The use of acupuncture in the management of pelvic girdle pain during pregnancy: a case report

S. L. Wong BSc MCSP

Hyde Physiotherapy Centre, Hyde, UK

Correspondence: S. L. Wong, Hyde Physiotherapy Centre, Parsonage Street, Hyde, Cheshire, SK14 1DP, UK (suekitching@yahoo.co.uk)

Abstract
The case study describes the use of acupuncture to treat pelvic girdle pain (PGP) in a 28-year-old pregnant patient. The patient was 22 weeks pregnant and reported pain in the lumbosacral area referring to the right buttock and upper thigh. She described a four-week history of gradually worsening pain. She was struggling to sleep and felt low in mood. Objectively, she had a hyperlordotic posture, limited range of movement due to pain and no neurology. Palpation and pain provocation tests of the sacroiliac joints were positive. She also had a trigger point within the gluteus maximus muscle. Treatment comprised acupuncture, initially to the localised area of pain including the points BL28 and HTJ S2. Subsequent treatment included the trigger point release in gluteus maximus and the addition of the He Sea point BL40. The patient’s pain responded to treatment but her mood remained low and she struggled to sleep. The acupuncture points then used were BL20, REN14, GV20, Yintang and TE3. The patient reported improved sleep and her mood returning to normal levels. The case study supports the previous literature that acupuncture is beneficial in treating PGP and mild emotional complaints during pregnancy.

Keywords: acupuncture, depression, pain, pelvic girdle, pregnancy.
Introduction

Pelvic girdle pain (PGP) is very common among the pregnant population and severe pain is reported by 33% of affected women (Elden et al. 2005). Clinically, PGP presents as a deep, dull ache experienced between the posterior iliac crests and gluteal folds, in particular within the sacroiliac joints. The pain may radiate down the posterior thigh and can occur with or separately from pubic symphysis pain (Elden et al. 2005). It can reduce the functional capacity for standing, walking and sitting. The onset of PGP is usually by weeks 17 to 19 of gestation, with a peak incidence by weeks 24 to 36. Studies show that 5 to 27% of women will have persistent pain for one to three months post partum (Elden et al. 2008).

Whilst the aetiology of PGP during pregnancy remains theoretical, the causes are thought to be due to altered biomechanics, hormonal and vascular. The classical hypothesis is that the weight gained during pregnancy leads to postural changes, which produce lower back pain (LBP) and PGP (Sneag et al. 2007). The anterior displacement of the centre of gravity of the trunk and abdomen causes hyperlordosis of the lumbar spine. This shift in load distribution places stress on the lumbar spine and pelvis leading to joint inflammation and pain (Sneag et al. 2007). However current research now suggests that rapid weight gain may exceed the capacity of the trunk and pelvis to compensate, leading to pain. The weight of the uterus may also compress the pelvis and lumbosacral plexus, causing referral of pain into the buttocks and legs (Sneag et al. 2007).

Serum levels of relaxin, oestrogen, progesterone and cortisol all increase during pregnancy. Current theory suggests that relaxin stimulates the remodelling of collagen, which may decrease the tensile strength of the ligaments, allowing increased range of movement (ROM) within the joints and pain (Sneag et al. 2007). Oestrogen is also thought to exert an influence on relaxin either by increasing relaxin receptor sensitivity or by directly influencing the joints. Relaxin also promotes expansion of the cervix and uterus, which may directly lead to pelvic instability (Sneag et al. 2007).

The vascular component is thought to be due to the developing uterus and an augmentation in water retention, which applies increasing pressure upon the abdominal aorta and vena cava. Compression of the vena cava and aorta will reduce cardiac output and blood pressure and raise the pulse rate. Compression of the vena cava, venous distensibility and inadequate venous collateral circulation distal to the point of occlusion can exacerbate symptoms. These changes can lead to ischemic and metabolic changes, which can induce LBP (Sneag et al. 2007).

