Acupuncture in the treatment of fibromyalgia in tertiary care – a case series

Barbara Duncan, Adrian White, Anisur Rahman

Abstract
Aims Fibromyalgia is a common cause of chronic widespread pain. The benefit of medication is often limited by its side effects, and the improvements obtained with exercise and education are inconsistent. Many patients seek acupuncture treatment, which is reported to be helpful in some cases. This study aimed to explore the acceptability and benefits of acupuncture offered in the setting of a tertiary referral clinic.
Methods An open, uncontrolled observational study was conducted among patients who met the usual fibromyalgia criteria and who had a pain score of at least 30 on a 100mm Visual Analogue Scale (VAS). Patients were allowed to continue other treatments but not to introduce new ones. Acupuncture was given using a Western approach according to a protocol developed by consensus. Patients were offered eight treatments in eight weeks. Outcome measures included VAS of pain intensity and Fibromyalgia Impact Questionnaire (range 0 – 100), and were taken before and after treatment, and at 14, 20 and 34 weeks from enrolment.
Results Twenty four eligible patients were enrolled in a 12 month period. Baseline mean pain VAS score for these 24 patients was 74 (SD 18) and mean Fibromyalgia Impact Questionnaire score 78 (SD 12.4). Only 14 patients completed the course of treatment within about 10 weeks. Compliance was poor in the remaining patients because of difficulty attending clinic, and in two cases because of exacerbation of pain. Completion of outcome measures was variable and therefore the analysis of data is limited. Five patients scored at least 20% reduction in Fibromyalgia Impact Questionnaire score which is a clinically relevant improvement. Two of these scored at least 50% reduction.
Conclusion Acupuncture appears to offer symptomatic improvement to some patients with fibromyalgia in a tertiary clinic who have failed to respond to other treatments. In view of its safety, further acupuncture research is justified in this population.

Keywords
Acupuncture, fibromyalgia, case series.

Background
Fibromyalgia (FM) is diagnosed when a patient has pain in the axial skeleton, on both sides of the body and above and below the waist for three months or more, in combination with tenderness on pressure of 11 out of 18 specific tender points – the American College of Rheumatology (ACR) classification criteria from 1990. Fibromyalgia is a polysymptomatic syndrome of chronic widespread pain often accompanied by fatigue, non-restorative sleep and visceral hyperalgesia. It is a common cause of chronic widespread pain, responsible for an estimated 10-20% of new patients attending rheumatology clinics. The symptoms of fibromyalgia can persist for many years and outcome is generally poor. Chronic ill-health and disability are well recognised consequences.

Currently available treatments are often ineffective. Amitriptyline has been shown to be effective in some but not all patients with fibromyalgia. Tramadol, either on its own or in combination with paracetamol, has been shown to be helpful in treating the pain of fibromyalgia. The evidence for lidocaine infusions alleviating fibromyalgia pain is equivocal. There is some evidence that N-methyl-D-aspartate (NMDA) antagonists, eg ketamine and dextromethorphan can ameliorate the pain of fibromyalgia, and more
recent evidence supports the use of pregabalin, gabapentin and duloxetine. However, these medications have side effects that can make them intolerable to patients with fibromyalgia, who are often more sensitive to medication. Education and exercise have been shown to improve some symptoms of fibromyalgia but results are inconsistent. Their beneficial effects depend on motivation and ability to comply with the exercise regime.

Treatments that can minimise unpleasant symptoms (without troublesome side effects) and reduce the health and social burden of this disease would be welcome. Acupuncture has the attraction of not being a pharmacological product consumed on a daily basis. Clinical observation suggests that acupuncture may be a viable adjunct in the management of fibromyalgia. Increased use of acupuncture has been encouraged by the British Medical Association, while calling for better quality of evidence. However, there are limited resources for acupuncture in the NHS and it is important to use them efficiently, concentrating on conditions where the potential for benefit is based on best evidence.

