

A Critique of Literature using Acupuncture to Treat Lower Back Pain

By Attilio D'Alberto

Abstract

Background

Lower back pain (LBP) is a major cause of suffering amongst the population of the UK and other nations. Acupuncture is now practiced by allopathic medical doctors as well as Chinese medicine practitioners. It is important to establish acupuncture efficacy in the treatment of LBP.

Objectives

To determine if acupuncture is an effective form of treatment for lower back pain (LBP).

Search Strategy

A literature search was carried out using Medline (1974-1996) and AMED. In addition 'hand searching', manual methods were employed at the British library.

Selection Criteria

All rigorous research, ranging from randomised controlled trials (RCTs) to case studies that reported the use of acupuncture in the treatment of lower back pain were included in the selection criteria. Studies that deviated from lower back pain to other affected areas of the body or used moxibustion, TENS or shallow needling were rejected. Six studies, three RCTs and three case studies, were randomly selected from papers collected and were included in this review.

Data Collection and Analysis

Three reviewers; Attilio D'Alberto BSc (Hons) TCM, Eunkyung Kim BA, BSc (Hons) TCM and Angelo D'Alberto BSc (Hons) TCM, independently assessed the randomised controlled trials (RCTs) according to the adapted Koes strategy. Case studies were critiqued as a group.

Results

Six papers were included, three RCTs and three case studies. One RCT scored more than 50 points, indicating a relatively average methodology, whilst the other two RCTs scored less than average. The three case studies were all published in traditional Chinese medical journals. Two studies reported the successful use of acupuncture as an intervention to treat lower back pain, whilst one reported an inconclusive outcome.

Reviewer's Conclusions

The evidence summarised in this review does not support the use of acupuncture as an effective form of treatment for lower back pain. By comparing the 'lesser' forms of rigorous research (case studies), it could be demonstrated the RCTs had flaws which otherwise would not have been made available if RCTs were reviewed alone.

Keywords: acupuncture, lower, back, pain, lumbago.

Introduction

Prevalence and Cost of Lower Back Pain

Lower back pain (LBP) as defined by Anderson *et al.* (1998), is a common complaint characterised by local or referred pain, at the base of the spine. In 1998, 40% of UK adults stated they had suffered from back pain lasting more than one day in the previous 12 months (Department of Health 1999). Nearly 40% of UK back pain sufferers consulted their doctor; 10% visited a practitioner of complementary medicine (osteopaths, chiropractors and acupuncturists) (Department of Health 1999). In 1999, back pain cost UK industry £5 billion (\$8.5 billion) lost from 11 million days of absence and a loss of trained staff, whilst in the UK health service, it cost £481 million (\$851 million) from 12 million doctor consultations and 800,000 in-patient days (Donaldson 1999).

Causes of Lower Back Pain

In orthodox terms LBP can be caused by a sprain, strain, osteoarthritis, ankylosing spondylitis, a neoplasm or a prolapsed intervertebral disk. From the viewpoint of Traditional Chinese Medicine (TCM), LBP is known as *Yao Tong* and can be caused by either; trauma leading to the stagnation of *Qi* and Blood, invasion by pathogenic Cold, Wind and Damp or a deficiency of Kidney *Qi* (Valaskatgis 1982). As a general rule, lower lumbar pain is closely related to the Kidney (Weng and Hwang 1981). These conditions can be divided into excess or deficient syndromes. The invasion by pathogenic Cold and Damp is an excessive disorder resulting in the stagnation of *Qi* and Blood. Kidney *Qi* deficiency is a deficient syndrome (Maciocia 1998, p160). In all these instances the end result is the stagnation of *Qi* and Blood, causing pain.

Acupuncture

There are 365 standard acupoints on the human body (Qiu 1993, Huang Di, 3rd BCE). In the process of acupuncture no matter what acupoint or manipulation is selected, the arrival of 'de *Qi*' must be achieved. It is indicated by soreness, numbness, heaviness and distension around the point, or transmission upwards and downward along the meridian (Cheng 1999). Kidney deficiency is the root, while evils and trauma are the branches. Kidney deficiency is the basic pathology of *Yao Tong* (lumbago). The *Bian Zheng Lun Zhi* (syndrome differentiation and treatment strategy) of *Yao Tong* is centred on strengthening the kidney above all else (Peng 2000).

