 9,000 and 10,000 people on continuous ambulatory peritoneal dialysis (CAPD). It is estimated that 1,000 people had received kidney transplants, but a new form of maintenance dialysis allows about 300 people to remain at home. Among these groups of Dialysis patients, there has been a recent transition regarding the underlying disease. Until recently, the predominant disease was Chronic Glomerulonephritis (CGN) but since 1998 CGN is being overshadowed by the prevalence of Diabetic Nephrology. Generally speaking, people on dialysis complain of many different symptoms, these are the factors blocking an improved QOL, however, people with diabetes have many more disease-related complications requiring treatments. Perhaps because of these conditions, following the Japanese publication of research (2000) about patients who receive maintenance Dialysis, the authors from the lower branch of the Japan Society of Medical Dialysis known as “the Complementary and Alternative Medical Research Society of Maintenance Dialysis Patients (Representative Suzuki Hiromichi from the Saitama Medical University’s Department of Nephrology)”, began collaborating with other institutions to accelerate the publication of research papers. Authors from the Saitama Medical University’s Nephrology Center reported that various Dialysis patients experienced good clinical results with Acupuncture and moxibustion treatments.

2. A review of Japanese and American Acupuncture Treatment Reports Concerning Maintenance Dialysis Patients and Chronic Renal Failure

The paper (Advances in Chronic Kidney Disease 12(3): 282-291, 2005) written by Garcia and et al. at National Center for Complementary and Alternative Medicine: NCCAM, a subsidiary organization of National Institutes of Health: NIH offers commentary on the followings under the title of “acupuncture and chronic kidney disease”

1. acupuncture for kidney pain (腎疝痛の鍼)³⁾,
2. acupuncture in hypertension (高血圧症の鍼)⁴⁾,
3. acupuncture in the treatment of uremic pruritus (尿毒症性掻痒症の鍼治療)^{5,6)},
4. role of acupressure in improving the quality of sleep quality of life in patients with end-stage renal disease (末期腎疾患患者の睡眠の質/生活の質の改善における経穴圧刺激の役割)^{7,8)} and
5. dose acupressure prevent kidney inflammatory diseases? (経穴圧刺激は腎炎症性疾患を予防するか?)⁹⁾, and suggests that acupuncture has potential in this area. Kimura et al.¹⁰⁾ searched the literatures issued between 1979 and 2008 with keywords: Dialysis, Kidney, Kidney disease, Acupuncture treatment, and Acupressure in Japanese from the Japan Medical Abstracts Society site, and in English from the American National Medical Library Search site (PubMed), and as a result, 31 Japanese references and 20 American references were extracted. To summarize, the Japanese Acupuncture references included observations on physiological responses within the kidney, complications of maintenance dialysis patients, various clinical reviews of the benefits of acupuncture treatment and finally, reports of the possible adverse effects of acupuncture and moxibustion treatments. Among the most interesting reports were questionnaire surveys answered by dialysis patients about receiving acupuncture treatment. In contrast, the Western reports focused on the efficacy of acupuncture for renal colic and the pruritis (chronic

whole body itching) accompanying dialysis, renal sympathetic nerve function, and a recent report from Chin et al.,⁹ on animals with acute Nephritis pre-treated with St 36 (Ashi San Li). Of particular note was a report from a Taiwan Nurses group reporting on the clinical results of stimulating acupuncture points, they were expecting improved sleep and QOL for dialysis patients. From these accumulated references, Acupuncture analgesia for the maintenance dialysis patient was thought to be influencing the autonomic nervous system, causing a bloodstream change and possibly influencing homeostasis; and acupuncture's protective efficacy of the kidney and renal function were also suggested. An important research theme for the future included the cost-effectiveness of acupuncture in this type of patient.

