Research Reviews

This section is designed to give a synopsis of some of the latest research published in medline listed journals over the last year or so. It will concentrate on controlled trials and systematic reviews, but will also include other papers that may be of interest to the readership. Some papers will be reviewed in more detail than others. If summaries and comments are based on an abstract only, this will be indicated. The main reviewer in this section is Mike Cummings, London. Other reviewers are indicated after the relevant review.

RCTs

Therapeutic massage is claimed to be effective for persistent low back pain (n=262)


Summary

Two hundred and sixty-two patients aged 20 to 70 years with ‘persistent low back pain’ were randomised to receive ‘Traditional Chinese Medical acupuncture’, massage or self-care educational materials. Up to ten sessions of acupuncture or massage were given over a ten-week period. Primary outcomes were a subjective score on a ‘symptom bothersomeness scale’, and a modified Roland Disability Scale. Outcomes were measured at four weeks, 10 weeks and one year. At 10 weeks massage was superior to self-care in both primary outcome measures. At one year massage was not better than self-care, but was superior to acupuncture. The authors conclude that massage was effective for persistent low back pain.

Comment

It is not clear from this paper exactly how the statistics were calculated. Mean values for the two primary outcome measures are given, and if the change from baseline is calculated, the self-care group is superior at one year on the disability scale with a numerical reduction of 5.6. The reductions for acupuncture and massage were 4.8 and 5.0 respectively. We are told that massage is superior to acupuncture at one year, yet the difference in the change of scores is only 0.2. On this scale, a change of 2.5 is said to be significant. It is somewhat concerning that the graphs of the changes in the primary outcome measures do not include baseline values, but start at the four week mark. The largest changes had already occurred by this point. What is more concerning is that the results displayed on the graphs are imprecise to the point of being misleading; indeed, in the graph illustrating the changes in the Roland Disability Scale scores, the results for self-care and massage at one year have been reversed, so that the latter appears superior. Furthermore, the figures quoted in the text do not seem to match those in the table of results for the primary outcomes.

It is difficult to draw any firm conclusions from this study; however, there does appear to be sufficient detail to refute the authors’ conclusions. At one year, massage did not appear to be superior to the self-care control.

Immunomodulatory effects of traditional acupuncture (n=38)

Summary

According to traditional Chinese medicine (TCM) acupuncture is a suitable treatment for complex chronic diseases such as bronchial asthma. In a randomised, controlled study the authors investigated immunologic effects of Chinese acupuncture on patients with allergic asthma. The effects of acupuncture treatment given according to the principles of TCM (n=20) were compared with those of acupuncture treatment using points not specific for asthma (n=18). All patients were treated 12 times for 30 minutes over a time period of 4 weeks. Patients’ general well-being, and several peripheral blood parameters (eosinophils, lymphocyte subpopulations, cytokines, in vitro lymphocyte proliferation) were determined before and after acupuncture treatment. In the TCM group, significantly more patients indicated an improvement in general well-being (79% in the TCM group versus 47% in the control group; p=0.049) after acupuncture treatment. The following changes were found in the TCM group: within the lymphocyte subpopulations the CD3+ cells (p=0.005) and CD4+ cells (p=0.014) increased significantly. There were also significant changes in cytokine concentrations: interleukin (IL)-6 (p=0.026) and IL-10 (p=0.001) decreased whereas IL-8 (p=0.050) rose significantly. Additionally, the in vitro lymphocyte proliferation rate increased significantly (p=0.035) while the number of eosinophils decreased from 4.4% to 3.3% after acupuncture (p>0.05). The control group, however, showed no significant changes apart from an increase in the CD4+ cells (p=0.012). The authors concluded that their results imply that asthma patients benefit from acupuncture treatment given in addition to conventional therapy, and that acupuncture performed in accordance with the principles of TCM showed significant immune-modulating effects.

Comment

The results of this trial seem amazingly positive for traditional versus non-specific acupuncture; however, what we are not told in the summary is that the TCM group all had segmental needling, whilst none of the control group did. If the results are genuine, we cannot tell whether the effect observed was because traditional asthma points were chosen, or because the segmental needling was superior to non-segmental needling.

The methodological rigour could have been improved by blinding the researchers who measured the outcomes and the data analyst. This would have been straightforward, and would have raised the internal validity from three to five out of five (Jadad score). The paper is written in a very positive fashion; however, buried in the discussion section, the reader discovers that when the groups were compared there were no significant differences in 13 out of the 14 immunological parameters measured.

Finally, there were no measures of respiratory function, so the reader is left to wonder whether the measured changes in immunological parameters reflect any significant improvement in the clinical condition.

No difference between acupuncture and sham in chronic tension-type headache (n=39)


Summary

Thirty-nine patients with chronic tension-type headache (TTH), according to the International Headache Society classification, were randomised to receive acupuncture to classical acupuncture points or a non-penetrating sham. A maximum of 15 points was used, treatment was applied twice weekly for five weeks, and the needles were left in place for 30 minutes. The sham procedure involved a blunt needle inserted through a cube of elastic foam, which was fixed to the point. The points used were GB20, LI4,
LR3, and, depending on symptoms, local muscular tender points at GB8, GB14, GB21, GB41, BL2, BL10, BL60, LU7, TE5, ST8, ST36, ST44, GV20 and EX1.