One third of the patients with fibromyalgia described by Ledingham had been treated with acupuncture, and 29% of these had found it helpful. A recent review included five RCTs of acupuncture in fibromyalgia, and concluded that the evidence is mixed and that further rigorous studies seem warranted. They also noted that all the positive trials used electroacupuncture.

The first author currently uses manual acupuncture (but not electroacupuncture) in this tertiary specialist pain clinic to treat patients with fibromyalgia. We originally planned to test the effectiveness of manual acupuncture in an RCT, and therefore designed a feasibility study to provide us with information on which to base a subsequent grant application, and gained consent of The National Hospital for Neurology and Neurosurgery and Institute for Neurology Joint Research Ethics Committee. However, because of the difficulties we experienced, which we describe here, it seems unlikely that a definitive RCT would be funded in this setting.

Therefore, our aim in this paper is to simply report the patients’ progress. The fact that we originally planned a pilot study explains certain features which might have been different in a case series, such as certain inclusion criteria, the restriction on using other interventions for the whole of the six months’ trial period, and the multiple outcome measures we used. However, we wish to report our findings out of recognition of the patients’ commitment to the trial, and to add to the body of evidence on what this type of acupuncture may achieve for patients with advanced fibromyalgia, and to provoke discussion on different treatment approaches.

**Methods**

An open, uncontrolled observational study was conducted among outpatients at the Centre for Rheumatology, University College London and the Pain Management Centre, University College London.

Patients aged between 18 and 65 years with fibromyalgia, as defined by the ACR criteria, were recruited. Only patients who rated their pain level as 30 or higher on a 100mm Visual Analogue Scale (VAS) were included, as we judged this to be sufficient to demonstrate a reduction. Presence of a co-existing systemic rheumatological illness (such as systemic lupus erythematosus or Sjogren’s syndrome) was not an exclusion factor, since it has been shown that this does not affect the clinical characteristics of fibromyalgia.

Patients with clotting disorders were excluded, as were patients who had previously experienced acupuncture for fibromyalgia and those who did not wish to be given acupuncture.

All regular medications were continued during the study period. Use of amitriptyline or any other drug prescribed for fibromyalgia or musculoskeletal pain was not an exclusion factor, provided the dose had been stable for at least three months before entering the trial.

Patients were excluded if they had started physiotherapy, psychology or education sessions within the last three months, and patients were asked not to start these forms of therapy during the treatment period or for a follow up period of three months.

We aimed to recruit and treat 24 patients, which we calculated would be enough to identify a statistically significant response, eg a 20% reduction in pain intensity VAS (from 60 to 40).
All patients presenting in clinic were assessed by AR or BD to confirm that they met the ACR criteria and the other inclusion criteria. They were then given an information sheet which explained the need to complete extra questionnaires and the possibility of mild side effects including dizziness, drowsiness, headache, nausea, bruising and possible temporary worsening of pain. Patients declining to give consent were offered acupuncture in the usual way, outside the study.

**Acupuncture intervention**

All procedures were carried out by BD, who has been a member of the BMAS for six years and is a consultant pain specialist experienced in the use of acupuncture for treating fibromyalgia, at the Pain Management Centre, National Hospital for Neurology and Neurosurgery. Treatment was carried out according to the usual practice there, ie using a Westernised approach to acupuncture, involving manual needling of trigger points, appropriate neurosegments and distant sites, depending on the locations of painful areas in the individual patient. Superficial needling with a small number of needles was used, because patients with fibromyalgia are often especially sensitive to needling. Superficial needling of the skin in people with fibromyalgia has been shown to produce an increase in skin and muscle blood flow not seen in healthy subjects. This supports the concept that light needling of the skin in fibromyalgia patients could produce the same effect as deeper intramuscular needling in normal subjects.

The treatment protocol (see Appendix) was designed to be reproducible but allow flexibility. It was sent to six senior members of the British Medical Acupuncture Society for review, and modified in response to their comments; at least one commentator thought the duration of needling was excessive. Electroacupuncture was not recommended by any of the reviewers.

