

BRIEFING PAPER No 2

Stroke and Acupuncture

The evidence for effectiveness



Edited and produced by the Acupuncture Research Resource Centre
Published by the British Acupuncture Council
June 1998

The Evidence Series of Briefing Papers aims to provide a review of the key papers in the literature, which provide evidence of the effectiveness of acupuncture in the treatment of specific conditions. The sources of evidence will be clearly identified ranging from clinical trials, outcome studies and case studies. In particular this series of briefing papers will seek to present, discuss and critically evaluate the evidence.

STROKE AND ACUPUNCTURE: THE EVIDENCE FOR EFFECTIVENESS

Introduction

In the West interest in the possible effect of acupuncture on stroke has been increasing over the last five years with much of the recent research being carried out in the Scandinavian countries and the USA. Traditional Chinese medicine claims that the symptoms of stroke and its sequelae respond well to acupuncture treatment. Known as "wind-stroke", such treatment involves either the use body points alone, with or without electrical stimulation, or the combination of body points with scalp acupuncture (Chen 1993). In China many studies have compared different techniques and point combinations. Often very large numbers of patients are involved, for instance Ge (1992) treated and assessed 684 patients with sequelae of stroke at the Air Force Hospital in Shengyang.

Literature Search

For the purposes of this review a search was made of the Centralised Information Service for Complementary Medicine (CISCOM) database together with that of BIDS, and Medline. Additional information was obtained from the ARRCBASE. The key words used were; *CVA, stroke, hemiparesis, hemiplegia, sub-arachnoid haemorrhage, neurological damage/change, acupuncture, and scalp acupuncture.*

Controlled Trials

Several controlled studies have been reported in recent years where acupuncture has been used to treat paralysis due to stroke. It should be noted that where sham acupuncture is used as a control, it will still have a therapeutic effect, and so cannot be seen as a true placebo (Dowson et al 1985).

Zhang et al (1987) conducted a study on the use of acupuncture in the treatment of limb paralysis after stroke at the Hua Shan Hospital, Shanghai. This was a controlled study with 94 patients. Change in muscle strength was taken as the outcome measure. The acupuncture group received treatment, including electro-acupuncture, 6 times per week for 4 weeks. An increase of muscle strength of 1 or 2 grades was taken as the level of significance to be

achieved for a good result. At $p < 0.05$, both the treatment and control groups showed improvement, 83% and 63% respectively.

One of the best controlled trials was that undertaken by Hu et al (1993) in Taiwan. Treatment was commenced with 30 acute patients, within 36 hours of the onset of symptoms, and continued 3 times per week for 4 weeks, together with all normal supportive therapy. Assessment was at one month and three months. In this study, the neurological outcome for the acupuncture group was significantly better than for the controls. The improvement in neurological status was greatest for patients with a poor neurological score at baseline.

In Sweden a neurologist (Johansson et al 1993) conducted a randomised controlled study on a group of 38 subjects. All were acute strokes (i.e. starting at 4-10 days post stroke) and were given traditional Chinese acupuncture together with all normal physiotherapy and occupational therapy care. A total of 20 treatments, twice a week for ten weeks were given. The control group of 40 patients received the normal therapy treatment only, starting at the same time. Amongst those receiving acupuncture significant improvement was observed in walking, balance and activities of daily living, quality of life, mobility and emotional state. The authors have postulated that the change in mood produced by the acupuncture stimulation might be the most important aspect of the treatment. The benefits were long lasting, showing continuing significant improvement twelve months later in the acupuncture group. Interestingly the most important conclusion from this study was economic: the savings from using acupuncture were shown to be \$26,000 per patient.

A further randomised, controlled trial was undertaken by Magnusson et al (1994) investigating the normalisation of postural control after stroke and using the same acupuncture treatment group as Johansson. This group, now totalling 22, were matched again with 26 survivors from the original control group and a further 23 age-matched healthy subjects. Significantly more patients in the treatment group than in the original control group maintained stance during the stimulations ($p < 0.01$). The conclusion was that the acupuncture had enhanced the recovery of postural function in the original treatment group and this was still evident two years later.

Margaret Naeser has carried out several small-scale studies in the US. The first study (Naeser et al 1992), which was double-blinded and randomised, was conducted with sub-acute patients, one to three months after the onset of stroke. Ten patients received real acupuncture in addition to normal physiotherapy and 6 patients were given sham acupuncture and all normal therapy. Pre- and post- arm and leg motor evaluation was undertaken by physical therapists. The acupuncture treatment consisted of needling to recognised acupoints on the affected arm and leg, scalp acupuncture and low frequency electro-acupuncture. A total of 20 treatments was given, five times per week for four weeks. Sham acupuncture and electro-acupuncture were used. Four out of the ten acupuncture patients showed good results, but no improvement was recorded in the patients receiving the sham treatments. Evidence from CT scans showed that where less than half the motor pathways were damaged; 3 out of 4 of those treated with acupuncture achieved a good response compared with none of the sham group.