The mechanisms of acupuncture as analgesia are still unclear. Dr Pomeranz first discovered acupuncture analgesia caused the release of endorphins from the pituitary gland after a 30 minute period (cited in Gerber 1996). As Gerber (1996) explains the possible mechanism of acupuncture analgesia starts from the initial acupoint stimulation ('de *Qi*'). Through the acupuncture meridian network, *Qi* energies are transformed into DC-current changes, which are then slowly transmitted along perineural pathways throughout the glial network. At the level of the brain, these changes in DC potential are also

associated with neurochemical mechanisms (i.e. endorphin release) that may precede or coincide with the action-potential changes in individual neurons.

Justification for a Review of Literature

It is imperative to conduct good quality research in order to treat patients with the greatest possible benefit and least possible harm. In the UK, general practitioners (G.P.'s) now undertake short courses in acupuncture for the relief of pain. It is therefore of vital importance to establish acupuncture efficacy.

Objectives

To take investigations that meet the inclusion criteria, randomly select six studies and critically appraise them in order to answer the research question 'Is acupuncture effective in the treatment of lower back pain'? The purpose of this paper is not to provide an answer regarding the mechanisms of acupuncture.

Method

A literature search was carried out using Medline (1966-present), Embase (1989-present) and AMED (1985-present). In addition 'hand searching', manual methods were employed at the British library to capture items that may have been indexed incorrectly or not indexed at all (Sim and Wright 2000). Copies of original articles were obtained at all times to capture an undiluted source of data. In addition, references given in relevant publications were further examined. Abstracts and unpublished studies were not selected.

Key Words

The key words used to search the secondary data sources were 'acupuncture', 'back', 'pain', 'lower', 'lumbago', 'Chinese' and 'medicine'.

Study Selection

All studies that fall under the term rigorous research and were published in English were sought. Rigorous research ranges from those listed in table 1. The hierarchy of scientific evidence places randomised controlled trials (RCTs) at the top of the list - the so called "gold standard", whilst case studies fall at the bottom.

Hierarchy of Scientific Evidence

- Randomised controlled trials (RCTs)
- Non-randomised controlled trials
- Concurrent comparison groups
- Prospective cohort studies
- Retrospective cohort studies
- Case-control
- Case studies

Table 1. The hierarchy of scientific evidence (Adapted from Harlan 2001).

Inclusion and Exclusion Criteria

Studies that either followed the criteria of treating LBP using acupuncture and studying subjects suffering LBP were included. Studies that deviated from LBP to other areas of the body or used moxibustion, laser acupuncture, TENS or shallow needling were rejected. Six studies, three RCTs and three case studies, were randomly selected from papers collected and were included in this review.

Quality Assessment

All randomised controlled trials (RCTs) were assessed using the adapted Koes strategy (appendix A) (Strauss 1999), as it was thought that studies with a higher score indicate a better methodology. To each criterion a weight was attached indicating its relative importance. The potential maximum score for each study was 100 points. Items B, C, E, J, K, M and O are relevant for assessing the internal validity of trials. The grading was conducted by Attilio D'Alberto BSc (Hons) TCM, Eunkyung Kim BA, BSc (Hons) TCM and Angelo D'Alberto BSc (Hons) TCM, using the same grading protocol. The differences in ratings were settled by group discussion (Sim and Wright 2000). The other forms of rigorous research (case studies) were reviewed as a group.

Results

Three randomised controlled trials and three case study reviews were randomly selected from papers collected, met the inclusion criteria and were included in this review (Carlsson *et al.* 2001, Leibing *et al.* 2002, Mendleson *et al.* 1983, Weng *et al.* 1981, Cao 1995 and Sun 1987). The results of the methodological assessment of RCTs are presented in appendix B, in a hierarchical order according to their methodological score. All six studies are summarised in appendix C.

One RCT had a score higher than 50 points (Carlsson *et al.* 2001), indicating a relatively average methodology used, whilst the other two RCTs scored lower than 50 (Leibing *et al.* 2002, Mendleson *et al.* 1983), indicating a relatively below average methodology. The sample size was small in all three RCTs, whilst no comparisons were made with existing treatment modalities in two studies (Carlsson *et al.* 2001, Mendleson *et al.* 1983). Dropouts were not correctly described for each study group in all three studies and the qualifications or work experience were not sufficiently mentioned. Co-interventions were not avoided in two studies (Leibing *et al.* 2002, Mendleson *et al.* 1983), whilst blinded outcome measures were correctly established in

one study (Mendleson *et al.* 1983) and there was a substantial loss to follow-up. Two of the three trials concluded a positive effect for acupuncture in the treatment of LBP (Carlsson *et al.* 2001, Leibing *et al.* 2002).

