ACUPUNCTURE IN THE TREATMENT OF POSTTRAUMATIC PAIN SYNDROME

M. I. KORPAN[1], Y. DEZU[2], B. SCHNEIDER[3], TH. LEITHA[4], V. FIALKA-MOSER[1]

To test the hypothesis that classical Chinese acupuncture provides an additional benefit subjectively as well as objectively in patients suffering from reflex sympathetic dystrophy, a double-blind, placebo-controlled prospective trial was performed. Fourteen patients suffering clinically and scintigraphically from acute CRPS of the upper limb lasting of more than one but less than 6 months were studied. Patients were randomly assigned to either the classical acupuncture (group A) or sham acupuncture (group S), which was applied five times a week for three weeks and required 30 minutes. Both groups received the same defined standard treatment. The current state of pain was assessed by means of a visual analogue scale. Subjective succes of treatment was rated by the patients by means of a rating scale. Each patient underwent a clinical examination and was investigated by 5-phase bone scan in order to confirm the diagnosis. The current state of pain as well as clinical parameters were almost identical in patients of group A and of group S at the beginning. During therapy clinical parameters as well as pain improved in both groups and reached nearly normal levels after 6 months. Owing to the small number of patients in our study, no differences between sham and treatment group could be recognized. For a definitive statement the treatment of further patients in both groups is planned. Determinations of the effect of acupuncture on clinical parameters, based on long-term follow-ups are projected.

Keywords : acupuncture ; complex regional pain syndrome.
Mots-clés : acupunture ; syndrome douloureux regional complexe.

INTRODUCTION

Complex Regional Pain Syndrome (CRPS) earlier on called reflex sympathetic dystrophy (RSD) is defined by a continuous diffuse burning pain often appearing after injuries or noxious stimuli to the involved limb (14). Trophic changes, sensory abnormalities, motor dysfunction, autonomic deregulation and psychologic reactive disturbances characterize the syndrome (14). Treatment is directed toward restoration of normal function and is based on therapeutic exercises (12). To test the hypothesis that acupuncture provides an additional benefit in patients suffering from CRPS, a double-blind placebo-controlled prospective study was performed.

PATIENTS AND METHODS

Fourteen patients, 10 female and 4 male with a mean age of 51.8+/-11.4 years considered clinically to have features of acute CRPS of the upper extremity, were studied. All patients had CRPS for less than 6 months. In 8 cases pain started after a Colles fracture ; in 6 cases patients had hand surgery. Each of the 14 patients was randomly assigned to either the classical acupuncture group (group A) or sham acupuncture (group S). The randomization list was not available to physicians performing the physical examination. Sham acupuncture was defined as acupuncture at incorrect points that only involve minimal surface stimulation. Real acupuncture and sham treatment with sterile acupuncture needles for single use were performed by a Chinese expert five times a week for three weeks and required

[1] Department of Physical Medicine and Rehabilitation, University of Vienna, Austria.
[2] University of Shanghai, China.
[3] Institute for Medical Statistics, Vienna.
[4] Department of Nuclear Medicine, University of Vienna, Austria.
Correspondence and reprints : V. Fialka-Moser, University of Vienna, Department for Physical Medicine and Rehabilitation, Währinger Gürtel 18-20, 1090 Vienna, Austria.

30 min. Acupuncture sites were chosen by the acupuncturist and included 5 standardized points. After the first treatment he fixed the schedule for acupuncture. Additionally both groups received the same basic therapy which comprised a home therapy program with elevation, ice and therapeutic exercises. Patients were first instructed by a physician and a physical therapist. A standardized folder was handed out to the patients. Patients performed three units of therapeutic exercises. In all three sessions an individually-adapted home therapy program was evaluated with the patient. All patients gave their informed consent for the treatment.

Clinical assessments were performed by the same physician before the start, after 1 and 3 weeks, and 1, 3 and 6 months following completion of acupuncture treatment. The current state of pain was assessed before each treatment by means of a visual analogue scale (VAS) ranging from 0% (no pain) to 100% (maximum pain imaginable). Subjective functional impairment was rated according to a VAS ranging from 0 to 100%. Evaluation of asymmetric increase in limb volume was performed by volumetric measurements of the extremities (4). Skin temperature was recorded by infrared thermography under static conditions using the Erika 900 Agema system. After a 20-min. period of equilibration, the hand temperature was recorded simultaneously in 5 areas. The mean difference between the affected and healthy side was calculated. Active range of wrist motion was measured by goniometry and determined by the neutral zero method in comparison to the healthy side.