The protocol specified that patients would be given eight treatments at weekly intervals. From clinical experience with fibromyalgia patients, improvement is commonly not seen until the fourth or fifth treatment, and BD routinely offers a maximum of 10 acupuncture treatments. Giving eight treatments was regarded as a reasonable compromise between the minimum necessary and the maximum possible within the limited resources of the Centre.

At each appointment, patients were asked about the response to the previous treatment, and the sites and severity of pain were established in order to plan further treatment.

**Outcome measures**

Outcome measures were collected on five occasions – immediately before treatment, at the end of the eight week treatment; then by post after six weeks (14 weeks from randomisation) and three months (total 20 weeks); and finally at a clinic visit after six months (total 34 weeks after enrolment).

Outcome measures included the following: 1) VAS of pain intensity at that moment in time; 2) the Fibromyalgia Impact Questionnaire (FIQ), a validated 20 item questionnaire which includes questions about work, ability to carry out everyday activities, tiredness, pain, stiffness and depression; with higher scores indicating greater impairment; 3) the Short-Form McGill Pain Questionnaire; 4) the Pain Self-Efficacy Questionnaire, where patients are asked to rate their confidence in performing various activities; 5) the SF-36 (Short Form 36 Health Survey), in nine domains exploring physical, psychological and social aspects of the patient’s response, from which we analysed the physical and mental components; 6) the Hospital Anxiety and Depression scale; 7) a global assessment of change: ‘Please tick the box to show how you think your fibromyalgia is now, compared with before acupuncture’, offering a choice of five responses from ‘very much better’ to ‘very much worse’.

**Analysis**

The analysis was exploratory. Where data were missing for one or two time points, but present for a subsequent one, the value of the last reading was carried forward. Data were not carried forward for more than two missing time points, nor after patients had dropped out.

It was not possible to give some patients weekly treatments because they attended so sporadically. Since a continuous course of treatment may be necessary for acupuncture to be effective, we decided, when looking at the results, to group patients and analyse results according to whether they had complied with regular appointments and received an appropriate course of acupuncture. Patients were placed into three groups. Group 1 included patients
who completed the treatment protocol in or close to eight weeks. Group 2 included patients whose treatment was spread over time with intervals of several weeks between treatments, for reasons relating to poor health or social circumstance. Patients who failed to complete treatment were placed in group 3 and not included in the main analysis.

Results
A total of 25 patients were enrolled between November 2003 and November 2004. One patient was subsequently excluded as her initial VAS score was too low, leaving 24 patients for analysis. Figure 1 shows their flow through the study. Baseline pain VAS score for these 24 patients was 74 (SD 18) and FIQ score 78 (SD 12.4).

Group 1 contained 14 patients, and Group 2 had 6 patients. Reasons for failing to attend treatment regularly included disability from fibromyalgia and hospitalisation for severe depression. Four patients (Group 3) failed to complete the treatment protocol. Two of these experienced more severe pain following acupuncture despite very light needling.

In many cases there were considerable amounts of missing data. Nine patients had data missing at follow up of either 20 or 34 weeks, or both. There was a notably poor return of postal questionnaires. One patient who completed treatment per protocol did not complete any measures in a manner that could be used, and on the follow up visit her daughter was seen to be completing the VAS score. On two occasions, FIQ was not completed when other

Figure 1 This chart shows the flow of patients through treatment and follow up.
questionnaires were. Thus, of the 24 patients eligible for inclusion, 14 (60%) completed the treatment as per protocol but only five of these (20% of those enrolled) provided sufficient data for a complete evaluation.

The socio-demographic and outcome data for the three groups are presented in Table 1. Group 1 tended to be older than groups 2 and 3 and to take more medication for other medical conditions. There were no other meaningful differences between the groups. All three groups had a median of two other significant medical conditions.