The three case studies included in this review were all published in traditional Chinese medical journals. They all reported the successful use of acupuncture as an intervention to treat LBP. Two studies Cao (1995) and Sun (1987) reported a success rate of over 90%. No success rates were given for the Weng *et al.* (1981) study as significant failures were noted, although no reasons were given for this. Only this study reported any failures. All the studies gave a TCM diagnosis whilst the Cao (1995) study gave a comparative orthodox diagnosis of LBP as well. Manipulation technique was used in all three case studies, either to reduce, reinforce or prick-to-bleed the various acupoints. The sample size was significantly different between all groups; the lowest being 30 patients in the Weng *et al.* (1981) study and the highest being 560 patients in the Cao (1995) study, with 100 patients in the Sun (1987) study respectively. Follow-up was only achieved in one study, Weng *et al.* (1981), and was conducted two years after treatment. Care to provide long term relief from LBP was only given in one study, Cao (1995) and involved the use of *Qi Gong*.

Discussion

RCTs and case studies both strive to answer the same research 'Is acupuncture effective in the treatment of lower back pain?' However, RCTs test the efficacy of a treatment whilst case studies demonstrate the effectiveness. Efficacy is the extent to which acupuncture produces a beneficial result under ideal conditions, whereas effectiveness is a measure of the success of acupuncture when carried out in an average clinical environment (White *et al.* 1999).

To answer the research question 'Is acupuncture effective in the treatment of lower back pain?' all RCTs study's methodology was scrutinised. The methodological assessment used to score the randomised controlled trials was the adapted Koes strategy and was used because the assessment criteria are based on generally accepted principles of intervention research. In addition, similar criteria have been used previously to assess the methodological quality of trials evaluating other therapeutic interventions for LBP (Strauss 1999). If the study achieved a high score, the study may be deemed acceptable with the conclusions drawn from that study being upheld. However, what grade constitutes a good methodology? When studies are compared together, as is done here, the notion of a good methodology is usually interpreted by the highest scoring paper even though that score may not be exceedingly high. What constitutes a high score? Is it 50+ or 60+ or 70+?

This methodological assessment is but one way to score RCTs. Even though a study may fail on certain aspects of its methodology, other aspects of its methodology may be correct and therefore its findings may be warranted. By utilising this method of assessment, this paper becomes more systematic in

its approach. It is recognised by the author that the adapted Koes grading strategy is limited in its scope as grading can be biased and subjective.

Bias

In all studies reviewed, none mentioned a vested interest or bias, however, a number were noted. No TCM diagnosis was included in any of the RCTs. This reflects an orthodox bias towards acupuncture and shows on the one hand, orthodox medicines interest in including acupuncture into its field and also on the other hand, the steady-fast resolution to ignore the diagnostic strategy and therefore the ancient theories of TCM. Every investigator in the case studies was a trained acupuncturist and therefore is likely to be biased towards the effectiveness of acupuncture in treating LBP.

Population Size

The number of patients it is necessary to recruit for a trial of acupuncture treatment for LBP is dependent on the anticipated clinical effect versus a placebo effect, the level of statistical significance the investigator considers appropriate, and the chance of detecting that difference (Strauss 1999). The population size in all but one RCT was low. All RCTs lacked the statistical power to detect clinically relevant differences in the effect between acupuncture and the placebo/sham form of treatment, hence the scoring of zero for population sizes.

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria varied in the literature reviewed. Usually inclusion and exclusion criteria must follow a definition of the disease being treated. None of the RCTs correctly defined LBP from an allopathic or TCM perspective and therefore the inclusion criteria was incomplete, hence the poor scoring. However, every effort was made by all studies to correctly exclude participants. It is always wise to include informed consent as one of the inclusion criteria, to give it due prominence (White *et al.* 1999).

Blinding

It is unrealistic to attempt a trial where the practitioner does not know whether the treatment given is sham or real acupuncture (Strauss 1999). A TCM practitioner needs to be aware of the anatomy of the subject in order to correctly identify the acupoint. In addition, the carer should be able to feel the arrival of 'de Qi' once the acupuncture needle has been inserted and manipulated. The notion of a trial being double-blinded (Mendelson *et al.* 1983) is impractical, although this study scored the highest for blinding, as this was favoured by the adapted Koes grading strategy.