Treatment success was calculated using analysis of variance of repeated measurements. In order to establish the diagnosis, all patients underwent a 5-phase bone scan. Increased uptake in the entire affected limb was found during all 5 phases with the characteristic signs of CRPS in the bone phase (7).

RESULTS

The changes in clinical parameters are shown in figures 1 to 4. The current state of pain as well as clinical parameters were almost identical in patients of group A and of group S at the beginning. During therapy clinical parameters as well as pain improved in both groups and reached nearly normal levels after 6 months. Owing to the small number of patients in our study no differences between sham and treatment groups could be recognized.

DISCUSSION

Sustained pain relief and the restoration of normal function seem to be the important components in the management of CRPS. This necessitates the institution of intensive therapy, particulary therapeutic exercise, in conjunction with a multimodal approach (12). Stimulation of traditional acupuncture points has been shown by several authors to be effective in the control of pain associated with CRPS. Melzack (11) used brief, intense, low-frequency transcutaneous electrical stimulation delivered to trigger at acupuncture points in two patients with CRPS. Chan (1) reported on 14 of 20 patients with established CRPS who were successfully treated by electroacupuncture in one uncontrolled series. Leo (8) described a child suffering from CRPS successfully treated with electrical stimulation at acupuncture points. No randomized clinical trial in the area of classical acupuncture as ancillary treatment in the multidisciplinary management of CRPS has been carried out as yet.

The aim of this study was to test the additional benefit of acupuncture in the treatment of pain in CRPS. Placebo treatments used as control strategies in acupuncture research have taken a number of forms. Among them the form of sham acupuncture as treatment at incorrect points to minimize the problem of differential expectations has become popular. The kind of sham acupuncture recommended by Vincent (15) was chosen as placebo to minimize the putative specific effect of the needles while maintaining the psychological impact. In order to exclude the discrepancy between the sensations associated with classical acupuncture and sham acupuncture, only inexperienced patients were enrolled in the study.

Since early treatment is required (12), patients with CRPS less than 6 months were selected. They expressed rather severe pain at the beginning of therapy, which could be documented by means of the VAS. Although the VAS is generally considered limited by its unidimensional character in pain studies, Davidoff et al. proved it to be a valuable instrument for brief clinical assessment of patient progress during treatment of CRPS (2). A satisfactory level of pain relief could be obtained

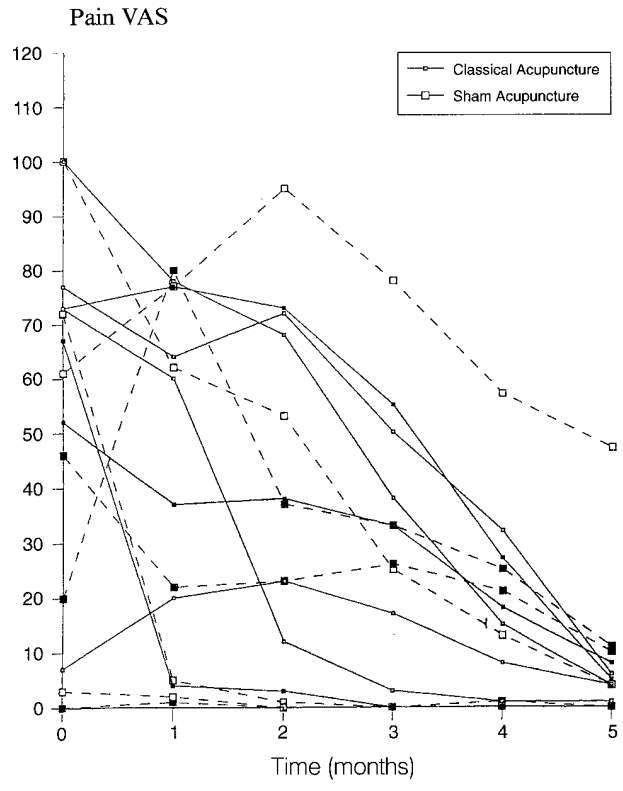

Fig. 1. — Effect of acupuncture on pain (VAS) in patients with CRPS.