Case Report

The case study focuses on a 28-year-old female who was 22 weeks pregnant with her first child. She described a deep, dull ache within the lumbosacral area, which referred into the right buttock and upper thigh. The pain varied from mild to moderate severity and was intermittent in nature. She denied any neurological signs. The aggravating factors were prolonged standing, walking, and turning over in bed. The easing factors were rest, lying supine / crook lying and heat. The daily pattern involved increasing pain as the day progressed and was activity-dependent. She woke several times during the night due to the need to change position, which aggravated her symptoms. The pain had developed gradually over a four-week period without any specific cause and was worsening due to increased frequency and severity. She stated that the pain was causing her to feel low in mood at times and she was fatigued due to the lack of sleep. She also felt anxious as this was her first pregnancy and she described herself as a ‘worrier’. With regards to her past medical history she reported a few episodes of LBP / PGP. Each episode only lasted up to two weeks and usually resolved with analgesia. No red flags were evident.
As far as her general appearance was concerned she was pale and appeared fatigued, struggling to recall facts at times. On examination of her tongue it was pale and dry with a thin white coating and her pulse was threadlike. She stood with a hyperlordotic posture and indicated the site of the pain to be over the right sacroiliac joint. Active ROM was limited to \( \frac{1}{2} \) range flexion due to pain, \( \frac{3}{4} \) range extension without pain and \( \frac{1}{2} \) range side flexion with pain limiting both directions at the end of range. All neurological tests were negative. Palpation of the lumbar spine did not reproduce her symptoms. However, compression and distraction of the sacroiliac joints were symptomatic. The patient tested positive for the posterior pain provocation test, active SLR test with compression of the sacroiliac joints, and palpation of the sacroiliac joints. Trigger points were also detected on palpation of the right gluteus maximus muscle.

Table 1. Indicates the acupuncture points utilised, the objective measures of treatment and any noted side effects following acupuncture.

<table>
<thead>
<tr>
<th>Treatment number</th>
<th>Acupuncture Point / Trigger Point (TP) (Total number of needles)</th>
<th>De qi / Needle Grasp (NG)</th>
<th>Outcome Measure</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (10 minutes)</td>
<td>BL28 bilateral (2)</td>
<td>NG  ( \checkmark )</td>
<td>ISQ AROM 6/10 VAS *EPDS - 9</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>BL28 bilateral HTJ S2 bilateral GV meridian below spinous process (SP) of S2 (5)</td>
<td>De Qi ( \checkmark ) NG  ( \checkmark )</td>
<td>( \frac{3}{4} ) Side Flexion P1 EOR 5/10 VAS</td>
<td>Erythema Light-headed 30 minutes post treatment.</td>
</tr>
<tr>
<td>3</td>
<td>BL 28 bilateral HTJ S2 bilateral GV below SP of S2 TP Glut Max unilateral (6)</td>
<td>De Qi ( \checkmark ) NG  ( \checkmark )</td>
<td>Full Side Flexion no P1 ( \frac{3}{4} ) Flexion P1 4/10 VAS</td>
<td>Light-headed 10 minutes post treatment.</td>
</tr>
<tr>
<td>4</td>
<td>As above + BL40 unilateral (7)</td>
<td>De Qi ( \checkmark ) NG  ( \checkmark )</td>
<td>FROM P1 EOR Flexion 2/10 VAS</td>
<td>Bruising at He-Sea point</td>
</tr>
<tr>
<td>5 - 6</td>
<td>As per session 4</td>
<td>De Qi ( \checkmark ) NG  ( \checkmark )</td>
<td>FROM no pain 0/10 VAS EPDS - 8</td>
<td>None</td>
</tr>
<tr>
<td>7</td>
<td>BL20 bilateral REN 14 GV20 (4)</td>
<td>De Qi ( \checkmark ) NG  ( \checkmark )</td>
<td>EPDS - 6</td>
<td>None</td>
</tr>
<tr>
<td>8 - 12</td>
<td>BL20 bilateral REN 14 GV20 Yintang TE3 unilateral (6)</td>
<td>De Qi ( \checkmark ) NG  ( \checkmark )</td>
<td>EPDS – 0</td>
<td>Sleep improved</td>
</tr>
</tbody>
</table>

*EPDS – Edinburgh Postnatal Depression Scale

Table 1
Each acupuncture session was of 20 minutes duration unless stated, with intramuscular needle insertion and manual rotational stimulation of the needle.

