

# Current Research and Clinical Applications

## Acupuncture Treatment for Spinal Cord Injuries: An Analysis of a Recent Systematic Review of Randomised Clinical Trials in the Chinese Literature

**R Craig Davenport** BSc(Med) MBBS FAFRM (RACP) MAppSc(Acup)  
Shoalhaven District Memorial Hospital  
Graduate School of Medicine, University of Wollongong

The following is a summary and analysis of a recent systematic review of acupuncture treatment in spinal cord injuries (SCI), 'Acupuncture for Spinal Cord Injury Survivors in Chinese Literature: A Systematic Review' by Shin and colleagues.<sup>1</sup>

The objective of this systematic review by Shin et al.<sup>1</sup> was specifically to review the Chinese literature regarding acupuncture treatment for SCI. They searched the China National Knowledge Infrastructure databases from their inception up until May 2008. The intention was to select randomised controlled trials (RCTs) with acupuncture, including electroacupuncture (EA).

Trials comparing needle acupuncture with various forms of rehabilitation and drugs were included, but comparisons with other forms of acupuncture, such as injection or laser acupuncture, or between two different types of acupuncture were excluded.

They identified 236 studies, with a final number of seven RCTs meeting the selection criteria. The reviewers also undertook an assessment of the appropriateness of the acupuncture treatment in each trial. None of the included trials used sham acupuncture as a control. Most of the trials included some variation of usual rehabilitation as

a control. Attainment of *deqi* was variably reported. There was a lack of reporting of adverse events in all but one study.

Five studies assessed functional recovery, and two assessed bladder dysfunction. One of the seven studies also assessed spasticity. All studies reported favourable effects of acupuncture on functional recovery or urinary function; however, methodological quality was poor in general. A pooled analysis of the two trials<sup>2,3</sup> assessing bladder dysfunction showed positive effects of acupuncture compared with conventional treatment ( $n = 128$ , RR 1.51, 95% CI 1.21–1.9). Meta-analysis of the remaining studies was not possible due to heterogeneity of study designs.

The authors concluded that overall the effectiveness of acupuncture for functional recovery and bladder dysfunction in SCI is suggestive, although with the poor quality and small number of the studies, further studies are required.

The methodological quality of the trials was assessed by using the PEDro and Jadad scales, which are both widely used. On average, the included studies had a mean PEDro score of 6/10(1.4) and Jadad score of 1.1/5(0.9). Scores below 7 and 3 respectively are indicative of poorer quality trials.

Of the seven included studies, the study with the highest PEDro and Jadad scores (9 and 3 respectively) was that of Ma.<sup>4</sup> This study of 30 subjects included 18 thoracic and 12 lumbosacral injuries, but no cervical level injuries. All subjects were classified as 'ASIA' C (sensory and motor incomplete) according to the American Spinal Injury Association Impairment Scale (AIS). It is important to note that the prognosis for ambulation at one year in incomplete injuries is substantially better than that of complete injuries, with 46% achieving community ambulation and another 14% performing household ambulation for incomplete tetraplegics, and 76% of incomplete paraplegics regaining community ambulation compared with only 5% of complete paraplegics.<sup>5</sup>

The control group received 'weight lift walking exercise' (presumably partial body-weight supported walking) for 15–30 minutes, five days per week for six months, whilst the treatment group also received EA to scalp points (5 min), plus (manual) acupuncture to arm and leg points (25 min) daily for six months. The treatment protocol was deemed appropriate and the points used included EA to scalp motor area (MS6) and equilibrium area (MS14), plus MA to LI 10, LI 11, TE 8, SI 5 in the arm, and LR 12, GB 34, GB 39, BL 54, BL 60, LR 3 in the leg.

