The use of acupuncture for cervical spondylosis in a 60 year old male

Anthony Guest

Abstract
This case study examines the use of acupuncture in the treatment of patient X, a 60-year old male who presented to the community physiotherapy department with neck pain. The application and clinical reasoning behind the use of acupuncture will be discussed.

Subjective Assessment

HPC
Patient X reported an eight-month history of central neck pain with gradual onset. This suddenly worsened after 2-3 months and movements of the neck became painful, particularly turning his head whilst driving. After this he developed tension headaches and paraesthesia along the right upper limb. He consulted his GP who referred him to the Orthopaedic Triage Service where he had a MRI scan and was diagnosed with moderate cervical spondylosis. He underwent physiotherapy but reported no change in symptoms after two months.

PC
- ache
- constant
- NAS – 7/10
- Tension headaches daily

Aggravating Factors
- Carrying heavy objects
- Turning head whilst driving
- Driving long distance

Easing Factors
- Avoid aggravating factors
- Analgesia
Special Questions

He reported no bilateral paraesthesia, gait disturbance, diplopia, dysarthria, dysphagia, tinnitus and black outs. He complained of regular dizzy spells about which he had consulted his GP.

Investigations/Previous Treatment

MRI of his cervical spine revealed moderate degenerative changes throughout and a markedly reduced disc height at the level of C5/6. Initial physiotherapy consisted of three sessions of cervical spine mobilisations by a locum physiotherapist. The patient reports these were very uncomfortable and had not changed his initial symptoms.

Diurnal/Sleep

Patient X complained of marked early morning stiffness but reported no change in pain throughout the day. His sleep was frequently disturbed but he had most difficulty in getting to sleep due to discomfort from his neck and back.

Past Medical History

He reported no previous occurrence but reported occasional neck pain associated with his occupation. A significant cardiovascular history included having a hole in the heart repaired in 1974, cardiac arrhythmias twelve years ago and angina. However, subsequent follow-up had shown no further problems and his cardiac arrhythmia is now stable. Patient X also reported having type II diabetes that is well controlled with medication. There was no other significant medical history except chronic low back pain since the early 1990’s.

DH

Patient X was taking codydramol and ibuprofen that gave some temporary relief but did not completely relieve pain. Metformin was prescribed to control his diabetes and glycoside to control his cardiac arrhythmia.

SH

Patient X worked as a delivery driver, driving a heavy goods vehicle, until April 2008 when he gave up due to the pain in his neck and back but is now keen to fully retire. Although very painful, his neck pain does not prevent any of his normal activities of daily living (ADL) but driving long distances aggravates P1.

Objective Assessment

On examination, the patient was found to have a forward head posture, increased upper thoracic kyphosis and protracted shoulders. He had a neck crease at C6/7 level indicating hinging and overuse of these joints. His active range of movement (AROM) for the cervical spine was reduced by half in all directions with contralateral stretching at end of range (EOR). Extension and right side-flexion aggravated P1. Hinging at C6/7 was observed on flexion and extension. Cervical dermatomes, myotomes and reflexes were normal. Palpation revealed increased tone with associated myofascial trigger points within the upper trapezius fibres bilaterally. Palpation of the cervical spine revealed marked tenderness and stiffness throughout, which the patient reported as familiar neck pain, but did not reproduce upper limb paraesthesia.

Differential Diagnosis

My primary diagnosis was cervical spondylosis exacerbated by poor posture, related to his occupation. Prolonged periods of poor posture on a day-to-day basis associated with patient X’s occupation is likely to result in soft tissue changes and the development of myofascial trigger points through chronic overuse. Patient X reporting driving as an aggravating factor for P1 supports this. A degenerative condition is indicated by the patient’s age, gradual onset of the condition and early morning stiffness. The objective findings of reduced AROM with pain at EOR, upper limb paraesthesia and poorly localised tenderness are all typical of cervical spondylosis (Binder, 2007). This diagnosis was supported by the MRI results, which
also showed narrowing of the C5 intervertebral foramen, possibly accounting for the paraesthesia along the C5 dermatome. However, it is important to note that radiological findings do not always correlate with patients’ symptoms (Binder, 2007). Patient X’s tension headaches were likely to be a result of referred symptoms from myofascial trigger points that had developed secondary to his poor posture.