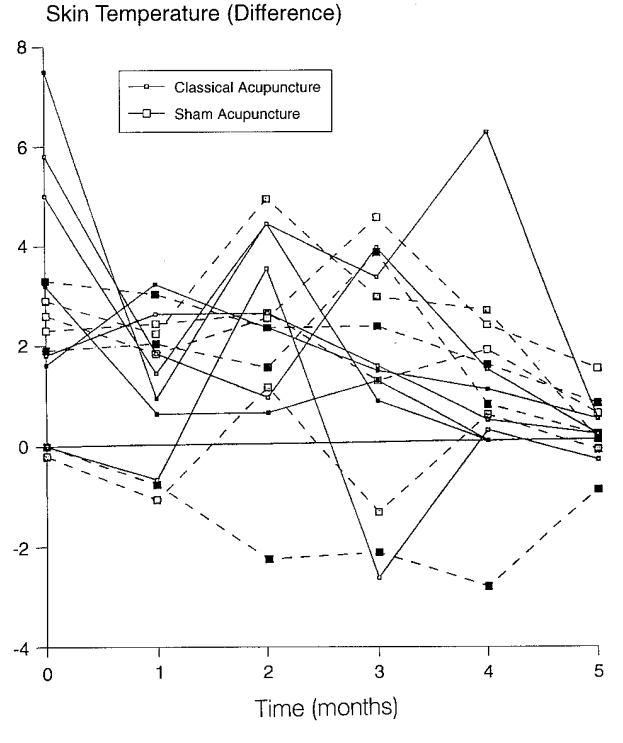

Fig. 2. — Effect of acupuncture on skin temperature (difference affected/healthy side) in patients with CRPS.

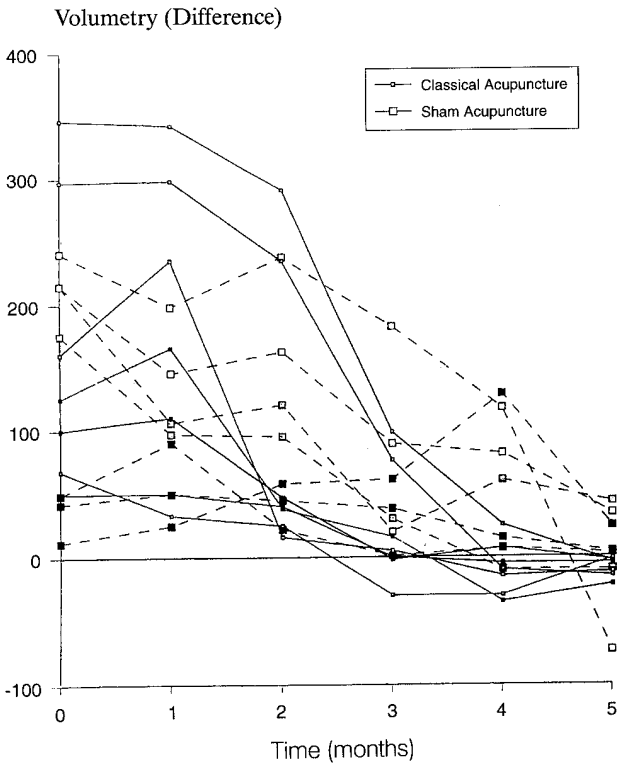

Fig. 3. — Effect of acupuncture on volumetry (difference affected/healthy side) in patients with CRPS.