\* correspondent author; e-mail: craig.davenport2@sesiahs.health.nsw.gov.au

The outcome measures used were the Fugl-Meyer score and Lindmark score and these were assessed after six months of treatment. There were significant differences in favour of acupuncture in both measures. The outcome measures used have not been validated in spinal injuries, so use of validated measures would improve the usefulness of this study, but the positive results are encouraging and will hopefully be replicated in future. The lack of any subjects with cervical level injuries or complete injuries (ASIA A) in this study limits the interpretation of these results to patients with thoracic and lumbosacral lesions, and more specifically to motor and sensory incomplete injuries.

Although rating low in methodological quality (PEDro 5, Jadad 1), the study by Gu et al.<sup>2</sup> is of some interest. This study of 64 subjects looked at both complete and incomplete SCI patients with bladder dysfunction. There were a large number of cervical level lesions amongst this cohort. The control group received intermittent catheterisation, whilst the treatment group received catheterisation plus additional EA 30 minutes daily for two weeks per course, with up to four courses over eight weeks. Points were prescribed according to whether the patient had an excess or a deficiency syndrome. The acupuncture treatment was deemed appropriate. The points used in this trial included the Eight-liao points (EA), plus BL 23, CV 6, BL 20, BL 22 in excess syndrome, and SP 6, BL 28, SP 9, and CV 3 in deficiency syndrome.

The outcome measure was Total Efficacy Rate measured after 2–8 weeks of treatment, and demonstrated a significant difference. Nevertheless, given the fact that rehabilitation treatments for bladder dysfunction are often limited to adaptive strategies such as catheterisation, or pharmacological inhibition of bladder overactivity, any modality that potentially improves bladder function demands a closer look.

However, any studies relating to bladder function in spinal cord injuries would need to recognise the fact that the true extent of bladder dysfunction can only be accurately ascertained by urodynamic studies to evaluate the pressures that arise during bladder filling and voiding, as elevated pressures may not produce visible or subjective symptoms in the patient, but may have serious consequences for kidney function over a long period of time. Over the last few decades, a more proactive approach to the management of neurogenic bladder dysfunction after SCI has been adopted in spinal units in Australia and overseas, with a large proportion of patients requiring some form of catheterisation in the long term. Therefore, ideally this study should be repeated with a more robust methodological design, and include physiological assessments of bladder function in the outcomes to ensure the long-term safety of the subjects.

The remaining trials included in the review were poorly reported and subject to significant potential bias, and therefore cannot sufficiently prove an effect from acupuncture. Nevertheless the significant benefits in the acupuncture groups in outcome measures such as Functional Independence Measure (FIM) and ASIA classification should provide impetus for further research.

The SCI population of patients has a number of medical and functional problems that prove difficult to treat with orthodox medicine. Any modality that can be shown to improve outcomes would be welcomed by clinicians working in the field. Whilst the methodological quality of the trials included in this review overall proved poor and therefore limit the usefulness of their findings, the small study by Ma<sup>4</sup> is suggestive of a benefit from acupuncture for walking function in incomplete thoracic and lumbosacral level SCI. The study by Gu et al.<sup>2</sup> despite its shortcomings, holds some promise of benefit for bladder

functioning in both complete and incomplete SCI.

A closer look at these studies highlights several important points. Researchers embarking upon clinical trials of acupuncture should aim to satisfy current standards of both research methodology and reporting of clinical trials, and thus withstand the scrutiny of quality scales such as PEDro and Jadad. Likewise, it is important to ensure that the prescribed acupuncture treatment is not only appropriate according to the Chinese medicine paradigm, but also logistically feasible to administer. Furthermore, control group treatments should be based upon usual care in conditions such as SCI where the rehabilitation treatments are important in maximising functional outcomes. Ideally studies would include a sham acupuncture treatment as a control to overcome the potential bias of a placebo effect. In addition, safety must be assured, particularly with a condition such as SCI where the risk of inducing autonomic dysreflexia and its life threatening consequences by applying a potentially noxious stimulus such as acupuncture need to be understood by practitioners treating these patients. Also, appropriate assessment of function, as mentioned in the case of bladder dysfunction, should be employed according to usual best practice, and outcome measures validated for the particular disease in question.