Outcome measures included a daily headache diary of pain intensity (VAS), site, duration and analgesic consumption, in addition to pressure pain thresholds bilaterally over the temporalis muscle. For the whole group VAS scores decreased significantly (p=0.001). There were no significant differences between groups.

Comment
At first glance this appears to be a well-conducted RCT published in a respected journal. On closer inspection it is underpowered, and may have drawn unsound conclusions from an inappropriate analysis.

We are told that the sham procedure, referred to throughout as placebo acupuncture, was found to be credible, in that the subjects could not distinguish between the interventions. This was not a crossover trial, however, so the subjects were exposed to only one or other intervention. We are not told what questions they were asked to determine whether their experiences were different. There is no mention of needling sensation.

The sham procedure did not involve skin penetration, merely the pressure of a blunt needle on the skin at classical points. The needle was held in place with a cube of elastic foam. This reviewer heard a presentation in Vienna (ICMART 2000), by one of the authors of this paper, which described the sham technique. The cube of foam was 1cm high, and the blunt needle did not have a telescopic handle. It was argued that the compression and subsequent expansion of the foam simulated the needle advancing through the skin.

Neither depth of needling, nor any manipulation of the needle was described. The needles used were 30mm or 15mm in length. The reader must assume that the shorter needles were used on the face and scalp. GB20 – an important segmental point for pain in the head – must be needled to a depth of at least 2cm in the average adult before the typical needling sensation of the point is achieved. This would have required the 30mm needle to be buried to the hilt in the foam cube, whereas the sham procedure would have resulted in 2cm of the needle shaft being visible above the foam. The same is true of several of the other sites needled. The real and sham needling would only have appeared similar if the depth of penetration at these points was limited to about 1cm in the acupuncture group. In a proportion of well-fed westerners, 1cm penetration would not reach the most superficial muscle layer at a number of the sites needled.

The results show similar reductions in VAS and headache frequency in both groups, with a slight trend in favour of the acupuncture group. Essentially there were no significant differences between the groups. That should have been it for the results, and the subsequent discussion should have concentrated on the implications of this result, drawbacks of the methodology, and suggestions for further research. Instead, a large section of the results is devoted to an analysis of the intra-group changes in pressure pain thresholds (PPTs). There was a significant increase in PPTs in the acupuncture group over the right temporalis (p=0.031). The changes on the left and on both sides in the sham group were not significant. What the authors do not highlight is the fact that the PPTs after treatment were virtually identical in both groups. The reason for the significant rise in the acupuncture group clearly had something to do with the fact that the PPTs at baseline were considerably lower (by over 10%) in this group, a point that is singularly ignored in the analysis of results. From this slightly unbalanced distribution at baseline the authors conclude that their study ‘supports the hypothesis that peripheral mechanisms – such as increased muscle tension – only play a minor role in the pathogenesis of chronic tension-type headache.’ This RCT supports the null hypothesis: i.e. that there is no difference between the acupuncture and the sham procedure used in this trial. No other conclusions can be drawn.
The effect size in the control group was surprisingly large for a non-penetrating sham. It could be suggested that this effect swamped any specific effect of the real needling, and that there was a type 2 error – insufficient number of subjects to show a real difference. This reviewer would have preferred to see PPTs measured at trigger points, and needling performed at trigger points, and an indication that reasonable needling sensation was produced from deep tissues in the acupuncture group.

Finally, this reviewer is rather surprised that such flawed analysis got through the peer review process of a respected journal, or could it be that the negative result for acupuncture was too much to resist?

The Vegatest is not reliable for diagnosing allergies (n=30)


Summary
This was a double-blinded study with 15 volunteers who had a positive result and 15 volunteers who had a negative result on a previous skin prick test for allergy to house dust mite or cat dander. Each volunteer was tested with 54 tests by three operators of the Vegatest electrodermal testing device, using house dust mite, cat dander, or distilled water in random order. The results of the electrodermal tests did not correlate with those of the skin prick tests. Electrodermal testing could not distinguish between atopic and non-atopic participants. No operator of the Vegatest device was better than any other, and no single participant’s atopic status was consistently correctly diagnosed.

Comment
Electrodermal testing relies on changes in skin conductance at acupuncture points when an allergen or homeopathic remedy is placed in the electrical circuit. This carefully conducted study by a keen proponent found that the method could not be used to diagnose environmental allergies. It is widely used, with probably as many as 500 complementary and alternative medicine practitioners using it at present in the UK alone. Its benefits, at least for allergy, seem to be due to the placebo response. Now we urgently need to know whether it is valid and reliable for homeopathic diagnosis or for food intolerance. This reviewer once had a Vegatest machine and attended a training course, but within a few weeks it was clear that the measurements were highly unreliable and could be altered almost at will. This has now been amply confirmed. The same experience occurred with other ‘alternative’ machines, apparently offering valuable diagnosis or therapy, leading to a strong distrust of them all.

Adrian White, Exeter.