**Treatment Plan**

Patient X reported his previous treatment of mobilisations was very uncomfortable and had not improved his symptoms. He also reported difficulty complying with his home exercise programme due to discomfort. Since this method of intervention had not been successful, manual acupuncture was suggested. It was strongly emphasised that the aims of acupuncture were to relieve pain so that he could comply more with his home exercise programme (and consequently improve function), improve quality of sleep and relieve myofascial trigger points that were contributing to his pain. Although the primary aim was pain relief to facilitate improved function, patient X was informed that acupuncture might not fully resolve his symptoms. Binder (2007) suggested that severe pain at initial onset and concomitant low back pain are predictors of poor outcome in patients with cervical spondylosis. The degenerative changes on MRI and his 20-year history of low back pain indicated he was statistically more likely to have a poorer outcome.

Following the initial assessment, patient X was given a home exercise programme, postural advice and education regarding cervical spondylosis.

**Precautions**

The departmental acupuncture checklist was used to identify any contraindications or precautions to treatment (see appendix 1). The presence of diabetes was a precaution to treatment due to the risk of infection at distal points where circulation maybe reduced. Patient X had reported a history of heart surgery and cardiac arrhythmias but on further questioning revealed that he was cardiovascularly stable and had been discharged by the cardiologist. However, this was considered a precaution due to the effects of acupuncture on the autonomic nervous system.

**Treatment Schedule**

Due to departmental policies and time constraints treatments were to be carried out once weekly for a total of six sessions. Reports in the literature recommend between 6-10 treatments to achieve adequate analgesia (Lundeberg & Stener-Victorin, 2002; He et al., 2004). Since patient X had not received acupuncture before and had some precautions, a test dose of 20 minutes was to be trialled with a smaller number of needles. Subsequent sessions of 40 minutes would be carried out with needle stimulation performed as required and tolerated.

**Point Selection**

The acupuncture points used were based on a combination of western medicine and traditional Chinese medicine (TCM) principles. A total of seven points were used consisting of local segmental and distal non-segmental points (appendix 2). The local segmental points selected were GV14 with GB20 and GB21 bilaterally. These points were chosen due to their close proximity to the source of the pain. Lundeberg & Stener-Victorin (2002) suggest 4-6 points as an optimal number when treating chronic pain. Distal extra-segmental points are reported to produce a more prolonged analgesic effect and so bilateral LI4 were selected (Lundeberg & Stener-Victorin, 2002; Bradnam, 2003).

Local segmental points stimulate local peripheral mechanisms via the axon reflex causing sensory neuropeptide release (e.g. substance P) from primary afferent nerve endings. These produce local vasodilatation and modulate local immune responses. Enhanced mast cell degranulation around the needle site has been observed with local needling which was directly associated with acupuncture analgesia (Bradnam, 2003; Zhao, 2008). Acupuncture stimulation of local segmental points also induces analgesia by blocking nociceptive impulses from C-fibres. Needle stimulation of A-delta fibres stimulates stalked cells within
the dorsal horn, which inhibit substantia gelatinosa cells through the release of enkephalins. This inhibits the transmission of nociceptive information to the brain, via the spino-reticular tract, from wide dynamic range cells (Bowsher, 1998; White, 2006).