Global scores were reported by four patients on at least one occasion as ‘very much better’, all in Group 1. Only one patient still scored ‘very much better’ at 34 weeks, and this self-assessment is consistent with her scores for other measures: for example, her FIQ fell from 60.5 to 20.6, and VAS 7.1 to 0.3.

The FIQ is regarded as the most valid measure of overall impact of fibromyalgia, and individual scores of patients in Group 1 are shown in Figure 2. At the end of treatment three scored at least 20% reduction and two others at least 50% reduction. One patient

<table>
<thead>
<tr>
<th>Table 1 Baseline data of three groups of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>age, y</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Group 1 (per protocol) n=14</td>
</tr>
<tr>
<td>Group 2 (significant delays) n=6</td>
</tr>
<tr>
<td>Group 3 (incomplete treatment) n=4</td>
</tr>
</tbody>
</table>

Values are means (SD) except where indicated
Abbreviations: FIQ – Fibromyalgia Impact Questionnaire; y – years; n – number

Figure 2 Individual Fibromyalgia Impact Questionnaire scores are shown of the 13 patients in Group 1 who provided data.
still had 20% improvement at six months, and one still had greater than 50% reduction. The respondents were not different from non-respondents in either mean age (54 and 52 years respectively) or duration of symptoms (six and eight years respectively).

Because of the amount of data that remained missing, even after substituting as described above, group analyses can be considered reliable only for 11 patients at four weeks in Group 1, and only for five patients at three weeks in Group 2. There was a small but consistent reduction in group scores for all measures at the end of treatment in Group 1, ie the patients who received acupuncture as per protocol. This is shown for three outcomes in Table 2. No reduction was seen in any measure in Group 2. There was no suggestion of a continued effect in Group 1, as group scores for all measures returned to baseline values from week 14 onwards. An analysis of those eight patients who provided baseline and six month data showed no trend to any long term effect.

Finally, for the remaining outcomes, results are presented from all patients who provided data up to the fourth data point (20 weeks), and are shown in Table 3.

**Discussion**

In this group of 24 patients with fibromyalgia referred to a tertiary pain clinic and willing to receive acupuncture in the context of a trial, acupuncture is of limited application mainly because repeated attendance at clinic can be a problem. In retrospect, the severity of the symptoms, using these outcome measures, would not have predicted difficulty with attendance. It may be more relevant that these people were living alone and did not have anyone to accompany or take them to clinic. Patients with fibromyalgia often complain about deterioration of cognitive function. Park and colleagues demonstrated deterioration of short term memory and deficits in vocabulary comparable to aging by 20 years. This may be relevant in attending outpatient appointments eg one patient described leaving home and not being able to remember where she was going – arriving for her appointment was a major achievement.

Of the 14 patients who could attend for the course of treatment, about a third had measurable benefit of at least 20% reduction in the FIQ score, which is a clinically relevant improvement. Two of these patients had a greater than 50% improvement.
However, our data do not provide any information on which patients respond best. We have no evidence that the likelihood that a patient will respond can be predicted from their age, severity or duration of symptoms. The one patient who was excluded, because her VAS score was below 30, showed marked improvement in other outcome measures. The presence of multiple pathology or use of other medications did not seem to prevent a response to acupuncture (though we cannot say whether or not these factors reduce the size of the response).

Because we had no control group, we cannot draw any conclusions as to whether this response in some patients is a specific effect of needling.

**Acupuncture protocol**

A protocol for application of acupuncture was used to allow reproducibility of method. In practice some changes were necessary during the study. The overall number of needles allowed should be greater than 10. The number was limited to 10 needles for this study to minimise the cost of placebo needles for a future RCT. Towards the end of the study, the protocol was modified to try to improve the response, and two patients had more than 10 of the smaller needles inserted – with benefit. It is possible that limiting the number of needles impaired the response to treatment. The use of electroacupuncture is discussed below.