This study opens the way for more work on the usefulness of using CT scans to help predict the efficacy of acupuncture treatment. While it is logical that those with less damage do better, these results seem to be at odds with the work done by Hu et al (1993), which showed that those patients with poorer neurological scores actually did significantly better with acupuncture treatment. This may reflect different assessment procedures.

In a subsequent study with a different design, sham acupuncture was abandoned and chronic cases were included to act as controls (Naeser et al 1994). This study observed that all stroke cases who had hand paresis had a good response following 20-40 acupuncture treatments even though the treatment was started relatively late, between 2 and 8 years after the stroke. Good response was defined as a clear improvement in finger dexterity and strength tests.

The most recently published trial from Norway observed similar good effects (Sallstrom et al 1996). This was a controlled trial by physiotherapists trained in traditional Chinese acupuncture. The median time from stroke onset to inclusion in the trial was 40 days, which defines patients as being in the 'sub-acute' stage. All patients underwent an individually adapted rehabilitation programme with acupuncture being added to the treatment for 24 of the total of 45 sub-acute patients. The acupuncture group were treated 3 to 4 times per week for six weeks and assessed on entry and at the end of the six weeks. Motor function, Activities of Daily Living (ADL) and quality of life were tested. Both groups improved significantly in motor function and ADL but the acupuncture group showed a greater response. Only the acupuncture group rated a significantly improved life quality. After one year the follow up showed that the acupuncture group maintained and increased improvements on all scales relative to the control group (Kjendahl et al 1997). The report concluded that there seems to be positive long-term effects from giving acupuncture at the sub-acute stage post stroke.

Evidence From Additional Trials And Studies

Four recent studies from China can be found in the literature, but all are incomplete, lacking in detail and description, and therefore difficult to assess. Zou & Wang (1990) conducted a randomised controlled trial on 63 stroke patients. The patients received either daily acupuncture for 60 days or some other form of medication. The acupuncture patients did better overall. In the study of 101 patients done by Liang & Zhao (1994), the control intervention is not described. The results are described as encouraging. Li & Jin (1994) randomised 108 stroke patients into two groups receiving either temporal acupuncture or body acupuncture, each group receiving 30 treatments. The patients treated with temporal points fared slightly better. The most recent study used scalp acupuncture on 105 patients (Zhou & Zhang 1997). High rates of effectiveness were recorded. These studies are typical of those found in the Chinese literature, good results are claimed, large numbers are treated but they are weak on methodological detail which means that the results can only be suggestive.

A pilot study undertaken in Southampton (Hopwood and Lewith 1997) sought to test a treatment protocol and evaluate outcome measures for a larger study. The aim of the study was to investigate the effect of acupuncture on recovery of upper limb function in stroke patients. A case study design was used. Upper limb motor function was assessed, and since pain might inhibit motor function, the presence and severity of pain was evaluated with a visual analogue scale. Six patients were given daily treatment for two months, alternating between two weeks of the acupuncture treatment and two weeks of the placebo intervention. Four assessments were made at two-week intervals. The most striking improvements were found in the Motricity Index, and the trends were interesting. A randomised, controlled, single blind clinical trial is now underway.

Discussion

The studies carried out so far have developed a variety of methodologies and are strongly indicative of therapeutic benefit. Methodological shortcomings include small sample sizes in studies which have been carefully controlled and not accounting for the inherent variability of stroke and its recovery. All the studies have been conducted in a period when natural recovery would have occurred (Parker et al 1986) and the studies have not, with the exception of the Scandinavians, taken this into account by including larger numbers. The major Chinese studies do treat very large numbers, necessary because of the wide variation of symptoms within this patient group, but usually do not include controls.

Amongst the studies there is a wide variation in outcome measures used and hence comparisons or pooling of results are not possible. However it is clear that quality of life measures, including a measure of 'mood', are important in assessing change for patients. The precise details of acupuncture treatment given are not always clearly stated in the studies, but, in the absence of any evidence to the contrary, it would seem reasonable to pursue the classic form of treatment, using both body acupuncture points and scalp acupuncture. In these studies, the average length of treatment is six weeks and the frequency is three to four times per week. Much of this care is given in a hospital environment because of the frequency of treatment required and the preferred early start to treatment, as soon as the patient is medically stable after haemorrhage. Little work has been done on treatment of chronic cases.

