CASE REPORT

The use of western acupuncture in the treatment of Sternocleidomastoid trigger points in a 54 year old lady with Fibromyalgia.

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Abstract
This case report reviews the use of acupuncture to treat anterior neck pain in 54 year old female with Fibromyalgia. Both trigger point acupuncture and Traditional Chinese Medicine (TCM) points were employed to affect sternocleidomastoid muscle composition, modify central pain mechanisms and influence insomnia. The numerical pain rating and subjective self reporting were used to determine effectiveness of interventions. Following three treatments short term relief of symptoms was achieved. Reassessment at a later date would be required to determine efficacy and long term implications of acupuncture upon this type of presentation. However, it does appear that acupuncture can reduce impact of trigger points and associated pain.

Keywords: Fibromyalgia, physiotherapy, sternocleidomastoid, trigger points, western acupuncture.

Introduction
Fibromyalgia syndrome (FMS) is a commonly misdiagnosed or under treated condition present in two to four percent of the population, more commonly women (ACR 2009). Described as a polysymptomatic syndrome, patients are identified as having chronic widespread pain with 11 out of 18 specific tender points as classified by the American College of Rheumatology (Duncan et al 2007)(ACR 1990). Presentation includes multiple areas of pain, peripheral and central sensitisation with allodynia, fatigue and changes to sleep rhythms. It is thought that physical, environmental or emotional stressors can precipitate onset (ACR 1990). Hence FMS has been described as “a somatic manifestation of psychological distress” (Richards 2001).

The health and social burden of FMS is likely to grow proportionally with an increase in stress amongst western societies. As no cure exists it is important to determine an effective management option which does not have great physical or financial cost. Therapists often report frustration when treating FMS due to conflicting management advice, the variety of patient presentation and hence variety of response to traditional treatments (Lundeberg & Lund 2007).

Case report

Patient Presentation
This study details the treatment of a 54 year old lady with three year history of anterior, right sided neck pain which she described as a “lump in my throat”; see fig. 1 for pain distribution and characteristics. Her General Practitioner had sent her to an Ear Nose and Throat specialist at a major London teaching hospital who had carried out barium swallow tests and an endoscopy; all investigations were deemed normal. She had seen
physiotherapists previously for her FMS with little effect; she was sceptical as to whether this intervention would be beneficial.

**Fig 1 Body Chart detailing pain presentation of Fibromyalgia patient**

Pain 1 (P1) was aggravated by fast cervical rotation to the right, which produced a catching throbbing sensation otherwise it remained as an aching feeling. This ache had no pattern during the day and would alter with a “mind of its own” suggesting a centralised pain mechanism (Gifford & Butler 1997). Pain 2 (P2) occurred only when P1 was at its worst and this was often concurrent with a poor night’s sleep or prolonged periods of gardening. She had found nothing which would relieve this aching.

During objective assessment, P1 was reproduced on cervical spine extension and on assessment of sternocleidomastoid (SCM) muscle length; this was also found to be short on the right side. Palpation of right SCM produced referred pain in the distribution of P2.

Active trigger points have been described as “a focus of hyperirritability in a muscle or its fascia … it causes referred pain at rest … prevents full lengthening of the muscle and weakens the muscle” (Travell and Simon 1992). The presence of trigger points in patients with FMS is well established and undoubtedly Travell’s description fits well with this patients’ presentation.

Subsequently, the following diagnosis was reached: Sternocleidomastoid trigger point referral with Fibromyalgia overlay. Likely pain mechanisms were chronic myogenic pains with underlying central sensitisation. A treatment approach to target both the trigger point dysfunction and the underlying centralised pain resulting from Fibromyalgia was integrated with traditional physiotherapeutic interventions.

**Clinical Reasoning for Acupuncture**

The use of acupuncture in conventional medicine has been supported by the British Medical Association, although it does recognise the need for further research (Duncan et al 2007). Increasingly, the use of complimentary therapies for treating Fibromyalgia is being supported over traditional medicine due to the lesser side effects and lower economic costs. There is an increasing body of evidence reviewing its effectiveness when treating FMS although conflicting arguments have emerged (Mayhew and Ernest 2006).

Assefi et al (2005) carried out a randomised control trial comparing acupuncture with sham points for the treatment of FMS. A twelve week, biweekly acupuncture intervention was compared with various sham delivery methods. No significant difference was seen between all groups at twelve weeks. As with all such studies,
blinding of the therapist is unattainable as they are administering the intervention and would be aware of what points or needle types are being used; this leaves the study open to bias.

Martin et al (2006) carried out a randomised control trial of reasonable methodological quality, although again it was only single blinded. The study only detailed fifty patients who had a total of six treatments. After one month significant improvements in the Fibromyalgia impact questionnaire were noted, however these improvements were not seen at seven month follow-up. Additionally ten participants were lost leaving a very small sample size; this combined with the known variability in FMS presentation makes extrapolation of findings to greater populations difficult (Lundeberg and Lund 2007).