Control Method

The control method used in RCTs when testing acupuncture has come under some criticism as being flawed. Some authors do not agree with the choice

of control points used by some investigators whilst others disagree with the use of sham acupuncture, as any form of sham acupuncture is likely to stimulate the release of endorphins and therefore relieve pain. As Lewith and Machin (cited in Strauss 1999) go on to specify the following effect rates based on the literature:

1. A placebo is effective in 30-35% of patients with chronic pain.
2. Sham acupuncture is a form of acupuncture therapy and is effective in approximately 50% of patients with chronic pain.
3. Real acupuncture is effective in 60-70% of patients with chronic pain.

Outcome Criteria

The nature of the outcome criteria is critical to a realistic analysis of the data. These measurements will determine the success or failure of the therapy for each individual entered into the trial (Strauss 1999). Analgesic intake is also important as it affects the outcome of any pain specific study. However, looking at the literature reviewed, it is clear that no completely objective method for assessing chronic pain currently exists (Strauss 1999).

Acupuncture Technique

All six studies varied their selection of acupoints used to relieve LBP. The standardised acupoints used to treat general LBP as described by definitive acupuncture texts, are *Shenshu* (UB23) and *Weizhong* (UB40) (Qiu 1993, Cheng 1999) These acupoints were used in all six studies but additional acupoints variations existed. It is reasonable to suggest that a positive outcome was achieved in 4 out of the 6 (66.66%) studies reviewed using these two acupoints. In the RCTs no syndrome pattern was used to further differentiate additional acupoint selection. The attempt of the study authors was to the application of acupuncture but dismiss the ancient theories of Traditional Chinese Medicine. In comparison, in all the case studies a syndrome differentiation was used to select the correct acupoints after the initial general points were used. This may explain the significantly higher success rates seen in the case studies as the correct method of acupuncture, based upon ancient theories, was employed. The RCTs scored poorly due to a lack of a creditable correlation of acupoints selected.

Reviewer's Conclusions

By increasing the scope of inclusion to all scientific-based research (table 1), a number of papers were yielded. From these, very different points of perspective in the treatment of LBP were observed. By comparing the 'lesser' forms of rigorous research listed in table 1 (case studies), it could be demonstrated that the RCTs had flaws which otherwise would not have been made available if RCTs were reviewed alone. The case studies offered a different view of diagnosing LBP by the traditional Chinese medical methods of syndrome differentiation. They collectively offered a more balanced, and theoretically sound insight into the reasons of using acupuncture and the possible ways in which treatment success is achieved.

TCM involves complex and interactive diagnostic and treatment procedures. The course of treatment is often altered depending on dynamically varying diagnostic criteria, such as alterations in pulse measurements and tongue diagnosis. This complex context of acupuncture within TCM makes the design of clinical outcome trials difficult (Sherman *et al.*).

Implications for practice

After reviewing the literature and assessing the quality of methodology in addition to the informative perceptions of the various hierarchical scientific evidence, this review could not clearly show acupuncture to be effective in the treatment of LBP. This is primarily caused by two RCTs scoring less than 50 points, the case studies were bias towards the positive outcome of acupuncture and the RCTs not performing a Chinese medicine syndrome differentiation treatment strategy on subjects.

Implications for research

Because the RCTs were of poor methodological quality and did not achieve a high grading using the adapted Koes strategy, there is a further need for high quality studies to be conducted. Future studies should overcome the limitations of the RCTs presented in this review. Studies should have larger sample sizes, an appropriate method of blinding, use a valid form of sham acupuncture and have short-term and long-term follow-up. One new form of control method that may enhance the validity of methodology used is the recently developed placebo acupuncture needle (Streitberger *et al.* 1998). In addition, a new form of blinding has been suggested by Caspi *et al.* (2000) titled 'dual blind', where the external evaluator and subjects are blind although the acupuncturist is not. This paper calls for the participation of large research institutions to conduct further research and to clarify if acupuncture is an effective form of treatment for LBP (van Tulder *et al.* 2003).