There is a wide spectrum of sensitivity to acupuncture in fibromyalgia. Some people respond to light superficial needling with a severe exacerbation of pain, whereas others improve with 20 deep needles inserted intramuscularly, as was evident in this study. Currently, it is not possible to predict which people will require deep needling to produce a good response. Lundeberg and Lund’s recent article provides the neurophysiological basis for suggesting an approach that tries both ‘light’ and ‘strong’ stimulation when performing acupuncture for patients with fibromyalgia, continuing with the more successful one. Three out of 25 patients had the larger (0.3mm diameter) needles inserted, contrary to the recommendation of Baldry, with good effect. The protocol also defined manual stimulation as rotation of the needles for five seconds every minute, which was difficult to reproduce precisely.

A number of patients initially responded well to a gradual increase in the number of tender points needled, but reached an upper limit, above which the pain became worse. They were therefore treated with distal points instead, including LI4, LR3, ST36 and SP6. Their response often improved with this approach, which was partially catered for in the protocol by allowing additional traditional points. The treatment protocol had not anticipated omitting tender point needling.

**Other studies of acupuncture for fibromyalgia**

Four RCTs in the Western literature provide findings that can be compared with our own. In three of these studies, the patients were clearly less severely affected than ours. Harris and colleagues explored three treatment variables – needling sites, needle stimulation, and dose of treatment – for pain in a crossover study in 114 patients recruited through the media, with average baseline VAS of about 55. They found only an overall dose effect of manual acupuncture. Deluze and colleagues, in patients recruited after referral to a rehabilitation clinic with baseline VAS of about 60, found electroacupuncture significantly more effective than a minimally active control treatment, for several outcome variables. Martin and colleagues compared acupuncture with a non-penetrating sham acupuncture in a rigorous RCT in 50 patients with fibromyalgia; the acupuncture group showed significantly greater improvement in symptoms measured by the Fibromyalgia Impact Questionnaire, particularly fatigue and anxiety. The benefits were still present, though reduced, after seven months. Baseline FIQ scores of around 43 indicate that the patients were less severely affected than ours.

In another study, Assefi and colleagues recruited patients through media and healthcare providers, with a mean pain intensity VAS score of 7 on a 10cm scale. A course of 12 sessions of a specific manual acupuncture prescription in 100 patients was no better at reducing pain than the pooled results from three control interventions: acupuncture for a different condition; non-point acupuncture; and a non-penetrating control. There were trends towards differences between the control interventions, but these were not commented on by the authors. The trial was no doubt under powered to show a difference between a specific form of needling, and a combination of other varieties of needling.

Only one of the reports of these studies gives an estimate of the percentage of responders (as well as
Implications for research

This study recruited a group of patients who are, by definition, difficult to treat: they had not responded to other treatments and were referred to a tertiary pain clinic where, as a last resort, they are offered acupuncture. The severity of their symptoms at baseline (mean pain VAS score 74, mean FIQ score 78) confirms this. Our results suggest that manual acupuncture could be helpful to some of these patients and further research is justified.

Two problems have not been resolved: it is not easy to predict which patients will be able to attend for the whole course of acupuncture within the allotted time period, and it is currently impossible to target the treatment at the patients who are most likely to respond. However, we believe this research may be worth pursuing because acupuncture seems to offer a useful therapy to some patients, and is relatively free of side effects apart from temporary exacerbations of pain. There is considerable interest and investment in pharmaceutical research (pregabalin, milnacipran, duloxetine etc), even though medications have to be taken continuously and usually cause problematic side effects in this group of patients.

Interestingly, the sample size for a definitive study may not need to be prohibitively large in similar populations, because there seems little variance in the scores for FIQ, the recommended primary outcome measure. The baseline standard deviation was much less than a quarter of the mean baseline score in this study, and other studies in secondary care have similar findings. Using our data, a difference between groups of 8 points (10% of baseline) would be identified with a total sample of 80 patients analysed. Martin calculated he needed a total sample of 50 to identify a 2 point difference in the FIQ scale.