Hand acupressure reduces postoperative vomiting after strabismus surgery (n=50)


Summary
This RCT compared an acupressure device (a disc, 1mm in diameter and 1mm thick) on a 4mm diameter tape, with the tape alone, placed on a point on the mid-palmar surface of the ring finger, just proximal to the crease of the distal interphalangeal joint, in reducing postoperative vomiting in children after strabismus surgery. This point corresponds to the Korean hand acupuncture point K-K9, which is said to have an antiemetic effect. The study was performed in 50 children undergoing strabismus surgery. Postoperative vomiting (POV) is recognised as having a particularly high incidence following this type of surgery.
In the control group, 68% of subjects vomited within 24 hours of surgery. In the acupressure group this figure was 20% (p=0.001).

**Comment**

This study is of high methodological quality (4 on the Jadad score). It demonstrates a specific effect for a small acupressure device at the point K-K9, although the study does not confirm specificity of the point. Indeed, we already know that an antiemetic effect can be produced by acupuncture at PC6 on the volar surface of the wrist.¹

This reviewer has some concern over the concealment of group allocation in the trial. Surely it would have been possible to tell whether there was an acupressure device under the tape or not, particularly as a pressure stimulus was the intended intervention. This was not discussed in the paper. The reader must assume that subjects were not instructed to press on the tape; therefore the stimulus would have been relatively mild. Previous studies give conflicting results of the efficacy of acupuncture related techniques for POV in children undergoing strabismus surgery.²⁻⁵ As POV is a particular problem following this type of surgery, further trials are warranted.

**Reference list**

episodes, 5, 10, and 15, respectively; \( p < 0.001 \). The electroacupuncture group had fewer episodes of emesis than the minimal needling group \( (p < 0.001) \), whereas the minimal needling group had fewer episodes of emesis than the antiemetic pharmacotherapy alone group \( (p = 0.01) \). The differences among groups were not significant during the nine-day follow-up period \( (p = 0.18) \). The authors concluded that, in their study of patients with breast cancer receiving high-dose chemotherapy, adjunct electro-acupuncture was more effective in controlling emesis than minimal needling or antiemetic pharmacotherapy alone, although the observed effect had limited duration.

**Comments**

This was a rigorous and well-reported trial scoring five out of five on the Jadad score for internal validity. It demonstrates a specific effect for electroacupuncture in controlling chemotherapy induced emesis. It does not confirm, however, the specificity of PC6 in antiemesis. The minimal needling group faired significantly better than control, though this may have been a non-specific effect. The points chosen for minimal needling were near LU7 and GB34, and were chosen because, in the opinion of two traditional Chinese medical physicians, they were unlikely to have an antiemetic effect. Well it turned out that this treatment did have a significant antiemetic effect beyond conventional pharmacotherapy, thus illustrating the potential drawback of a penetrating sham procedure. It should be noted, however, that the antiemetic drugs used in the trial did not include any 5HT3 antagonists, which are now in more widespread use.

The electroacupuncture group received stimulation of needles over 2 to 10Hz, with a bipolar square-wave of pulse width 0.5 to 0.7ms. The narrative comments that a current of less than 26mA was used for 20 minutes. Unfortunately there is no description of how strong the stimulation was set within these parameters, which could allow anything from a mild tapping sensation to powerful muscle contraction.

Unusually, the protocol of acupuncture treatment involved traditional pulse diagnosis prior to each treatment session in both groups that received needling, despite the fact that this was not going to have any influence on the choice of treatment.

Despite these minor points, this is an important study, which adds to the growing body of research supporting the antiemetic efficacy of acupuncture. Is there now sufficient evidence for acupuncture to be adopted widely in the adjunctive treatment of chemotherapy-induced emesis? Without similar marketing to that received by the modern, expensive pharmaceuticals, this reviewer thinks it is unlikely.

**EA for wobbler syndrome in dogs (n=40)**


**Summary**

This paper describes a clinical trial involving the treatment of 40 dogs with wobbler syndrome. The dogs were graded according to severity and randomly divided into two treatment groups. The first was treated by orthodox methods, including surgical intervention. The second received mainly electroacupuncture every other day, although some members of the group were also treated surgically. Reported success of the orthodox group was 20% compared with 85% in the acupuncture group.

**Comments**

The major flaw in this paper is that a diagnosis has not been satisfactorily reached for those dogs entered into the trial. The pathophysiology of dogs suffering from wobbler syndrome is no longer grouped as one condition, but varies according to the age of the patient. In younger dogs wobbler syndrome is characterized by bony pathology – misalignment and/or deformity of cervical vertebrae, resulting in the compression of the
caudal cervical spinal cord and associated signs. These signs include hind limb ataxia, UMN deficits, para and tetraparesis and neck pain. Not all signs are present in all patients. In older dogs (older than six years) ligamentous hypertrophy of the ligamentum flavum is thought to be responsible for the signs observed. In dogs older than one year and younger than six years both pathophysologies may be present. These dogs should therefore not be grouped together.

Diagnosis of wobbler syndrome cannot be made on the evidence of radiography alone. Bony abnormalities may be present in asymptomatic dogs and signs of wobbler syndrome present in radiographically normal animals. This study carried out only a ‘few’ myelographic studies and it therefore cannot be said with any confidence that wobbler syndrome was the condition that was being treated.