Biography

Attilio D'Alberto graduated from a program jointly run at Middlesex University and Beijing University of TCM with a BSc (Hons) in Traditional Chinese Medicine (Middlesex University) and a MD (Beijing University). He currently practices in various busy clinics in London. Correspondence: www.attiliodalberto.com/contact.php

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Appendices

Appendix A – The criteria for methodological assessment of clinical trials of acupuncture for lower back pain (Strauss 1999)

Study Population

- A. Description of inclusion and exclusion criteria (1 point). Restriction to a homogeneous study population (1 point). Uniformity of treatment numbers (1 point).
- B. Similarity of relevant baseline characteristics: the duration of complaints, value of outcome measures, age, recurrence status, radiating complaints (1 point each). Adequate validity, accuracy and reliability of diagnosis (1 point).
- C. Randomisation procedure adequate: randomisation procedure described (2 points). randomisation procedure which excludes bias (2 points).
- D. Dropouts described for each study group separately: information from which group and with reason for withdrawal (3 points).
- E. Loss of follow-up: <20% loss to follow-up (2 points), <10% loss of follow-up (2 points).
- F. Smallest group immediately after randomisation: >50 subjects in the smallest group (6 points), >100 subjects in the smallest group (6 points).

Interventions

- G. Interventions included in protocol and described adequately. Acupuncture treatment described (5 points). All reference treatments explicitly described (5 points).
- H. Pragmatic study: Comparison with an existing treatment modality (5 points).
- I. Co-interventions avoided: Other physical therapy modalities or medical interventions are avoided in the design of the study except analgesics (5 points).
- J. Placebo (or sham) controlled: Comparison with a placebo or sham therapy (3 points). Adequate description and use of an appropriate placebo or sham (2 points).
- K. Good qualification of acupuncturist: Mentioning of qualified education and work experience of the acupuncturist (5 points).

Measurement of Effect

- L. Patients blinded: Placebo controlled: Attempts for blinding (3 points), blinding evaluated and fully successful (2 points).
- M. Outcome measures relevant: Use (measured and reported) of: pain, global measure of improvement, functional status (activities of daily

- living), spinal mobility, medicine consumption (1 point each). Validity and reliability of instruments (1 point).
- N. Blinded outcome assessments: Each blinded measurement mentioned under point M earns 2 points. Control of observer and subject bias (1 point).
- O. Follow-up period adequate: Moment of measurement during or just after treatment (2 points). Moment of measurement 3 months or longer (2 points).

Data Presentation and Analysis

- P. Intention to treat analysis: When loss to follow-up is less than 10%: all randomised patients for most important outcome measures, and on the most important moments of effect measurement minus missing values, irrespective of non-compliance and co-interventions. When loss to follow-up is greater than 10%: intention to treat as well as an alternative analysis which accounts for missing values (5 points).
- Q. Frequencies of most important outcomes presented for each treatment group. For most important outcome measures, and on the most important moments of effect measurement. In the case of (semi-) continuous variables: presentation of the mean or median with standard error or percentiles (5 points). Use of descriptive as well as inferential statistics.
- R. Literature review (1 point), good use of references (1 point).

Appendix B – The methodological assessment scores for the randomised controlled trials analysed.

Outcome	Positive	positive	negative
Total Score	53	46	45
R(2)	1	1	2
Q(5)	5	5	5
P(5)	5	5	5
O(4)	4	5	2
N(11)	3	1	10
M(6)	4	3	6
L(5)	5	3	5
K(5)	0	3	0
J(5)	5	3	5
I(5)	5	0	0
H(5)	0	2	0
G(10)	5	5	0
F(12)	0	0	0
E(4)	4	0	2
D(3)	1	3	0
C(4)	2	2	0
B(6)	2	3	2
A(3)	2	2	1

Ref	Carlsson <i>et al.</i> (2001)	Leibing <i>et al.</i> (2002)	Mendelson <i>et al.</i> (1983)
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Appendix C – Tables

1. Study: Leibing *et al.* (2002)

Method

RCT; random number method.

Population Size

Participants: 131 patients

Inclusion and Exclusion Criteria

Inclusion criteria: Non-radiating LBP for at least 6 months. Exclusion criteria: abnormal neurological status, concomitant severe disease, psychiatric illness, current psychotherapy, pathological lumbosacral anterior-posterior and lateral X-rays (except for minor degenerative changes), rheumatic inflammatory disease, planned hospitalisation and refusal of participation.

Control Method

Control group. Received active physiotherapy with no other treatment.

Sham acupuncture group. Received 20 sessions (each 30 mins) of minimal acupuncture by the same physician (Dr Li) over 12 weeks, following the standards of minimal acupuncture (Vincent and Lewith, 1995). Needles were inserted superficially, 10-20mm distant to the verum-acupoints, outside the meridians and were not stimulated (de Qi).