In order to improve pelvic stability the patient was also given advice at the initial assessment on pelvic floor exercises and corrective postural advice. The pelvic floor exercises and postural advice were also reviewed at the second session to ensure compliance.

**Literature review**

Evidence suggests that acupuncture is useful both for LBP / PGP and mild to moderate emotional complaints during pregnancy. Elden *et al.* (2005) compared the efficacy of standard treatment alone with standard treatment plus acupuncture or stability exercises for PGP during pregnancy. 386 women with PGP entered the trial and were allocated into the three treatment groups. The standard treatment group consisted of general information about PGP, the provision of a sacroiliac belt and home exercises. The acupuncture group also received the standard treatment plus acupuncture. 10 segmental points and seven extra segmental points were selected. The points included GV20, LI4, BL26, BL32, BL33, BL54, BL60, K11, EX21, GB30, SP12 and ST36. The needles were left in situ for 30 minutes and stimulated every 10 minutes. The stability group also received the standard treatment and were trained to activate their deep lumbo-pelvic muscles. The exercises became gradually more dynamic to improve endurance, strength and mobility.

The patients recorded their pain intensity on a visual analogue scale (VAS) every morning and evening as a primary outcome measure. The secondary outcome measure was the response to pain provocation tests performed by a physiotherapist at the start and the end of the trial.

Both the acupuncture and the stabilising group reported less pain on a morning and evening compared with the standard group. A median score of 15 and 18 compared to 27 in the morning values and a median score of 31 and 45 compared to 58 in the evening values for each group respectively. The acupuncture group had less pain in the evening compared with the stabilising group. Attenuation of the PGP as assessed by an independent examiner was also greatest in the acupuncture group. The study supports the hypothesis that both acupuncture and stabilising exercises are a useful adjunct to treatment for PGP compared with standard treatment alone.

In criticism, the study stated that it was a randomised single blinded trial. The initial recruitment into the trial was through pre-selection by medical professionals working at 27 maternity centres in Sweden. Randomisation only occurred once the individuals had been selected for entry into the trial and they were then randomly allocated to treatment groups. The acupuncture needles were also stimulated three times during treatment when it is recommended to stimulate the needles once or maximally twice in the pregnant patient to achieve de qi.

Taken from the same trial, a second publication by Elden *et al.* (2008), investigated the possible adverse effects of acupuncture during and post pregnancy on the mother and the foetus compared with the women receiving stabilising exercises or standard treatment. The women were asked to identify any adverse effects experienced after each treatment. Within the acupuncture group the foetal and maternal heart rates were also recorded prior to and after each session. At a follow-up visit the women rated their overall experience of the treatment. Antenatal, intrapartum, neonatal and infantile data was also recorded. The results indicated no serious adverse effects associated with either treatment. Minor adverse effects were most common in the acupuncture group. Only 64 (5%) minor adverse events were recorded from 1414 acupuncture treatments, indicating that they were uncommon. The acupuncture and the stabilising exercise groups were more likely to report themselves to be very satisfied with their treatment compared with the standard treatment group (Values of 46/108 and 43/111 and 8/100 respectively). No negative influences on the pregnancy outcomes were found after either treatment. Analysis of the antenatal recordings in connection with the acupuncture was normal. Acupuncture did not lead to preterm delivery nor were there any differences between groups.
regarding pregnancy complications. The use of analgesia was found to be similar in all treatment groups. Finally, no differences were detected between the study groups in neonatal outcome measures. The study concluded that acupuncture administered with a strong stimulation led to minor adverse complaints in the mothers but had no observable severe adverse influences on the pregnancy, mother, delivery or the foetus/neonate.

Guerreiro da Silva et al. (2007) compared the effect of acupuncture on the treatment of emotional complaints in pregnancy with conventional treatment alone. A total of 51 pregnant women with mild to moderate emotional complaints were randomly allocated into either the acupuncture or the conventional treatment group. The women were asked to estimate the overall severity of their emotional distress using VAS. They also rated the impact this had on five areas of their life: mood, relationships, social activities, sexual life and the joy of living. Acupuncture was normally performed once a week but was used twice a week in severe cases. The standard used points were: bilateral points – HT7, PC6, LU9, ST36, LR3 and midline points – Yintang, GV20, CV 17. There was the option to use four additional points as required and the needles were then left in situ for 25 minutes. The control group was treated with counselling and, when considered necessary, with one of two phytotherapeutic agents. The acupuncture group was also offered the conventional treatment.