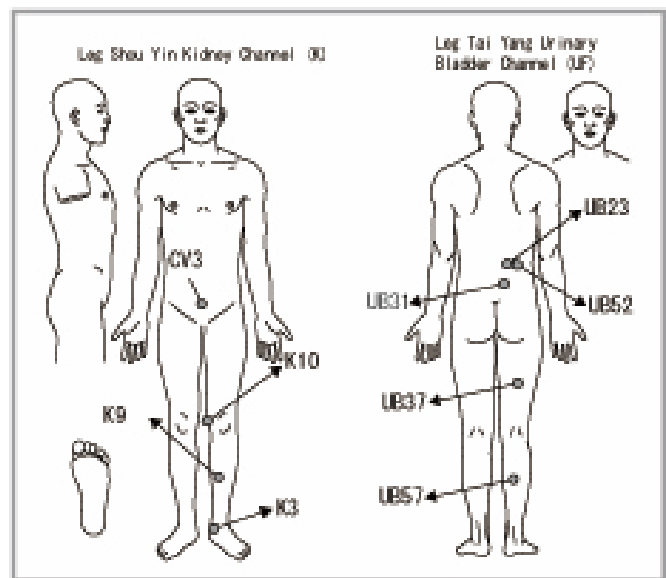
3. Acupuncture and Moxibustion Treatment outcomes for Maintenance Dialysis Patients at the Saitama East Asian Medical Center

A) Evaluation method of Acupuncture and Moxibustion treatments, protocols, and evaluations as they relate to maintenance Dialysis Patients

As was mentioned earlier, we are seeking to evaluate the situation of acupuncture and moxibustion treatment and clinical research in maintenance Dialysis patients throughout Japan. We used the treatment system of our former teacher, Serizawa Katsusuke, Professor Emeritus from Tsukuba University on our maintenance Dialysis patients. While grasping the patient's disease state through bedside and laboratory findings, we also performed a series of acupuncture treatments 1-2 times a week using Acupuncture Electro Therapy (AET) stimulating nerves, muscles and joints with the purpose of clarifying whether or not Acupuncture's analgesic effects could help raise the pain threshold for patients with (1) whole body aches, pains, weariness, itchiness etc. (2) Further, from East Asian Medical Theory we know that Kidney and Bladder function are known to influence water

metabolism and elimination, so we selected appropriate points and meridians (Chart 3) to stimulate the somatic-internal organ reflex. In order to provide a thorough method of estimating Acupuncture treatment efficacy, we compared pre- and post-treatment measurements of local pain (lower leg, lower back, shoulder joint, neck stiffness etc.) and whole body conditions (aches and pains, weariness etc) using a visual analogue scale (VAS); indicators of biochemical examinations of blood changes were statistically processed and used along side QOL measures such as the frequently used "Kidney disease quality of life short form" (KDQOL-SF) to provide a comprehensive scale of the patient's internal and clinical condition.

Chart 3 Leg Shou Yin Kidney Channel (K) / Leg Tai Yang



Urinary Bladder Channel (UB)

B) Fourteen maintenance dialysis patients (10 males, 4 females, average age 62.5+8.3 years, average time on dialysis 40.8+38.8 months, (hemodialysis) HD 7, (continuous ambulatory peritoneal dialysis) CAPD⁷ from the Saitama Medical Hospital of Nephrology were tracked for local pain, whole body symptoms, QOL issues and biochemical blood changes, were given regular acupuncture treatments for one month after which they were investigated. Of these patients, we confirmed 6 patients reported pain and cramping

in the lower leg, low back pain 4; neck stiffness 19, shoulder joint pain, thigh pain and arm pain (average 1.4 complaints per patient); 16 patients reported whole body complaints including itching and weariness (average 1.1 complaints per patient). Given one month of acupuncture treatments, the VAS scores improved ($p<0.1$, $p<0.05$) (lower values reported) demonstrating a trend toward symptom improvement. Also, after the one month series, using a patient QOL measure, MOS Short-Form 36-Item Health Survey (SF-36), with the exception of “vitality” as a response, all other responses showed increases, raising the subject QOL levels to nearly National Standard levels, however, a statistical difference was not confirmed. Comparing responses to score items, such as degree of physical and mental health, before and after acupuncture treatments, respondents reported a significant increase in their reported degree of physical health ($p>0.05$). Further, within the KDQOL-SF, scores for “Work situation” and “Relationships” showed a downward trend ($p<0.1$, $p<0.1$), especially the item, “personal condition” showed a significant increase ($p<0.05$). These results suggest that the influence of Acupuncture stimulation (that is, the points and meridians stimulated) travels along the spinal column or is a spinal nerve transmission, increasing resistance to pain, possibly inducing a whole body response.