Interventions

The treatment group received 20 sessions (each 30 mins) of traditional and standardised acupuncture by an experienced Taiwanese physician (Dr Li) over 12 weeks. In the first 2 weeks of treatment, acupuncture was done five times a week, and in the next 10 weeks once a week using a combination of body and auricular acupoints (Stux and Pomeranz, 1990), 20 on the body and six on the ear. Body acupoints were needled to 10-30mm and stimulated to received 'de Qi' and were left in situ for 30 mins. Ear needles were not stimulated and left in situ for 1 week.

Acupoint Selected

Body acupoints: Yaoyangguan (DU3), Mingmen, (DU4), Shenshu (UB23), Dachangshu (UB25), Shangliao (UB31), Ciliao (UB32), Weizhong (UB40), Kunlun (UB60), Yanglingquan (GB34), Sanyinjiao (SP6), Yautungdien (EX),

Ear acupoints: Os sacrum, parasympathicus, nervus ischiadicus, lumbosacrum, shenmen, kidney.

Outcome Criteria

Visual Analog Scale (VAS), Pain Disability Index (PDI). did not use analgesics but instead gave the subjects active physiotherapy which may have marred the measure of acupuncture efficacy.

Outcome Results

At the end of treatment acupuncture was superior to the control group regarding pain intensity (P=0.000, ES=1.00, pain disability (P=0.000, ES=1.45), and psychological distress (P=0.020, ES=0.73). There was no significant difference in acupuncture and sham group regarding pain intensity and pain disability. There was a significant difference between the acupuncture group and the sham group, with a significant reduction of psychological distress in the acupuncture group.

2. Study: Carlsson *et al.* (2001)

Method

RCT; random number method.

Population Size

Participants: 50 patients

Inclusion and Exclusion Criteria

Inclusion criteria: Lumbar or lumbosacral low back pain for a duration of 6 months or longer. No radiation of pain below the knee level and normal neurologic examination findings of lumbosacral nerve function, including deep tendon reflexes, plantar response, voluntary muscle activation, straight leg raising and sensory function. Exclusion criteria: major trauma or systemic disease, ongoing pregnancy and a history of acupuncture treatment.

Control Method

The placebo stimulation treatment used a mock transcutaneous electrical nerve stimulation (TENS). During stimulation, flashing lamps were displayed and visible to the patient.

Interventions

Treatments were given to the acupuncture group by the author (CC-non acupuncturist) once per week for 8 weeks. One follow-up treatment was given after 2 months, and the last (10th) treatment was given after an additional 2

months, 'de-Qi' was sought. For the electro acupuncture group, two or three sessions of manual acupuncture were given initially, followed by treatments consisting of electrical stimulation of four needles in the lower back. Frequency was 2 Hz every 2.5 seconds and was interrupted by a 15 Hz train every 2.5 seconds.

Acupoint Selected

Qihai (UB24), Dachangshu (UB25), Guanyuanshu (UB26), Jaji, Weizhong (UB40), UB57, Kunlun (UB60), Quchi (LI11), Hegu (LI4).

Outcome Criteria

Visual Analog Scale (VAS). did record analgesic intake and also did not change any of the patient drug prescriptions during the study.

Outcome Results

At the 1-month independent assessment, 16-24 patients in the acupuncture groups and 2 of 16 patients in the placebo group showed improvement ($P < 0.05$). At the 6 month follow-up assessment, 14 of 34 patients in the acupuncture groups and 2 of 16 patients in the placebo group showed improvement ($P < 0.05$). A significant decrease in pain intensities occurred at 1 and 3 months in the acupuncture groups compared with the placebo group.

3. Study: Mendleson *et al.* (1983)

Method

RCT; random number method.

Population Size

Participants: 100 patients.

Inclusion and Exclusion Criteria

Chronic low back pain, no compensation or litigation pending, no overt psychiatric disease.

Control Method

Placebo acupuncture, intradermal injection of 2% lidocaine at non-acupuncture, non-tender sites, and then acupuncture needles for 30 minutes without stimulation, twice weekly, 4 weeks.

Interventions

Acupuncture tx: traditional Chinese acupuncture by a surgeon trained in Peking, meridian, 8 needles, manual stimulation until reaching Teh Chi, 30

minutes with no further stimulation, twice weekly, 4 weeks. A surgeon trained at the Chinese Traditional Medical Research Institute in Peking.