Acupuncture points also activate supraspinal mechanisms such as descending inhibition, diffuse noxious inhibitory control (DNIC) and neurohormonal responses, which have a more prolonged effect. Supraspinal effects are better elicited with distal points due to greater representation within the sensory cortex (Bradnam, 2003). Serotonergic and noradrenergic descending pathways, activated from the nucleus raphe magnus and locus coeruleus respectively, inhibit transmission cells within the dorsal horn. DNIC attenuates existing pain in the presence of further noxious stimuli (e.g. needle) by inhibiting dorsal horn neurons though descending pathways from the medulla oblongata (Bowsher, 1998; White, 2006; Zhao, 2008).

Although point distribution was based on western principles, TCM principles were used to help select specific points and located using Hecker et al. (2001). LI4 is the most important analgesic point relieving pain in all parts of the body and is also good for headaches. GB20 is very important in treating cervical spondylosis, headaches and dizziness. GB21 is a local point for neck pain and headaches but also corresponds with a common trigger point. GV14 is an important point for occipital headaches and cervical spondylosis (Stux & Pomeranz, 1997; Hecker et al., 2001).

Outcomes
The main outcomes used to assess the efficacy of treatment were perceived pain, reported changes in quality of sleep and AROM of the cervical spine. Pain is an important outcome measure as it is the primary complaint from patient X. A numerical analogue scale was used to quantify perceived pain levels (Williamson & Hoggart, 2005). Quality of sleep was chosen because sleep disturbance can have a dramatic impact on a patient’s quality of life and general health (Vernan et al., 2008). AROM was chosen as reduced cervical spinal was another primary complaint and it provides an objective measure of treatment efficacy.

Implementation of Treatment
Session 1
After checking contraindications and signing a departmental consent form, acupuncture was administered as per the treatment plan (appendix 3). The patient was positioned in prone lying to allow easy access to the acupoints and for comfort. De Qi was achieved at all sites and a warming sensation was reported following treatment. The sensation of De Qi is essential in achieving analgesia with patients describing soreness, numbness or heaviness. It is thought De Qi may be due to physical coupling of the needle with connective tissue creating a mechanical signal within the tissue. Since it is the physical stimulus of the needle that stimulates nerve endings it is reasonable to assume that the intensity, frequency and duration of needle stimulation will affect the responses achieved (Zhao, 2008).

Session 2
No changes in symptoms were reported at follow-up one week later. Ideally the patient would have been seen sooner but time constraints prevented this. Patient X did report discomfort in his right shoulder post-treatment due to the position required for LI4. Therefore SI3, another distal point for the cervical spine, was used to allow the patient to hang his arms over the side of the bed (Hecker, 2001). Immediately post-treatment, as he moved from prone to sitting, the patient complained of severe dizziness and nausea, which lasted for fifteen minutes. He declined food and drink but remained in the department, in supported sitting, until his symptoms had resolved. He was advised to consult his GP as soon as possible as he then admitted to gradual worsening of dizziness on sit-to-stand for several months.

Session 3
The patient had consulted his GP who performed cardiovascular checks which were insignificant. The patient was keen to continue with acupuncture as he reported a markedly
reduced pain score (NAS 3/10) for several days after treatment until aggravated by a long
car journey. Treatment was administered as per the treatment plan with the patient in
supported sitting. De Qi was achieved at all sites and erythema noted. Immediately post-
treatment the patient reported pain relief without dizziness.

**Session 4**

Patient X reported a constant pain score of 4/10 with minimal sleep disturbance. AROM had
increased to ¾ range for left and right side flexion. Treatment was uneventful with De Qi
achieved at all sites and all needles stimulated once to increase effect.

**Session 5**

Pain had been aggravated again following a four-hour drive, returning pain levels to 7/10.
Treatment continued as in previous sessions with all needles stimulated twice vigorously
with strong De Qi reported.

**Session 6**

Patient X reported a 50% total improvement in symptoms. Sleep was infrequently disturbed
by low back pain, pain scoring was 3/10 and he had tolerated a four-hour car journey without
aggravating symptoms. Objectively, all cervical spine movements had increased to ¾ range.
The final treatment session was completed as per the treatment plan with all needles
stimulated vigorously twice with strong De Qi reported. The patient will be reassessed in six
weeks time to determine the prolonged effects of treatment.