Conclusion

There is an increase in interest in using acupuncture as a treatment modality for stroke (Ernst & White 1996), and the recent Consensus Development Statement from a panel convened by the US National Institutes of Health to consider the evidence for acupuncture (NIH 1997) finds 'positive clinical reports' for its use in this context. It would seem that the evidence to date suggests that acupuncture has a valuable role to play in helping stroke recovery.

References

- Chen A (1993) *Effective acupuncture therapy for stroke and cerebro-vascular disease: Part II*. American Journal of Acupuncture. 21(3):205-219.
- Dowson DI, Lewith GT, Machin D (1985) *The effects of acupuncture versus placebo in the treatment of headache*. Pain 21:35-42.
- Ernst E, White AR (1996) *Acupuncture as an adjuvant therapy in stroke rehabilitation?* Wien Med Wschr 146:556-558.
- Ge S (1992) *The effect of acupuncture in cerebral thrombosis: a report of 684 cases*. International Journal of Clinical Acupuncture 3(2):125-129.
- Hopwood V, Lewith GL, (1997) *The effect of acupuncture on the motor recovery of the upper limb after stroke*. Physiotherapy, 83:614-19.

Hu HH, Chung C, Liu TJ, Chen RC, Chen CH et al (1993) *A randomised, controlled trial on the treatment for acute partial ischaemic stroke with acupuncture*. Neuroepidemiology, 12(2):106-113.

Johansson K, Lindgren I, Widner H, Wiklund I, Johansson B (1993) Can sensory stimulation improve the functional outcome in stroke patients? Neurology 43:2189-2192.

Johansson B (1995) *Acupuncture in stroke rehabilitation*. Acupuncture in Medicine 13(2):81-84.

Kjendahl A, Sallstrom S, Osten PE, Stanghelle JK, Borchgrevink CF (1997) *A one year follow-up study on the effects of acupuncture in the treatment of stroke patients in the sub-acute stage: a randomised, controlled study*. Clinical Rehabilitation 11(3):192-200.

Li Y, Jin R (1994) *Clinical study on the sequelae of cerebral vascular accident treated with temporal-point acupuncture*. Chen Tzu Yen Chiu 19(2):4-7.

Liang D, Zhao Y (1994) *Puncturing the empirical point shengen in treatment of 101 cases of apoplectic hemiplegia*. Journal of Traditional Chinese Medicine 14(2):110-4.

Magnusson M, Johansson K, Johansson B (1994) *Sensory stimulation promotes normalisation of postural control after stroke*. Stroke 25(6):1176-1180.

Naeser MA, Alexander MP, Strassy-Eder D, Galler V, Lannin LN, Bachman D (1992) *Real versus sham acupuncture in the treatment of paralysis in acute stroke patients: a CT scan lesion site study*. Journal of Neurological Rehabilitation 6(4):163-174.

Naeser MA, Alexander MP, Strassy-Eder D, Galler V, Hobbs S, Bachman D (1994) *Acupuncture in the treatment of hand paresis in chronic and acute stroke patients-improvement observed in all cases*. Clinical Rehabilitation 8(2):127-41.

NIH, Acupuncture. *Consensus Development Statement*. Nov 3-5 1997. Washington

Parker VM, Wade DT, Langton Hewer R (1986) *Loss of arm function after stroke: measurement, frequency and recovery*. Int. Rehabil Med. 8:69-73.

Sallstrom S, Kjendahl A, Osten PE, Stanghelle JK, Borchgrevink CF et al. (1996) *Acupuncture in the treatment of stroke patients in the sub-acute stage* Complement Therapies in Medicine 4(3) 193-7

Zhang W et al. (1987) *Acupuncture treatment of apoplectic hemiplegia*. Journal of Traditional Chinese Medicine 7:157-60.

Zhou J, Zhang F (1997) *A research on scalp acupuncture for cerebral infarction*. Journal of Traditional Chinese Medicine 17(3):194-7.

Zou X, Wang D (1990) *Comparative study of cerebral infarction treated with acupuncture at six acupoints of yang meridian and colon*. Chinese Journal of Modern Developments in Traditional Medicine 10(4):199-202.

Grateful acknowledgements are due to Valerie Hopwood (this paper was based on her article in Complementary Therapies in Medicine 1996 4(4):258-263 entitled "Acupuncture in stroke recovery: a literature review") as well as to Alison Gould and Hugh MacPherson for their work in preparing this briefing paper.