Treatments were carried out ‘preferably every other day’, which indicates that frequency was variable. Point selection is unclear. Criteria for recovery were also variable. ‘Normal or near normal’ gait and ‘complete or almost complete proprioception’ were used as indication of maximal recovery or cure. Such variables make assessment of the meaning of cure rates given impossible.

There is insufficient information given for the reader to evaluate results for themselves.

The method of randomisation is not described and the assessors were not blinded to the method of treatment. Three patients were left out of the final statistical calculations and it is unclear to which group they belonged.

Several points should be noted with regard to the provision of analgesia to the patients on the trial. The authors suggest that restriction of movement of dogs with no analgesia assisted in recovery, implying that acupuncture provided no analgesia. They go on to state: ‘treatment with electroacupuncture offered pain relief and minimized discomfort’. Significantly, if the authors did not believe that they were providing pain relief to these dogs then the welfare of the patients was poorly served. From both practical and welfare standpoints it would have been preferable to have compared conventional treatment plus electroacupuncture with conventional treatment alone.

In their discussion the authors comment: ‘It would appear reasonable to suggest that electroacupuncture promotes recovery in cases of wobbler syndrome.’ This reviewer would be more guarded about drawing such a conclusion from the data presented.

Samantha Scott, Edinburgh

A cocktail stick is as good as brief acupuncture in episodic tension-type headache (n=50)


Summary
This was a multicentre, randomised clinical trial to test the hypothesis that acupuncture is more efficacious than sham in the prevention of episodic tension-type headache. Fifty subjects were randomised to receive a course of treatment with either brief acupuncture or a sham procedure. The acupuncture group received needling bilaterally at GB20 and LI4, and at up to four other points in the head, neck or shoulders, chosen according to tenderness and the patient’s symptoms. The needles were stimulated for 15 seconds or until deQi was felt if that was sooner. The sham procedure involved tapping a blunted cocktail stick in a guide tube against bony prominences in four standard areas, and gently pressing against the skin and rotating it for 15 seconds. Subjects were followed up for 3 months. Changes in headache were assessed by daily diary, the primary outcome measure being the number of days with headache.

‘No significant differences were found between the changes in the two groups for any measure at
any time point. Results also show that patient blinding was successful. In conclusion, this study does not provide evidence that this form of acupuncture is effective in the prevention of episodic tension-type headache.

**Comment**

This was a rigorously conducted and well-reported RCT. It scores five out of a maximum of five points on the Jadad score for internal validity. The methodology also has external validity in that the procedure being tested is commonly used in practice on the type of subjects included in the trial. The lead author comes from a department that has gained a reputation for its rigorous and uncompromising approach to reporting and reviewing research in this field. The abstract of this paper is carefully worded, and accurately reflects the results in a strict mechanistic style, yet there is more to learn by delving beyond.

The therapeutic approach in the treatment arm was sound, and the sham control was suitably inert. Why then, did this trial not show the sort of effect that is seen in clinical practice? Are we simply wielding a powerful placebo in the form of our needles? The thorough reporting in this paper allows us to propose some answers. First, there was a significant difference between the groups. The severity of headaches was significantly lower in the acupuncture group during treatment; however, as this outcome was not nominated as the primary measure of results, it is not reflected in the abstract. Secondly, there was a significant improvement in both groups over the course of the study, indeed 30% of subjects reported themselves much better or totally relieved of headache. Thirdly, the power calculation estimated that 40 subjects would be required in each arm to detect a 10% difference, with significance set at p<0.05 and a power of 80%. This means that if 40 subjects per arm had been recruited, the risk of not showing a real advantage of acupuncture, if one exists (i.e. a type 2 error), was 20%. As only 25 subjects were recruited per arm, this risk increased to 40%. The authors suggest that it is unlikely that larger numbers would have given a different result, as there were no positive trends in any of the outcome measures. The scores for severity of headache, however, were 24% lower in the acupuncture group during treatment, and continued to be over 10% lower throughout follow-up. This reviewer would consider that a positive trend, although there was also a lesser trend in favour of the control procedure for days without headache – the primary outcome measure.

Clearly we may be wielding a powerful placebo, but this paper does not demonstrate a lack of specific efficacy for acupuncture. Chance, the lack of statistical power, and a significant group by time effect may have obscured any specific effect of real needling. Or perhaps there was no specific effect to find, as all of the acupuncture responders had already been treated, because the majority of subjects were recruited from patients of experienced GP members of the BMAS.

As the authors conclude, this study does not provide evidence that acupuncture has specific efficacy in the prevention of episodic tension-type headache; however, it leads this reviewer to suggest that future studies may consider using headache severity as their primary outcome measure, accepting that days without headache may have greater external validity, and consider inclusion criteria carefully so as to achieve the necessary recruitment of subjects.