An RCT would be feasible in the patients who attend this tertiary referral centre, but would have to be limited to only those who are likely to be able to attend repeatedly. Recruitment of 50 patients would take about two years. It seems likely that delivering the acupuncture treatment in primary care, close to the patient, might increase recruitment and attendance for follow-up. Modifications to our study protocol that we would suggest include: allowing patients who do not respond to drop out before the six months’ follow up period, so they can try other treatments; and being more rigorous at ensuring that patients do not start other treatments at the advice of their GP. One patient had a course of physiotherapy for shoulder pain, and another took advantage of free aromatherapy massage. Future studies could also investigate the long-term outcome of offering continued, intermittent treatment to responders, in order to maintain their improvement. Finally, electroacupuncture should be considered for future studies since it was used in both positive trials reviewed.

Outcome measures

This study included an excessive number of outcome measures (for reasons explained above). This proved a particular problem despite interpreters being available as many patients did not speak English as their first language. In a rigorous study, professional qualified interpreters are permitted but not family. Simple, quick outcome measures completed in clinic would improve future data collection.

No measure seemed to be more sensitive to change than FIQ in this study, so we would recommend the FIQ because it is widely accepted. Lundeberg and Lund comment on sleep disorder in fibromyalgia and draw attention to the failure of acupuncture studies to measure quality of sleep because pain is frequently the primary outcome measure. FIQ contains one question related to sleep so does include change of this parameter within an overall assessment. Understanding and completion rate for postal questionnaires were not as good as for questionnaires administered personally at the time of the appointment. The outcome measures used here only allowed for scoring of pain in the body as a whole. When treating widespread pain there may be – as there was in this study – improvement in pain in one region, which was not reflected in the results. For example, two patients remarked that their back pain had improved considerably which made a difference to their mobility but this was not always reflected in the outcome measures.
The number of measures needs to be reduced in further studies. SF-36 is long, and has no advantage over FIQ. Since this study was designed, a new tool to measure mood in pain patients has been developed – Depression Anxiety and Positive Outlook Scale (DAPOS) which would be useful in future studies. Mood disorders are known to impair recovery. The one patient who maintained the improvement particularly well had a positive outlook. This patient was still in active employment, which is known to reduce the impact of pain related disability. For future studies we would recommend VAS, FIQ, and DAPOS.

Conclusion

Acupuncture may have a role as treatment for some patients with fibromyalgia that has been unresponsive to other therapies, but the response is unpredictable. Further research into acupuncture is indicated because of its lack of serious side effects. Comparisons between manual and electroacupuncture should be conducted, to determine which produces better results. Suggestions have been made for the design of such studies, including the optimal outcome measures.

Summary points

- Fibromyalgia (FM) is a common cause of chronic widespread pain
- The benefit of medication in FM is often limited by its side effects
- Acupuncture appears to offer symptomatic improvement to some patients with FM in a tertiary clinic
- In view of its safety, further acupuncture research is justified in this population
- Comparisons between manual and electroacupuncture should be conducted, to determine which produces better results

Conflicts of interest

BD, AR none declared. AW is employed by the British Medical Acupuncture Society.

Reference list


**Editorial handling**

In view of the second author’s conflict of interest as Editor of this journal, all editorial handling of, and decisions about, this article were carried out independently by Mike Cummings on behalf of the editorial board.
Appendix

Treatment protocol
At the first treatment, two or three of the patient’s most painful areas will be identified, tender points located, and a maximum of six (more usually four) fine needles (0.2mm x 15mm Seirin B type needle) will be inserted subcutaneously in the points that are the most tender and left in situ for three minutes.

At subsequent sessions the treatment will be modified in light of the patient’s response: further schedules depend on whether the pain is worse after the first treatment. Treatment is to be given weekly for eight sessions.