**Discussion**

In the short term, acupuncture was successful in reducing pain and increasing function of a
patient with cervical spondylosis. There is limited high quality evidence to support or refute
the use of acupuncture to treat neck pain (Binder, 2007). However, several studies have
reported beneficial effects. Zhao (2008) reported acupuncture to be effective in treating 50-
85% of chronic pain patients. He et al. (2004) used acupuncture to treat female office
workers with chronic neck pain and reported analgesic effects persisting three years after
initial treatment. However, these patients were treated with a total of 16 points with ear
acupoints used between sessions. Lundeberg & Stener-Victorin (2002) suggest that
inconsistencies in clinical studies may be because researchers are overlooking the complex
pathophysiology of chronic pain.

Irnich et al. (2002) found that acupuncture at distal extra-segmental points was more
effective in reducing pain in patients with chronic neck pain than trigger-point needling.
However, most studies use a mixture of local and distal points to activate the spectrum of
endogenous pain inhibition mechanisms as used in this study. Despite a 50 % improvement
overall, patient X was not asymptomatic. This may be due to the severity of degeneration
within his cervical spine and chronicity of the problem. On reflection possible adaptations of
the treatment may have improved outcomes further. Electroacupuncture may have
increased the strength of nervous system stimulation leading to a stronger response. However,
this modality was not available within the department. Due to apprehensions about adverse reactions to treatment, needle stimulation was not initiated until session 4.
Stronger or more frequent needle stimulation earlier within the treatment plan may have
enhanced analgesic effects (Zhao, 2008). The points selected may not have been the most
effective combination. On reflection, patient X’s most significant pain reduction occurred
when bilateral SI3 was administered. At follow-up, LI4 was reselected due to its strong pain
relieving effect but it may have been more appropriate to continue with SI3 as it is a distal
point for the cervical spine. Although I attempted to couple the principles of western
medicine and TCM, my lack of knowledge of TCM effects of acupoints may have limited my
effectiveness.

Overall, the application of acupuncture was successful in achieving the treatment aims of
reducing pain, increasing movement and improving quality of sleep. Limiting factors to
further improvements may have included severity of pathology and the initial cautious
approach to treatment. In future, I plan to further my understanding of TCM principles and combine this with western principles to greater effect.

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References


### Acupuncture Checklist

**Patient Name:**  
DOB: / /  
NHS Number:

<table>
<thead>
<tr>
<th>Contraindications</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergy to metal</td>
<td>Controlled Epilepsy</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Needle phobia</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Pacemakers</td>
<td>Heart conditions</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Infectious blood disease (Hep B, HIV, TB)</td>
<td>Low blood pressure</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Blood disease (Haemophilia, Sickle Cell)</td>
<td>Blood pressure medication</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Anti-coagulated patients (Warfarin)</td>
<td>Anti-coagulated patients (Aspirin)</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Long-term steroids</td>
<td>Adverse reaction to previous medical procedure</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>Eaten within past 2 hours?</td>
</tr>
<tr>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

1. Are you happy that the effects of acupuncture have been fully explained?  
   Yes / No
2. Are you happy that any questions you have, have been fully answered?  
   Yes / No
3. Have you understood the information leaflet?  
   Yes / No

Therapist signature:  
Date / Time:

Interpreter signature:  
Date / Time:
## Appendix 2

<table>
<thead>
<tr>
<th>Point</th>
<th>Location</th>
<th>Depth of Needle</th>
<th>TCM Action</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI4</td>
<td>Highest point of dorsal interossei 1 when thumb adducted</td>
<td>0.5 – 1 cun in direction of palm (towards middle of metacarpal)</td>
<td>Expels exterior pathogenic factors, Alleviates pain</td>
<td>Any pain</td>
</tr>
<tr>
<td>SI3</td>
<td>Ulnar edge of hand with fist lightly closed – proximal to MCP joint</td>
<td>0.5 – 1 cun in direction of palm</td>
<td>Relaxes muscles and tendons</td>
<td>Distal point for cervical spine</td>
</tr>
<tr>
<td>GV14</td>
<td>Below spinous process of C7</td>
<td>0.5 – 1 cun along angle of spinous process</td>
<td>Removes exterior pathogenic factors</td>
<td>Headache and neck pain</td>
</tr>
<tr>
<td>GB20</td>
<td>In depression between the insertions of sternocleidomastoid and trapezius muscles at the lower edge of the occiput.</td>
<td>1 cun in direction of contralateral eye socket</td>
<td>Relaxes muscles and tendons, Clears head and eyes, Harmonises Qi and blood</td>
<td>Cervical spondylosis, Tension in the body, Tension headache</td>
</tr>
<tr>
<td>GB21</td>
<td>In middle of line between acromion and spinous process of C7</td>
<td>0.5 – 1 cun in perpendicular direction</td>
<td>Relaxes muscles and tendons, Removes obstruction from the meridian</td>
<td>Pain in shoulder and neck, Headache, Corresponds to common trigger point</td>
</tr>
</tbody>
</table>

Hecker et al. (2001)
# Appendix 3

<table>
<thead>
<tr>
<th>Session</th>
<th>Acupuncture Points Used</th>
<th>Duration</th>
<th>Treatment</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bilateral GB20, GB21 &amp; GV14 – 30 x 0.25mm needles Right sided LI4 – 30 x 0.25mm needles</td>
<td>20 mins</td>
<td>Prone position. De qui achieved – reports warming sensation across neck</td>
<td>Reports ache across neck and slight tiredness. Upper limb position poorly tolerated in prone.</td>
</tr>
<tr>
<td>2</td>
<td>Bilateral GB20, GB21, SI 3 &amp; GV14 – 30 x 0.25mm needles</td>
<td>40 mins</td>
<td>Prone position. De qui achieved all points.</td>
<td>Patient complained of nausea and dizziness++ post-treatment which lasts approximately 15 min.</td>
</tr>
<tr>
<td>3</td>
<td>Bilateral GB20, GB21, LI4 &amp; GV14 – 30 x 0.25mm needles</td>
<td>40 mins</td>
<td>Supported sitting in chair. De qui reported all points and erythema noted. Strong de qui at LI4 bilaterally.</td>
<td>Reports increased ROM and decreased pain since last session. No upper limb paraesthesia since last session.</td>
</tr>
<tr>
<td>4</td>
<td>Bilateral GB20, GB21, LI4 &amp; GV14 – 30 x 0.25mm needles</td>
<td>40 mins</td>
<td>Supported sitting in chair. De qui reported all points and erythema noted. Strong de qui at LI4 bilaterally. Needles stimulated x 1</td>
<td>Reduced pain levels and ROM maintained since last session.</td>
</tr>
<tr>
<td>5</td>
<td>Bilateral GB20, GB21, LI4 &amp; GV14 – 30 x 0.25mm needles</td>
<td>40 mins</td>
<td>Supported sitting in chair. De qui reported all points and erythema noted. Strong de qui at LI4 bilaterally. Needles stimulated x 2</td>
<td>Reports reduced pain levels initially following last session but aggravated following 4 hour car journey.</td>
</tr>
<tr>
<td>6</td>
<td>Bilateral GB20, GB21, LI4 &amp; GV14 – 30 x 0.25mm needles</td>
<td>40 mins</td>
<td>Supported sitting in chair. De qui reported all points and erythema noted. Reports strong de qui at all points. Needles stimulated x 2</td>
<td>50% overall improvement since initial assessment. Pain remains constant but now NAS 3/10. Reports increased movement and reduced stiffness.</td>
</tr>
</tbody>
</table>