**Other Clinical Papers**

**Survey of adverse events in Australia (n=1100)**


**Summary**

The aim of this study was to investigate the nature and frequency of adverse events that occur as a result of the practice of traditional Chinese medicine (acupuncture and Chinese herbal medicine) in Australia. Data on adverse events...
were obtained as part of a comprehensive survey of all occupational health groups, government-registered and unregistered, who practiced traditional Chinese medicine (TCM) or one of its main modalities. Practitioners reported numerous adverse events arising from the application of acupuncture (including fainting, nausea and vomiting, and increased pain), or the consumption of Chinese herbal medicines (including direct toxic effects and allergic reactions). Practitioners experienced an average of one adverse event every eight to nine months of full-time practice or one adverse event for every 633 consultations. The mean adverse event rate of non-medical practitioners was less than half the mean adverse event rate of medical practitioners. The authors concluded that the practices of acupuncture and Chinese herbal medicine are not risk-free and that fatalities have occurred. The variation in adverse event rates between medical and non-medical practitioners may have reflected differences in relevant education or reporting behaviours.

Comment
This was an epic survey. There was a genuine attempt to contact every relevant practitioner in Australia. Unfortunately the results are limited by the response rates, which were 50% or less, and the by the fact that the information collected was retrospective, relying on the memory of practitioners. The results are not particularly unexpected, though the interpretation of the adverse event rates of medical versus non-medical practitioners is somewhat surprising. Serious adverse events related to acupuncture, such as pneumothoraces, were reported twice as often by medical practitioners as non-medical practitioners. The authors suggest that this may be due to the limited training of the former, as 72% had completed less than two weeks of TCM training. The authors clearly did not consider undergraduate anatomy or clinical techniques, such as insertion of chest drains, as relevant training. Are they seriously suggesting that three years of traditional Chinese theory give the practitioner a better understanding of how to avoid pneumothorax than six or more years of orthodox medicine? A more plausible explanation is a difference in reporting behaviours. If you developed a cough or shortness of breath a day or two after acupuncture, whom would you consult? It is salutary to be reminded of the potential adverse events associated with the therapies we use, but the rates quoted in this paper may be poor estimates of event frequencies, and, as the authors comment, prospective data should be collected to give more accurate figures. Such data would still be open to reporting bias. Perhaps serious adverse event frequencies could be estimated from hospital admissions rather than by asking practitioners who have a financial incentive to appear safe and efficacious. Prospective and independent assessment of adverse events may be the only way to obtain reliable data, but this would have serious manpower and cost implications.

Significantly more substance P is found in upper trapezius trigger points of patients with myofascial pain compared with fibromyalgia or controls (n=27)


Summary
Substance P (SP), a neurotransmitter stored within the afferent nociceptive fibres, is likely to be involved in the pathogenesis of musculoskeletal pain. The authors of this study investigated SP immunoreactive (SP-ir) nerve fibres in the upper trapezius of patients with fibromyalgia (FM) and myofascial pain syndrome (MPS) by immunochemistry. Trapezius muscle obtained from tender points of nine women with primary FM, from trigger points of nine women with regional myofascial pain, and from nine control women, were immunostained with anti-SP sera.
Quantitative evaluation was performed by computerized image analysis. No significant differences in the number of SP-ir areas were detected between groups; in contrast, mean optical density (OD) of SP-ir showed a significant difference comparing the groups (p < 0.0001). Mean OD of the immunostaining for SP was statistically greater in trapezius muscle of patients with MPS compared to specimens from patients with FM (p < 0.05) and controls (p < 0.05); mean OD of immunostaining for SP was greater in FM specimens than in controls (p < 0.05). The authors concluded that their results point to a peripheral hyperactivity of the peptidergic nervous system in FM as well as in MPS, and that this supports the notion of pathogenetic involvement of the afferent nervous system in the development and perception of myofascial pain.

Comment
This reviewer is not qualified to comment on the technical methods used in this study, so it must be assumed that these were appropriate. We are not told how the subjects were recruited, so there is also an assumption made that the samples are representative of their respective populations. Whilst the analysis was performed by computer, and therefore unlikely to be affected directly by bias, the rigour of the study would have been improved by blinding the researcher who performed the analysis.

The results are interesting, and certainly conform with the hypothesis that some form of peripheral sensitisation is involved in the pathogenesis of myofascial trigger points.

Acupuncture appears to reduce urinary incontinence in spinal-cord-injured patients (n=13)

Summary
This is an uncontrolled cohort study of the effect of needling at BL33 on urinary incontinence in 13 subjects with chronic spinal cord injuries. Needling was performed bilaterally, from skin insertion over the third sacral foramina (BL33), in a cranial direction, until the needle tip was close to the sacral periosteum (needles were inserted 5 to 6cm). The needles were rotated for 10 minutes. This treatment was performed once a week for four weeks. Symptom diaries were kept for one week before treatment, and for one week after the fourth session. Urodynamic studies were performed at baseline, immediately after the first session, and one week after the fourth session. Incontinence disappeared in two subjects, and decreased by over 50% (in terms of urine volume) in a further six subjects. Bladder capacity increased significantly after the first session (p<0.05), and after the course of four treatments (p<0.05).

Comment
This is an encouraging study, but in the absence of a control group, and with n=13, it is little more than hypothesis generating. The investigators chose a strong manual stimulus to the myotomes of S2 to S3, which lie within the sacral parasympathetic segments supplying the bladder, and used objective outcomes to measure change. Interestingly, a satisfactory therapeutic effect was seen in about half of the subjects, a response rate similar to that seen in a pilot study of electroacupuncture in enuretic children (reviewed in Dec 2000 issue of AIM). Further research is now indicated, ideally in the form of a randomised controlled trial and with follow-up for longer than one week.