1. Schedule for patients whose pain was not aggravated by the first treatment – see Appendix Table 1
Those who failed to respond will receive stepwise increase in stimulation, involving thicker needles (0.3mm x 30mm Seirin B type needle) and more needles (maximum of 10) inserted intramuscularly. The needles will be left in situ for a longer period of time (to a maximum of 10 minutes) and manually stimulated, ie rotated in both directions for 5 seconds every minute.

Treatment 2: standard (0.3mm x 30mm Seirin B type needle) needles inserted intramuscularly, same number and duration as before. Treatment 3: more needles left in situ for the same period of time with manual stimulation. Treatment 4: increase the number of needles to the maximum, duration to 5 minutes. Treatment 5 to 8: increase duration to the maximum.

In general, once the patient responds positively and the pain is improving, the acupuncture in that area will not be increased. If the patient’s pain is worse following any treatment session then needling will be reduced to the previous dose.

In addition, points on hands for upper limb and neck pain (LI4) and points on the feet (LR3) for lower limb pain may be used. Other points that may be used are LI11, ST36, SP6, KI3, if they are close to the painful area being treated or are tender.

2. Schedule for patients whose pain is aggravated by the first treatment – see Appendix Table 2
For those patients who responded with aggravation of their pain, the treatment schedule will be as follows. Treatment 2: using the same size needle as in the first treatment, needle the most painful tender point in one painful area subcutaneously for 1 minute, without stimulation. If even this causes aggravation of the pain without any subsequent improvement then acupuncture is abandoned.

If there is no change in pain following the second treatment, either the number of needles can be increased by one, or the duration increased by one minute at each treatment, continuing to use fine needles. Both parameters are not increased at the same time.

---

### Appendix Table 1
<table>
<thead>
<tr>
<th>Treatment number</th>
<th>Size of needle, mm</th>
<th>Depth of needle</th>
<th>Number of needles</th>
<th>Manual stimulation</th>
<th>Time left in situ, minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.2 x 15</td>
<td>Subcutaneous</td>
<td>3-6</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>0.3 x 30</td>
<td>Intramuscular</td>
<td>3-6</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>0.3 x 30</td>
<td>Intramuscular</td>
<td>3-10</td>
<td>Yes</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>0.3 x 30</td>
<td>Intramuscular</td>
<td>Max 10</td>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>0.3 x 30</td>
<td>Intramuscular</td>
<td>Max 10</td>
<td>Yes</td>
<td>5-10</td>
</tr>
<tr>
<td>6 to 8</td>
<td>As 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Appendix Table 2
<table>
<thead>
<tr>
<th>Treatment number</th>
<th>Size of needle, mm</th>
<th>Depth of needle</th>
<th>Number of needles</th>
<th>Manual stimulation</th>
<th>Time left in situ, minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.2 x 15mm</td>
<td>Subcutaneous</td>
<td>3-6</td>
<td>No</td>
<td>3 min</td>
</tr>
<tr>
<td>2</td>
<td>0.2 x 30mm</td>
<td>Subcutaneous</td>
<td>1</td>
<td>No</td>
<td>1 min</td>
</tr>
<tr>
<td>3</td>
<td>0.2 x 30mm</td>
<td>Subcutaneous</td>
<td>2</td>
<td>No</td>
<td>1 min</td>
</tr>
<tr>
<td>4-8</td>
<td>0.2 x 30mm</td>
<td>Subcutaneous</td>
<td>2-10</td>
<td>No</td>
<td>1 min</td>
</tr>
</tbody>
</table>
Acupuncture in the treatment of fibromyalgia in tertiary care – a case series

Barbara Duncan, Adrian White and Anisur Rahman

doi: 10.1136/aim.25.4.137

Updated information and services can be found at:
http://aim.bmj.com/content/25/4/137

**Email alerting service**

*These include:*
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**

To request permissions go to:
http://www.bmj.com/company/products-services/rights-and-licensing/

To order reprints go to:
http://journals.bmj.com/content/subscribers

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/