Singh et al (2006) used a small sample of just twenty-four participants (although within the necessary calculated power calculation) who received a total of sixteen treatments. No control group was involved and methods of recruitment seemed somewhat flawed as state-wide advertising was used, meaning a self-selecting sample would limit the efficacy of findings. The results showed that acupuncture had positive impacts upon all outcome measures reviewed and that those who started with the highest (worst) scores improved the most. However, the lack of control (and hence blinding) does not rule out the effect of placebo or demand characteristics in this case.

Duncan et al (2007) carried out a case series, hence no control, with a sample of twenty-four participants. Eight treatments were given and a huge variety in response was found and hence they concluded that some patients will achieve symptomatic relief. However, case study design does not rule out the possible effects of placebo in achieving such relief.

Mayhew and Ernest (2006) carried out a systematic review of the efficacy of acupuncture for FMS they found that of five papers of good quality, three were in favour of acupuncture and two were inconclusive. However, the positive results were short-lived. The two trials that did not support acupuncture used only manual acupuncture whereas the others investigated electro-acupuncture (which seems to be effective in this condition). However, electro-acupuncture was not available in this case due to lack of practitioner experience and lack of equipment within the department.

Lundeberg and Lund (2007) question the findings of reviews when sham acupuncture is used as a control in the case of FMS. Duncan et al (2007) argue that FMS patients respond to superficial needling in the same way as a 'normal' patient would to intramuscular needling due to the presence of sensitisation and wind-up. Additionally, Lundeberg and Lund suggest that in the case of FMS there may be no such thing as 'non-specific' points. They reason that this can be explained by the physiological effects and underlying pain mechanisms within the skin in Fibromyalgia patients.

They suggest that a truer interpretation of the acupuncture as a treatment in such cases can only be compared with an 'inactive control'. They also contradict Duncan (2007) by suggesting that due to the physiological changes in pain mechanisms stronger stimulation may be needed in order to activate the necessary descending pain inhibition.

**Acupuncture Point Rationale**

In this case three treatments of 30 minute duration were employed with 2 needle stimulations. Intervention points were selected amalgamating Bradnam's clinical reasoning model (Bradnam 2007), seemingly effective points suggested by Duncan et al (2007), Assefi (2005) and the non peer reviewed fibromyalgia protocols on www.yinyanghouse.com. These points were considered along with the specific patient presentation to create the treatment protocol (see fig 2).
After each session passive stretching of the Sternocleidomastoid muscle for a total of two minutes was carried out, the patient was taught to carry out this stretch in sitting thrice daily at home.

<table>
<thead>
<tr>
<th>Point</th>
<th>Traditional Chinese</th>
<th>Western</th>
</tr>
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<tbody>
<tr>
<td>LI4 Bilateral</td>
<td>Promotes Qi, good for pain in neck and strong analgesia (Alied 2008)</td>
<td>Supraspinal: to activate descending pain inhibition (Bradnam 2007)</td>
</tr>
<tr>
<td>LR3 Bilateral</td>
<td>Clears heat, invigorates blood, good for headaches &amp; dizziness</td>
<td>Supraspinal: to activate descending pain inhibition (Bradnam 2007)</td>
</tr>
<tr>
<td>LI11 Bilateral (Alied 2008)</td>
<td>He sea, tonification point, alleviates pain and pathogens.</td>
<td>Supraspinal: to activate descending pain inhibition</td>
</tr>
<tr>
<td>SP 9 (Alied 2008)</td>
<td>Treatment for insomnia</td>
<td>Improved brainstem pain modulation with improved sleep</td>
</tr>
<tr>
<td>SP 6 (Alied 2008)</td>
<td>Treatment for insomnia</td>
<td>Improved brainstem pain modulation with improved sleep</td>
</tr>
<tr>
<td>ST 36</td>
<td>Strong anti-inflammatory, Qi booster (Alied 2008)</td>
<td>Meridian lies along symptomatic anterior neck and to TMJ</td>
</tr>
<tr>
<td>TP SCM (Travell &amp; Simon 1992)</td>
<td>n/a</td>
<td>Affect on motor end plates, local, peripheral and pro-inflammatory responses</td>
</tr>
</tbody>
</table>

**Figure 2 Treatment Protocol**

**Physiological Reasoning for acupuncture selection**

The patho-physiology of FMS is well discussed but poorly understood (Hardy-Pickering et al 2007). Some physiological factors are common throughout the FMS population. Primarily, there is central sensitisation of sensory neurons and reduced inhibition of pain signals (Lundeberg & Lund (2007)). A notable elevation in substance P (a dorsal horn neurotransmitter) within cerebrospinal fluid has been observed causing an amplification of pain and increase in sensitivity in surrounding tissues (Hardy-Pickering 2007, ACR 2009, Richards 2001). Suggestions of lower serotonin levels have also been made; this would imply that descending inhibition of pain is reduced in these patients (Richards 2001). There are also decreases in cerebral spinal blood flow within areas responsible for pain interpretation; Richards (2001) states this will further impair nociceptive inhibition.