C) An examination of differences between Dialysis type (HD, CAPD) and the relative effects of acupuncture treatment on maintenance dialysis patients.

We investigated the differences in efficacy between two groups of maintenance Dialysis patients (14 subjects, $n=7$ HD, $n=7$ CAPD) who received regular acupuncture treatments for one month. The results are as follows, within the CAPD group 10 people reported aches and pains, 8 people complained of whole body itchiness and lassitude. Following one month of regular acupuncture treatments, the VAS scores were significantly lower for these whole body

symptoms ($p<0.01$), SF-36 scores for [physical function] and [daily life physical functioning] both increased ($p<0.05$, $p<0.1$). Further, comparing scores for [physical and mental wellness] before and after the treatments, CAPD subjects reported significant increases in levels of physical health ($p<0.05$). Next, scores for KDQOL-SF within the CAPD group increased significantly ($p<0.05$). Given these results, the CAPD group enjoyed better results compared to the HD group, these results are thought to be related to differences in dialysis type and degree of kidney dysfunction.

D) Results of Long Term Acupuncture Treatments for Maintenance Dialysis patients

Next, we analyzed changes in dialysis patients following 1 year of continuous regular Acupuncture treatments. Eligibility for this study required more than one year of continuous Acupuncture treatment (subjects included 4 men and 1 woman, average age, 65.2 ± 8.2 years, HD type 1 subject, CAPD type 4 subjects; underlying disease diabetes Mellitus DM 2, non DM 3, average dialysis duration 57.2 ± 37.5 months). Once eligibility was confirmed, we collated their complaints for local symptoms (total 8 complaints: 3 lower leg numbness, 1 low back pain, 1 neck and shoulder stiffness, 1 pain and numbness in the hands and fingers, 1 post herpes related neuralgia, 1 lower leg chilliness), and whole body complaints (4 itching and 2 general malaise). Significant improvement in whole body aches and pains VAS scores were confirmed following long term acupuncture treatments, 6 months to one year ($p<0.1$, $p<0.1$), the SF-36 life style items such as “vitality” improved after one year of treatment ($p<0.05$), as did the KDQOL-SF item for “Sleep” ($p<0.05$). Also, biochemical examination of blood samples showed significant decreased in BUN (Blood Urea Nitrogen) comparing baseline levels, with 1, 3, 6 and 12 month samples ($p<0.001$, $p<0.001$, $p<0.001$, $p<0.001$), Hb (Hemoglobin) showed significant increases with just 3 months of treatment ($p<0.1$). In addition, we collected a survey of 5

patient's impressions of their progress and experience after receiving long term acupuncture treatments. They reported personal improvements in actual pain and itchiness, mood, lethargy and quality of sleep. We also collected comments reporting improvements in the excretory function of the kidney and anemia. As a result of long term acupuncture treatments, we can suggest that in addition to various medical therapies and nutritional support, continuing acupuncture treatments improves the patients QOL by reducing whole body symptoms and assisting general kidney function and improving Hemoglobin levels for patients with anemia.