Clearly, challenges exist in providing acupuncture treatment in the acute stages in SCI patients in a hospital setting in Australia, but these challenges are not insurmountable. A robust evidence base would facilitate this process. The worldwide incidence of spinal cord injury is between 12.1 and 57.8 per million.<sup>6</sup> This translates to approximately 60 000 cases occurring annually in China alone, which is why it is important that research performed in China is made accessible to clinicians and researchers in the West. Hopefully, over the next five to ten years, trials will be reported in both Asian and western

publications with methodological quality closer to the standards expected in modern clinical research, and which verify the sorts of results that the trials in this review have suggested, potentially establishing this modality as a legitimate treatment option for spinal cord injuries.

#### REFERENCES

1. Shin BC, Lee MS, Kong JC, Jang I, Park JJ. Acupuncture for spinal cord injury survivors in Chinese literature: a systematic review. *Complement Ther Med* 2009;17:316–27.
2. Gu XD, Fu JM, Yao YH. Clinical observation of electroacupuncture on eight-liao points in 64 bladder dysfunction patients with spinal cord injury. *J Clin Acupunct Moxibustion* 2005;21(4):47–8.
3. Huang ZG, You B. Acupuncture treatment on 32 cases of urinary retention after spinal cord injury. *J Shanghai Acupunct Moxibustion* 2002;21(2):31.
4. Ma CH. The effects of combination treatment of electroacupuncture and weight lift walking exercise on the walking function of spinal cord injury patients. *Chin J Clin Rehabil* 2005;9(17):186.
5. Kirshblum SC, Priebe MM, Ho CH, Scelza WM, Chiodo AE, Wurmser LA. Spinal cord injury medicine. 3. Rehabilitation phase after acute spinal cord injury. *Arch Phys Med Rehab* 2007;88(3):S62–70.
6. van den Berg ME, Castellote JM, Mahillo-Fernandez I, de Pedro-Cuesta J. Incidence of spinal cord injury worldwide: a systematic review. *Neuroepidemiology* 2010;34(3):184–92.

## Snapshot: Chinese Medicine Workforce – Victoria 2009

**Peter Ferrigno PhD**

Not unlike Chinese medicine researchers seeking to answer the question of who seeks out Chinese medicine treatment, the Victorian Department of Human Services sought to gain a picture of those practising Chinese medicine in Victoria. Some seven years after the registration of Chinese medicine profession commenced in Victoria, the Service and Workforce Planning Branch of the department, in collaboration with the Chinese Medicine Registration Board of Victoria (CMRB) conducted a workforce survey of Chinese medicine practitioners. Two surveys were conducted, one in 2008 and the other in 2009. Tied to registration renewals, practitioners were asked to complete the survey and the response rate was (not surprisingly) high – over 80%. What follows is a reflective comment on the data rather than a summary.

#### GENDER DISTRIBUTION

As of 2009, the workforce profile appears to be gender balanced; in contrast to other healthcare professions, females tend to be more equitably represented. What would be of interest

is whether this gender balance has been an ongoing feature of Chinese medicine practitioners in Victoria (indeed, Australia) and what the profile has been and is during training.

#### WHERE DO WE COME FROM?

Just over 41% of practitioners are Australian born and presumably Australian trained. Roughly the same proportion of practitioners is Asian born and again probably Asian trained. One would expect that in the foreseeable future the number of Australian born and trained practitioners will increase, which may offer a guide as to the increasing maturity of Chinese medicine practice in the state. It would be interesting to know whether the current Victorian profile matches with other Australian states.