With consideration of the mechanism, points were selected with the primary aim of increasing the action of descending inhibition systems. Activation of the supraspinal mechanism is advocated through use of distal points in the hands and feet such as Liver 3 and Large Intestine 4 through the theory that these areas have “larger representation on the somatosensory cortex in the brain” (Bradnam 2007).

Further points have been postulated as effective in alleviating insomnia, and hence such points as Spleen 9 and Spleen 6 were chosen (Cheuk 2007). The importance of sleep in re-setting pain mechanisms and increasing serotonin levels are of course essential in FMS pain modification. As this lady was experiencing sleep deprivation it was essential to target this deficiency to gain holistic pain management.

Point Stomach 36 was chosen as the corresponding meridian extends to the symptomatic anterior neck region. Additionally there have been investigations into its performance enhancing qualities due to its strong sympathetic reactions AACP (2008).
For patients with FMS who struggle with mood and fatigue this could be deemed an appropriate selection.

**Outcomes and Results**

On initial assessment the patient reported her symptoms to have a numerical pain rating (NPR) severity of 8/10 for P1 and 4/10 for P2. The numerical pain scale has been validated for use in patients with chronic pain and has been proven as being sensitive to change in their condition (Williamson & Hoggart 2005) (Bijur et al 2008). After three treatments the patient reported NPR scores as P1 3/10 and P2 2/10. However, she stated that overall the condition still place a burden upon her life and although the severity of her pain had reduced the impact upon her remained at the same level. This highlights the huge psychological component of Fibromyalgia.

**Conclusion**

As this is a single case study it is not appropriate to carry out statistical analysis of the outcomes. However, there were large reductions in NPR scores and this could indicate a clinical effectiveness. As previously discussed the presentation of FMS patients varies greatly and hence the generalisability of case studies can be criticised. Moreover the impact of placebo effects cannot be ruled out due to the lack of control conditions.

Most importantly, in this case, the patient reported that the condition remained impactful upon her life, “it is still a daily annoyance”. This perspective is particularly pertinent in the consideration of FMS patients. Due to the chronicity and physiological changes in pain processing it is essential not to rely upon ‘hands-on’ treatment without implementation of cognitive strategies too. During the treatment period the patient had significant life stressors which could have additionally impacted upon her coping strategies. There is a growing body of evidence to support self-management through behavioural therapies, pacing and relaxation in conjunction with an increase in physical activity to manage FMS (Rooks 2007).

Treatment was limited to three sessions of acupuncture and the frequency of these was inconsistent. This poor frequency was caused by the clinician’s case load and the difficulty the patient had in accessing the clinic during bad weather. Treatment was ceased at four sessions as the patient had personal stressors in her life which took her away from the clinic locality.

**Discussion**

With Rheumatologists and researchers emphasising that long term management of FMS should focus upon alleviation of symptoms primarily pain and reduced sleep acupuncture would appear to be a treatment of choice. For pain modification, acupuncture is known to be effective, whereas for insomnia there remains need for better quality research (Lundberg & Lund 2007, Cheuk et al 2007); so it would appear a sound extrapolation that it would be effective in this way for FMS patients.

This case was not wholly successful and there are a number of variables which could have been modified to improve outcomes. As the physiology of pain in FMS is centrally evoked it is important to incorporate diffuse noxious inhibitory control mechanisms. Although distal points were employed treatment duration was limited to thirty minute durations. Bradnam (2007) and Lundeberg (1998) support needling of forty minutes to activate opiate pain relief which lasts up to twenty hours.

To improve effectiveness, a different approach of point selection could have been adopted. If a segmental method was adopted, the points Bladder 10 and Gall Bladder 20, which lie in the C3 dermatome, would have been appropriate as this dermatome extends to the anterior neck overlying the symptomatic sternocleidomastoid muscle. If
targeting of the somatic nervous system had not been effective at all, the approach can
be adapted to target the sympathetic system. Points between T2 and T4 are attributed
to the sympathetic control of the head and neck; hence Bladder 11 and 13 as well as
Huatuojiaji at these levels could be effective for this presentation.

**Summary**

It appears that acupuncture can offer short term symptomatic relief and in view of the
small health and financial costs further research should be undertaken to further clarify
its efficacy for use in FMS. Larger scale studies to combat individual variation with long
term follow-ups are essential. The forthcoming publishing of the FMS Cochrane Review
should provide interesting debate.

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Laura is working as a Senior Physiotherapist specialising in Musculoskeletal Outpatients at King’s College Hospital and undertook the AACP Foundation Acupuncture course in 2008/9 where this case study formed part of the assessment process.