E) Effectiveness of Acupuncture for Maintenance Dialysis Patients with Peripheral Artery Disease (PAD)

Peripheral artery Disease is usually divided into functional and organic artery disease. Until recently, researchers have postulated that the efficacy of Acupuncture for Raynaud's phenomenon is due to its influence on the autonomic nervous system in general and the sympathetic nervous system in particular, that is, it might encourage the dilation of the capillaries of the affected limb nail bed, improving local circulation and thereby alleviating pain¹¹. Therefore, we investigated the effects of acupuncture in maintenance dialysis patients who often experience PAD as a complication. The subjects in this trial were 9 maintenance Dialysis patients with Arteriosclerosis Obliterans (ASO) (average age 65.1±7.3, 7 males, 2 females, 6 DM, 3 non DM, 2 Fontaine Classification I, 3 Fontaine Classification II, 3 Class III, 1 Class IV). The acupuncture protocol included electro acupuncture at St 36 and Sp6 on the diseased lower leg; we tracked skin perfusion pressure (SPP) and transdermal oxygen tension (tcPO₂). In addition, following a month of once or twice weekly acupuncture treatments, we compared pre- and post- treatment tcPO₂ with SPP measurements and conducted VAS and KDQOL-SF evaluations. We found significant increases in SPP

measurements in the dorsal area of the foot and at the medial malleolus following one month of AET ($p<0.05$, $p<0.001$), further, SPP increased significantly in all measured areas ($p<0.05$, $p<0.05$, $p<0.05$, $p<0.01$). Also, one month following the treatments, the SF-36 item for "Body Function" rose significantly ($p<0.05$). One possible mechanism for Acupuncture treatment efficacy could be the physical, mechanical stimulation by the needle and electrical stimulation influences dermal and muscular micro circulation, increasing blood vessel reactivity stimulated by the autonomic nervous system or vessel dilating peptides.

F) The possibility of using Acupuncture Treatment for maintenance Dialysis Patients with Pruritis Itchiness is one representative peripheral symptom that includes atopic dermatitis, contact dermatitis, hives, drug-related skin eruptions, various dermatological conditions affecting the skin and mucous membranes, and in particular, there are many articles presenting supportive evidence for Acupuncture and Moxibustion as effective modalities for atopic-dermatitis¹³. In contrast, the itchiness of the maintenance Dialysis patient is thought to be stimulated or suppressed by the central nervous system. Recently, selective activation of k receptors by Nalfurafine Hydrochloride has been attracting attention for its ability to suppress itchiness. In contrast, investigations of acupuncture treatment for the itchiness associated with maintenance Dialysis suggest acupuncture at LI11(曲池) appears to be effective^{5,6}. These researchers then used the VAS and KDQOL-SF indexes to investigate the effectiveness of acupuncture treatments on the whole body itchiness experienced by dialysis patients. The acupuncture protocol included bi-lateral AET of 1Hz for 10 minutes at LI 4 (合谷) and LI11 (曲池). Following one month of Acupuncture treatments, patients reported a significant increase in the KDQOL-SF index for "Symptom" ($p<0.05$). Additionally, following one year of regular

treatments, patient VAS scores showed significant decreases for “itchiness” ($p < 0.1$). These results suggest that acupuncture treatments control β endorphin (μ receptors) through the upper central nervous stimulation, and stimulation of Dinorphin (k receptors), these mutually balancing actions are thought to improve whole body itching in maintenance dialysis patients.

4. The Future Direction of Acupuncture Treatment for Maintenance Dialysis Patients

Since 2007, the Japanese Association of Acupuncturists, Inc. has sponsored 4 Specialist Training System Seminars on “Acupuncture Moxibustion Medical Care Risk Management”, to be implemented in every prefecture throughout Japan. There is now a pressing need not only for dialysis patients, but also the medical care providers (Dialysis physicians, engineers and nurses) to stimulate interest in Acupuncture treatment, and at the same time, to insure the importance of risk management in this domain while securing the safety of Acupuncture treatments. Additionally, current research themes for Acupuncture treatment include improving patient QOL, but accumulated data also includes research on the treatment of Fibromyalgia in Dialysis patients, efficacy for Kidney function¹⁴ and disease in an attempt to delay dialysis by preventing disease progression and finally the cost-effectiveness of acupuncture treatment and reducing the high cost of dialysis patient health care. Finally, we are coming into a status defining time for Acupuncturists, clearly we must take up our role and position within the medical team attending in the Dialysis Room, it is one clear way for the next generation of young Acupuncturists to make their appearance in the upcoming medical transition.

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