Sixty-six percent say they benefited from acupuncture (n=653)
The objective of this study was to survey attitudes to, and use of acupuncture in the general Norwegian population. An anonymous questionnaire was dispatched to a random sample of 1100 in the general population, and 653 responded (60.7%). Nineteen per cent of the general population, most often suffering from musculoskeletal pain, had tried acupuncture treatment. Lack of effect of conventional medicine was most often given as the reason to try acupuncture. Acupuncture patients had tried other kinds of alternative medicine twice as often as others, most often homeopathy (p<0.01). Acupuncture patients visit their GP more often (p<0.01), and are more concerned about their own health (p<0.01) than patients who have not tried acupuncture. Sixty-six per cent say they benefited from acupuncture, and 7% report that the acupuncture treatment had adverse effects. Fifty-six per cent of those with experience of acupuncture felt that doctors should recommend acupuncture for migraine patients, and 34% of those never having tried acupuncture agreed (p<0.01). Both patients who had tried acupuncture and those who had not, felt that the doctor should not interfere in the cancer patient’s wish to try acupuncture.

Of the reasons for seeking acupuncture, musculoskeletal problems were the most common, being cited by 54% of responders to the survey. This is probably a reflection of the impact of these problems on quality of life, combined with a failure of orthodox medicine to tackle them effectively.

Auricular acupuncture manages disabling chronic pelvic pain in pregnancy (n=1)


Summary
Chronic pelvic pain in a 23 year-old primigravida at 27 weeks’ gestation was incapacitating on opioids. After organic causes were ruled out, acupuncture was employed successfully. Chronic pelvic pain is a health problem that affects many reproductive-age women. During reproduction the dilemma is even more challenging. The growing uterus often exacerbates pain, and treatment is limited by the effect on the fetus. A multidisciplinary approach and alternative medicine can be effective. Recently, the FDA announced the use of acupuncture and acupressure as officially recognized modalities for treatment of chronic pain in oncology patients.

The patient in this case had surgically observed endometriosis at age 15 and subsequent infertility. Five months prior to conception she had laparoscopic uterosacral nerve ablation, presumably for pelvic pain, and during the procedure scarring was noted on the right ureter, pulling it closer to the uterus. The patient’s pain was described as constant and dull, with exacerbations during movement and urination. She was admitted for bedrest, and required intravenous opioid analgesics initially. Trigger points were injected under anaesthetic with no benefit. On the 11th day of admission auricular acupuncture was performed. Shenmen, sympathetic, lumbar spine and abdomen 2 were used on the left ear. The needles were left in for eight hours, during which time the patient required no opioids, and reported no pain on mobilising or urination. The pain relief lasted for one hour after the needles were removed. Acupuncture was repeated on the following day, this time using the right ear, and the pain relief lasted for four hours after the needles were removed. After the third daily session the pain relief lasted eight hours, and after the fourth session the patient

Reference
was allowed to return home. Acupuncture was employed successfully for the remainder of the pregnancy on an outpatient basis, with opioid analgesics for breakthrough pain. Spontaneous vaginal delivery without complications at 38 5/7 weeks produced a 3,305g female infant. The pain resolved immediately following delivery.

Comment
This type of response to auricular needling is likely to be fairly uncommon, however, it is such a simple technique, and adverse effects are so uncommon, should it not be tried universally in pain management before the use of opioids or more invasive techniques?

Complementary therapies were provided in 40% of primary care practices (n=964)


Summary
A postal questionnaire survey of a random sample of about one in eight (1226) GP partnerships in England assessed the number of practices offering ‘in-house’ access to a range of complementary therapies – acupuncture, chiropractic, homeopathy, hypnotherapy, medical herbalism, and osteopathy – or making National Health Service (NHS) provision by referrals outside the practice.

The response rate was 79%. Approximately 40% of GP partnerships provided access to some form of complementary therapy, and more than half of this was by a member of the primary health care team, usually the GP. About 6% employed an ‘independent’ complementary therapist, and 25% had made NHS referrals for complementary therapies. Homeopathy was the most commonly available therapy followed by acupuncture. Patients made some payment for 25% of the practice-based provisions. Former fundholding practices were significantly more likely to offer complementary therapies than non-fundholding practices (45% versus 36%, p=0.02).

Comment
This was a rigorous survey that was originally funded by the government. The figures seem to be high considering the generally poor level of rigorous evidence supporting these therapies, which implies that rigid criteria are generally softened by those who have direct patient contact. It also reflects the enthusiasm of the patients, and presumably the lack of other available therapeutic options for many conditions. One problem with these data is that they refer to 1995, since when the funding for general practice has changed (more than once!).

Adrian White, Exeter.