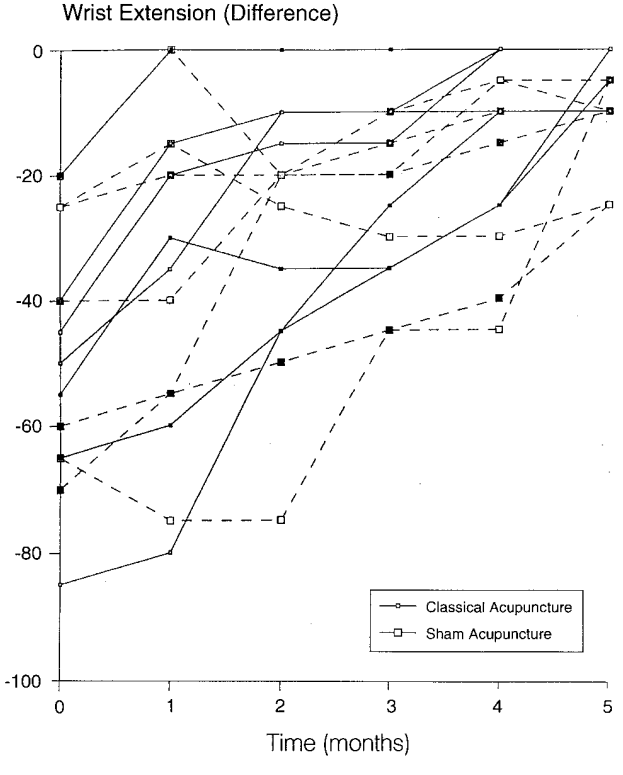

Fig. 4. — Effect of acupuncture on wrist extension (difference affected/healthy side) in patients with CRPS.

by acupuncture and sham acupuncture. Most of the clinical trials using a real versus sham acupuncture model show that sham acupuncture is effective in treating pain but at a lower percentage than real acupuncture (6, 9). It may also be that the use of the standardized basic program obscured the positive effect of acupuncture in both groups. Selected methods of therapeutic exercise have been shown to improve clinical parameters as well as pain in CRPS (3). For ethical reasons their use is required for each patient suffering from CRPS. Furthermore the psychologic effect which is carried out by the intense treatment by the Chinese expert and the daily check-up with the physician contribute to the success of treatment in both groups.

No significant difference between sham and treatment group could be observed. For a definitive statement the treatment of more patients in both groups is planned. To determine the effect of acupuncture on clinical parameters, long-term follow-ups are projected.

REFERENCES

1. Chan C. S., Chow S. P. Electroacupuncture in the treatment of posttraumatic sympathetic dystrophy (Sudeck's atrophy). Br. J. Anaesth., 1981, 53, 899-902.
2. Davidoff G., Morey K., Amann M., Stamps J. Pain measurement in reflex sympathetic dystrophy syndrome. Pain, 1988, 32, 27-34.
3. Fialka V., Wickenhauser J., Engel A., Schneider B. Effect of physical therapy on clinical and scintigraphic parameters in Reflex Sympathetic Dystrophy Syndrome. Eur. J. Phys. Med. Rehabil., 1991, 1, 3-8.
4. Fischbach J. U., Mönter B., Göltner E. Messungen von Armödemen durch optoelektronische Volumetrie, Phlebologie und Proktologie, 1986, 4, 3-15.
5. Gaw A. C., Chang L. W., Shaw L. C. Efficacy of acupuncture on osteoarthritic pain. New Eng. J. Med., 1975, 21, 375-378.
6. Godfrey C. M., Morgan P. A controlled trial of the theory of acupuncture in musculoskeletal pain. Rheum., 1978, 5, 121-124.
7. Leitha T., Staudenherz A., Korpan M., Fialka V. Pattern recognition in five phase bone scintigraphy : diagnostic patterns of reflex sympathetic dystrophy in adults. Eur. J. Nucl. Medicine, 1996, 23, 256-62.
8. Leo K. Use of electrical stimulation at acupuncture points for the treatment of reflex sympathetic dystrophy in a child. Phys. Ther., 1983, 63, 957-959.
9. Lewith G. T., Field J., Machin D. Acupuncture compared with placebo in prosthetic pain. Pain, 1983, 17, 361-368.
10. Man S. C., Baragar F. D. Preliminary clinical study of acupuncture in rheumatoid arthritis. J. Rheumatol., 1974, 1, 126-129.
11. Melzack R. Prolonged relief of pain by brief, intense transcutaneous somatic stimulation. Pain, 1975, 1, 357-373.
12. Raj P., Cannella J., Kelly J., McConn K., Lowry P. Multidisciplinary management of reflex sympathetic dystrophy. In : Reflex Sympathetic Dystrophy. eds., Stanton Hicks M., Jänig W., Boas R. A., Kluwer Boston, 1990, pp. 165-172.
13. Roberts W. A hypothesis on the physiological basis for causalgia and related pains. Pain, 1986, 24, 279-311.
14. Stanton Hicks M., Jänig W., Hassenbush S., Haddox J.D., Boas R., Wilson P.Reflex sympathetic distrophy : changingconcepts and taxonomy. Pain, 1995, 63, 127-33.
15. Vincent C. A., Richardson P. H. The evaluation of therapeutic acupuncture : Concepts and methods. Pain, 1986, 24, 1-13.