#### WHAT KIND OF TRAINING?

Historically, Chinese medicine practice in Victoria began with acupuncture. Training in Chinese herbs is a later addition. In more recent times, training

in TCM appears to have moved to obtaining a dual qualification and the majority of practitioners (almost 60%) are dual trained. However, just under 40% of practitioners in Victoria are acupuncture trained and this is more than likely a reflection of the history of acupuncture training in the state. One might expect to see this pattern in other Australian states.

#### WHERE DO WE WORK?

By far the majority of practitioners work in metropolitan Melbourne. Quite likely, the distribution pattern will reflect an Australian trend of working in the major cities. In Victoria, it seems that the further one moves away from a central place like Melbourne or Geelong the less likely an activity or trend is represented. Indeed, a similar pattern is also to be noted within the Melbourne metropolitan region. How long a place like Melbourne or Geelong will be able to sustain the trend to work primarily in such settings will be noteworthy. The implication is that the profession may be nearing saturation with regard to practitioners working in Melbourne. If this is so, one obvious

challenge is to determine what this 'saturation point' is for TCM practice in the Melbourne area; there may also be a need to encourage practitioners to locate themselves in regional towns or rural areas. Indeed, it seems that there are also a number of Melbourne metropolitan areas where TCM practice is underrepresented. This issue of how to get healthcare practitioners to work in regional and rural areas of Victoria is now being considered by our biomedical colleagues.

#### HOW DO WE WORK?

Unlike many other healthcare professionals, TCM practitioners work almost exclusively on a fee for service basis. Very few are retained as employees by healthcare facilities such as community centres or hospitals. That TCM practitioners are not employed as part of the broader healthcare system probably attests to the idea that TCM is still in the process of becoming part of mainstream healthcare. Working as a sole trader also means having to develop a range of business skills and acumen that will help maintain a practice. We know that many small businesses have a very short 'use by date' and perhaps this may be one reason why so many practitioners choose to work from home, thereby minimising the business risks.

#### HOW LONG DO WE WORK?

Data tends to show that practitioners work less than the full-time equivalent. Why this is so is not clear but open to speculation and further study. Way back in the early 1980s, the late Carole Rogers said that seeing somewhere around 25–30 people a week would sustain a TCM practitioner or more particularly, an acupuncturist. Most practitioners tended to charge around \$30 per session, a session being roughly one hour. More than half of the respondents estimated that they saw less than 20 people per week, whilst also stating that, on average, they worked 31 hours and 24 hours per week, male and females respectively. Perhaps working fewer hours and seeing, it seems, a small number of clients could be a practitioner choice. If so, this choice could go part of the way to explaining why many practitioners work from home. Perhaps also the demand for TCM services is growing slowly.

#### YEARS OF EXPERIENCE:

With respect to practitioner experience, the findings suggest that, relatively speaking, TCM is a young practice. TCM practice in Victoria is not much more than 30 years old. What we do not know is how many individuals have actually trained as TCM practitioners

since the early 1980s and how many of these are still practising. Based on CMRB figures and personal observation, it seems that many have left the profession. If this is correct, why has it happened? Indeed, we could also seek to find out how many individuals have obtained TCM qualifications since 2000 and have now left the profession.

TCM practitioners in Victoria, or more accurately in Melbourne, seem to be dual trained or trained in acupuncture only. Men and women are equally represented, with a large majority of practitioners working as sole practitioners, with a sizeable number largely working from home. Most do not work a full-time equivalent week, with just over half the practitioners seeing less than 20 patients a week. TCM is a young profession, but there are signs of an increasing maturity. It would be of interest to note how the Victorian data compares with the national workforce pattern.

#### REFERENCES

1. Victoria's Health Workforce: Allied Health Workforce Studies. Chinese Medicine Workforce 2009 [cited 21 April 2010]. [http://www.health.vic.gov.au/\\_\\_data/assets/pdf\\_file/0005/385259/Chinese-Medicine-2009.pdf](http://www.health.vic.gov.au/__data/assets/pdf_file/0005/385259/Chinese-Medicine-2009.pdf).