Experimental Studies
(humans)

Acupuncture and experimentally induced ischaemic pain (n=60)


Summary
Sixty human volunteers attended two sessions for pain induction using a sub-maximal effort tourniquet test (SETT). The latter involves application of a standard sphygmomanometer cuff to the arm, inflated to a pressure of 200 mm Hg for 12 minutes (including inflation and deflation). Immediately after inflation the subject performs 20 hand grip exercises at 75% of their maximum grip strength. Pain was assessed using a visual analoqe scale (VAS) and the McGill Pain Questionnaire (MPQ). At the second session, 48 hours after the first attendance, subjects were randomly allocated to one of five groups. The control group underwent exactly the same procedure as in the first session. The four other groups received manual acupuncture for 15 minutes prior to the SETT and again for five
minutes during the procedure. Acupuncture treatment group one were needled at points distal to the cuff, and acupuncture treatment group two were needled at points proximal to the cuff. Placebo group one received superficial needling to four mock points over the flexor surface of the forearm. Placebo group two received superficial needling to the points used in the active treatment groups (six subjects had the proximal points needled and six had the distal points needled). Analysis of VAS revealed no significant differences between the groups. Analysis of the MPQ revealed some effect in treatment group two and placebo group two. The authors concluded that their study provided no convincing evidence for the hypoalgesic effect of acupuncture compared with ‘sham’ procedures on this model of experimental pain.

**Comment**

The graphic display of VAS pain scores in this paper show reduced pain over the second session in all five groups (p=0.0001). The effect appears greater in all four groups that received stimulation compared to control; however, we are told that there are no significant differences. The trend appears most pronounced in treatment group two and placebo group one. The former received proximal segmental needling, and the latter received superficial needling to mock points; however, these mock points were located over the bulk of the forearm flexor muscles – the area from which the majority of the ischaemic pain would have been produced.

Needling probably does have a specific effect in such acute pain, but this trial did not detect that effect. Sixty subjects is a reasonable starting figure, but dividing into five groups of 12 rather dilutes the statistical power. A no treatment control is always useful to judge group by time changes, but was it necessary to have four different groups receiving needling? Was more than one question being addressed with this design? Proximal versus distal needling, superficial versus deep needling, and real point versus non-point needling differences were all being compared.

We are told that TENS has been shown to be effective using the SETT model. Perhaps it would have been better to try electroacupuncture, as it is this type of stimulation that is generally used in combating acute pain, although this study was clearly trying to gain external validity in the treatment of clinical muscle pain by using a standard manual needling approach.

If this study was to be performed again, this reviewer would like to see non-penetrating sham needling versus manual needling versus electroacupuncture, all to the same segmental points.

**Acupuncture and delayed onset muscle soreness (n=48)**


**Summary**

Forty-eight healthy volunteers were randomly allocated to one of four experimental groups. Subjects in the control group were left to rest for 20 minutes. The placebo group received minimal needling at non-acupuncture points. Treatment group one received manual acupuncture to classical acupuncture points, and treatment group two received manual acupuncture to tender points in the affected muscle. Muscle soreness was induced in the elbow flexors of the non-dominant arm prior to the first treatment. This was done in a standardised manner by eccentric loading with maximal weights, repeated to exhaustion on three consecutive occasions with a short rest between repetitions. Outcomes were subjective pain, muscle tenderness measured with a pressure algometer, and various functional measurements at the elbow using a standard goniometer. There were no consistent differences between the groups, and the authors concluded that acupuncture has little effect on delayed onset muscle soreness.
Comment
Any readers who spent time pushing weights in their youth will be familiar with the pleasant aching and stiffness that occurs the day after a ‘good workout’. This reviewer was amongst the cadre who thought that this feeling was necessary to achieve increased performance. Subsequently we learnt that this delayed onset muscle soreness (DOMS) was simply a reflection of numerous microtears in the exercised muscles, probably indicating excessive, unaccustomed workload. The researchers responsible for this study have been engaged in an attempt to find an experimental model for muscle pain that can be used to answer questions regarding the efficacy of different forms of acupuncture. DOMS does not appear to be a suitable model for the type of manual acupuncture performed in this study. It could be argued that group sizes of 12 diluted the power of this study too much, or that strong electroacupuncture would have been a more suitable treatment for such intense muscle soreness; however, it is more likely that DOMS in healthy volunteers is simply not sufficiently akin to the chronic muscle pain we see in clinical practice, where acupuncture appears to be so effective.

What should this research group try next: injection of capsaicin perhaps? Whatever it is, this reviewer wishes them good luck – something that is needed just as much in good science as it is desired elsewhere.

Experimental Studies (animals)

Acupuncture at LI4 reduces uterine motility in pregnant rats (n=?)


Summary
As the pregnancy stage advances, prostaglandin (PG) concentrations increase in the uterus, being responsible for the increased uterine contractility during labour. Therefore, regulating the concentration of the PGs in the uterus may be important in controlling preterm delivery. In traditional oriental medicine acupuncture at LI4 controls the function and motility of the uterus. In this study, acupuncture treatment at LI4 in non-pregnant and pregnant rats was evaluated for its effect in the expression of cyclooxygenase-2 enzyme (COX-2) and uterine motility. Whether the rats were pregnant or not, immunohistochemical localization of the COX-2 enzyme was primarily found in the uterine endometrium with weak localization in the uterine myometrium. The level of expression in these two locations was intensified by pregnancy but reduced by acupuncture at LI4. The infusion of PGF$_{2\alpha}$ in pregnant rats caused and increased COX-2 expression in the myometrium, whilst it caused a decreased expression in the endometrium. The uterine motility, monitored during LI4 acupuncture, reduced to 67.0% in non-pregnant rats, and to 75.0% in pregnant rats. PGF$_{2\alpha}$ infusion in pregnant rats increased uterine motility to 117.3%. The authors concluded that the significant reduction in uterine motility in pregnant rats supports the role of LI4 acupuncture in inhibiting the expression of COX-2 enzyme that can be used to regulate complicated preterm labour.