SAMENVATTING

M.I. KORPAN, Y. DEZU, B. SCHNEIDER, TH. LEITHA, V. FIALKA-MOSER. Acupunctuur in de behandeling van posttraumatisch pijnsyndroom.

Om de hypothese te testen dat klassieke chinese acupunctuur een duidelijke waarde heeft bij patiënten met reflex sympatische dystrofie werd een dubbel blind placebo gecontroleerde prospectieve test uitgevoerd. Veertien patiënten met klinische en scintigrafische acute RSD van het bovenste lidmaat, bestaande voor meer dan 6 maanden, werden bestudeerd.

De patiënten werden ad random toegekend voor klassieke acupunctuur of voor cham-acupunctuur. Dit werd 5 maal per week toegepast gedurende 3 weken en gedurende 30 minuten per sessie. Beide groepen hadden dezelfde standaard basisbehandeling. De toestand van pijn werd nagegaan met een visuele analoog score. Subjectief succes van de behandeling werd geëvalueerd eveneens door de patiënten met een score. Elke patiënt onderging een klinisch onderzoek en was nagekeken met een 5-fasen botscan om de diagnose te bevestigen. De huidige toestand van pijn en de klinische parameters waren identiek in beide groepen. Gedurende de behandeling was er een duidelijke verbetering van pijn en de klinische parameters in beide groepen die een normaal niveau haalden na 6 maanden. Gezien het kleine aantal patiënten in beide groepen, werd er geen significant verschil tussen beide vastgesteld. Verdere uitbreiding van het onderzoek is noodzakelijk.

RÉSUMÉ

M.I. KORPAN, Y. DEZU, B. SCHNEIDER, TH. LEITHA, V. FIALKA-MOSER. Le traitement par acupuncture du syndrome douloureux post-traumatique.

Afin de tester l'hypothèse que l'acupuncture classique chinoise procure un bénéfice additionnel subjectif et objectif chez les patients souffrant de dystrophie réflexe sympathique, une étude prospective randomisée en double aveugle a été conduite. Quatorze patients souffrant d'une dystrophie réflexe sympathique aiguë confirmée cliniquement et scintigraphiquement et affectant le membre supérieur depuis 1 à 6 mois ont été étudiés. Les patients ont été au hasard traités soit par acupuncture classique (groupe A), soit par un traitement simulant l'acupuncture (groupe S). Le traitement a été réalisé pendant une durée de 3 semaines, 5 fois par semaine, pendant 30 minutes. L'évaluation de la douleur a été réalisée à l'aide d'une échelle analogique visuelle. Les patients ont été également invités à évaluer sur une échelle chiffrée le bénéfice subjectif du traitement. Chaque patient a subi un examen clinique et a été investigé par scintigraphie en 5 phases, de manière à confirmer le diagnostic. L'importance de la douleur et les paramètres cliniques se sont avérés pratiquement identiques avant le traitement dans les deux groupes. Le traitement a considérablement amélioré la douleur et les paramètres cliniques, les patients étant pratiquement normalisés à 6 mois. En raison du petit nombre de patients repris dans notre étude, aucune différence statistique n'a pu être mise en évidence entre les 2 groupes. Toutefois, une conclusion définitive ne pourra être tirée que lorsqu'un nombre plus important de patients pourra être inclu dans chaque groupe, avec suivi à long terme.