Acupoint Selected

Shenshu (UB23), Dachangshu (UB25), UB36, UB40, UB30, UB34, UB39 and UB60.

Outcome Criteria

Visual Analog Scale (VAS). allowed the subjects to vary their drug intake as they wished. It was noted that there was a significant reduction in analgesic intake in the treatment and control group.

Outcome Results

reduction in pain score (VAS) after 4 weeks in acupuncture group 40% versus reference group 26%. Not significant. Cross-over: reduction in pain score now acupuncture 19%, placebo 40%. Significant. Overall mean percentage decrease in pain score 26.1 for acupuncture and 21.8 for placebo. Not significant.

4. Study: Weng *et al.* 1981

Population Size

Participants: 30 patients.

Inclusion and Exclusion Criteria

Patients diagnosed with traumatic lumbar back pain, rheumatic type lumbar pain or renal weakness type lumbar pain.

Interventions

Traumatic lumbar pain: treatments consisted of three courses, with always 5 needling sections per course. Rheumatic type lumbar pain: one course of treatment consisted of 5 needling sessions. Two courses were required. Renal weakness type lumbar pain: none given.

Acupoint Selection

Traumatic lumbar pain: Shenshu (UB23), Huantiao (GB30), Yinmen (UB37), Chengshan (UB57) and Ashi acupoints.

Rheumatic type lumbar pain: Shenshu (UB23), Huantiao (GB30), Chihpien (UB54), Kunlun, (UB60), Hegu (LI4).

Renal weakness type lumbar pain: Shenshu (UB23), Mingmen (DU4), Weizhong (UB40), Sanyinqiao (SP6), Chihai (CV6), Ciliao (UB32).

Outcome Results

Traumatic lumbar pain: Out of 10 cases, 8 patients fully recovered, 1 had marked improvement and 1 showed slight improvement. Rheumatic type lumbar pain: Out of 10 cases, 7 patients completely recovered, 2 showed marked improvement and 1 patient was somewhat improved. Renal weakness type lumbar pain: Out of 10 cases, 3 fully recovered, 5 improved and 2 say no improvement. Negative outcome.

5. Study: Cao 1995

Population Size

Participants: 560 patients.

Inclusion and Exclusion Criteria

Lumbar pain.

Interventions

The three groups of acupoints were selected in turn and the treatment was given once every day. A therapeutic course consisted of 10 treatments. Usually a 3 day interval could be arranged between two therapeutic courses.

Acupoint Selection

1. Shenshu (UB23), Qihai (UB24), Dachangshu (UB25), Guanyuanshu (UB26),
2. Huangmen (UB51), Zhishi (UB52), Yaoyan (EX-B 7), Huatuoji (acupoints from L1-L5),
3. Zusanli (ST36), Guanyuan (RN4), Pishu (UB20), Quchi (LI11), Weizhong (UB40), Xuehai (SP10), Taixi (KI3) and Mingmen (DU4).

Outcome Criteria

Sub-divided into four ranges, starting from cure, to excellent, then improved or lastly, no effect. There was no mention if any of the subjects were prescribed analgesics.

Outcome Results

95.71% solid effective rate.

6. Study: Sun 1987

Population Size

Participants: 100 patients.

Inclusion and Exclusion Criteria

Lumbar pain.

Interventions

For those with acute, severe pain, once daily. In chronic cases start with once daily for 5 consecutive days followed by needling once every other day for a total of 12 sessions as one course. If the condition persisted, a second course may be started after 5 days.

Acupoint Selection

Wind-cold dampness: Weishu (UB21), Weizhong (UB40), Yaoyangguan (DU3), Yinlingquan (SP9), Yanglingquan (GB34) and Fengfu (DU16).

Kidney Yang deficiency: Shenshu (UB23), Mingmen (DU4), Zhishi (UB52) and Taixi (KI3).

Kidney Yin deficiency: Shenshu (UB23), Zhishi (UB52), Yaoyangguan (DU3) and Kunlun (UB60).

Sprain and sudden contusion type: Weizhong (UB40) until bleeding, Shenshu (UB23), Yaoyangguan (DU3) and Ashi acupoints.

Outcome Criteria

Included a number of measurements; able to pursue daily activities, pain relieved, movement of lumbar spine, pain on exertion, etc.

Outcome Results

Total effective rate of 93%.