Comment
Why should needling the front paw of a rat lead to decreased uterine motility? Is not the same point used for inducing labour or miscarriage?

Exercising the forelimbs of rats results in a greater rise in endorphin levels than exercising the hind limbs (Lundeberg, personal communication). Perhaps this is because strong somatic stimuli from the forelimbs are more likely to be associated with fighting for survival, in which case endorphin mediated analgesia would be advantageous. Increased sympathetic tone during fight or flight
would be expected to reduce visceral activity in favour of optimal somatic function. The results of this study, therefore, are not particularly surprising. It would have been interesting to compare the effects at LI4 with those at another point, or non-point, on the forelimb, and the rigour would have been enhanced by blinded data collection and analysis. This reviewer feels that the authors are a little ambitious in concluding that their research supports a role for LI4 in preterm labour; however, the study certainly does question the ability of acupuncture at LI4 to induce labour, in rats at least.

**Acupuncture influences cortical blood flow in rats (n=52)**


**Summary**

The effect of acupuncture-like stimulation of various areas (cheek, forepaw, upper arm, chest, back, lower leg, hind paw, perineum) on cortical cerebral blood flow (CBF) was examined in anesthetized rats. An acupuncture needle (diameter, 0.34 mm) was inserted into the skin and underlying muscles at a depth of about 5 mm and twisted to the right and left once a second for one minute. CBF of the cortex was measured using a laser Doppler flowmeter. Stimulation of the cheek, forepaw, upper arm and hind paw produced significant increases in CBF, but stimulation of the chest, back, lower leg and perineum did not produce significant responses. Stimulation of the cheek, forepaw, and hind paw produced an increase in mean arterial pressure (MAP), while stimulation of the back produced a decrease in MAP. Stimulation of the upper arm, chest, lower leg and perineum did not produce a significant MAP response. After spinal transection at the 1st to 2nd thoracic level, the blood pressure response to stimulation of the cheek and forepaw was suppressed, whereas an increase in CBF still took place. The increase in CBF induced by forepaw stimulation was abolished by severance of the somatic nerves at the brachial plexus. Forepaw stimulation enhanced the activity of the radial, ulnar and median nerves. Passing of an electric current through acupuncture needles showed that excitation of group III (Aδ) and group IV (C) afferent fibres in the somatic nerve was capable of producing an increase in CBF, whereas excitation of group I (Aα) and group II (Aβ) fibres was ineffective. The increase in CBF induced by forepaw stimulation was almost abolished by intravenous administration of muscarinic and nicotinic cholinergic blocking agents (atropine 5mg/kg and mecamylamine 20mg/kg), and by bilateral lesions in the nucleus basalis of Meynert. Acupuncture-like stimulation of a forepaw increased acetylcholine release in the cerebral cortex. The authors concluded that the increase in CBF, independent of systemic blood pressure, elicited by acupuncture stimulation is a reflex response in which the afferent nerve pathway is composed of somatic group III and IV afferent nerves, and the efferent nerve pathway includes intrinsic cholinergic vasodilators originating in the nucleus basalis of Meynert.

**Comment**

This group has produced a small number of high quality neurophysiology papers relating to acupuncture, which are well worth studying. The present paper continues in a similar style to investigate how somatic stimulation can influence cerebral blood flow, and to define the neural pathways responsible. The authors note in the discussion section that, in contrast to the size of points defined in traditional acupuncture, their experiments indicate that the effective areas of stimulation are rather diffuse and not strictly localised in small spots. They go on to comment that the limbs appear to be the most effective sites for eliciting cardiovascular responses through supraspinal structures, whereas the areas most influential on bladder and gastric motility are segmental.


Reports of Adverse Events & Related Papers

Pyoderma gangrenosum follows acupuncture (n=1)


Summary
A 48-year-old woman with ulcerative colitis developed an erythematous papule, which became a large ulcerated pustule. She presented six months after the appearance of the ulceration. The lesion occurred at a needle puncture site some time after the start of weekly acupuncture treatment for arthralgia. Her ESR was 42mm/hr on presentation, and she was treated for a suspected diagnosis of pyoderma gangrenosum associated with inflammatory bowel disease. The treatment included high dose oral steroids. Colonoscopy revealed diverticular disease of the left colon. The lesion improved considerably over a period of two weeks and had healed after three months, by which time she was on a maintenance dose of 5mg per day of prednisolone.

Comment
The authors suggest that this is the first report of acupuncture leading to pyoderma gangrenosum in a susceptible individual. Minor injuries, such as needle puncture, however, are recognised to cause ulcerative skin lesions in patients with certain predisposing conditions, such as pyoderma gangrenosum and Behcet’s disease. Nevertheless, it is useful to be reminded that needle puncture of the skin in some individuals can be associated with the development of recalcitrant ulceration.
No difference between acupuncture and sham in chronic tension-type headache (n=39)

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