25 patients in the study group and 19 patients in the control group completed the trial. The average intensity of the symptoms decreased by half in 15 patients in the study group and in five in the control group. At the end of treatment the differences between the initial and final VAS were significantly higher in the acupuncture group when compared with the control group (3.9 vs. 1.5 respectively). The scores for the severity of symptoms were also lower in the acupuncture group compared with the control group in three of the five parameters measured. Improvements of at least 50% were reported in the study group for mood, sleep and relationships compared with 5% in the control groups for mood and sleep and 16% for relationships. The main finding of the study was that acupuncture exerted a good influence in minimising the emotional symptoms in pregnancy. The study was limited by a small sample size and the two groups were not blinded to the treatment they received which introduces an element of bias in the results. Also H7 was used which is considered too strong to treat during pregnancy.

Discussion

The beneficial effects of the case study were that it provided further support for the use of acupuncture in the treatment of PGP and mild emotional complaints in pregnancy. Whilst the exact mechanism of acupuncture is not fully understood, it is believed to include peripheral events, spinal / supraspinal mechanisms and cortical control. Carlsson et al. (2002) hypothesised that insertion of the needle induces local axonal reflexes, which causes vasodilation and the release of pro-inflammatory neuropeptides. The neuropeptides are thought to induce regeneration of traumatised tissue. Carlsson et al also suggest that tissue injury with the acupuncture needle causes the release of localised endorphins and also the increased synthesis of endorphin receptors. The increased levels of endorphins are secreted from the inflammatory cells into the injured tissue. Increased synthesis of endorphin receptors occurs at the dorsal root ganglion as a response to the nociceptive input to the dorsal horn. The endorphins and their receptors accumulate at the site of injury over several days. This accumulation may lead to peripheral opioid analgesia several days after trauma.

Carlsson et al. (2002) argue that with regards to the spinal mechanisms the gate control theory only explains the short-term pain relief during stimulation of the needle and does not explain the pain relief during the non-painful stimulation period. They also hypothesise that with regards to the spinal mechanisms there is long-term potentiation (LTP), which is a form of synaptic plasticity where the synaptic strength increases, and long-term depression (LTD), which is the opposite where the synaptic strength decreases. LTP is thought to contribute to central
sensitisation in the pain transmission system, which is involved in some forms of chronic pain. Central sensitisation results in reduced mechanical threshold and increased responsiveness to stimuli. These changes cause the patient to perceive non-painful stimuli as painful (allodynia). Acupuncture stimulation of the A delta fibres leads to the capacity not only to give rise to LTD but also to reverse the ongoing LTP.

With regards to the supraspinal mechanisms, Carlsson et al. (2002), suggests that low intensity stimulation gives rise to reduced sympathetic outflow and reduced secretion of adrenaline, noradrenaline, ACTH and cortisone. Oxytocin is secreted in response to non-noxious sensory stimulation. The hormone is thought to have an anti-stress effect and induces long-term pain threshold elevations.

Finally, Carlsson et al. (2002), suggests that acupuncture could have a placebo effect upon the higher cortical centres of the brain. This may be due to the development of a good therapist/patient relationship that forms a part of therapeutic counselling, a reduction in overall anxiety and their improved sense of wellbeing.

During this case study acupuncture achieved gradual pain relief over several sessions and no major adverse effects were reported. The main cause of the patient’s pain was believed to be nociceptive in nature. The patient’s low mood and fatigue were originally attributed to the non-resolving nature of the pain. In accordance with traditional western medicine, acupuncture point selection was initially localised to the affected segment of S2. Subsequently the trigger point was addressed and the addition of the he sea point enhanced both the segmental acupuncture and the resolution of the muscular trigger point. When the patient’s pain responded to the acupuncture but her emotional state remained low consideration was given to Chinese medicine to alleviate her symptoms of mild perinatal depression. The patient had symptoms suggestive of a heart qi deficiency in that she was pale and fatigued with a threadlike pulse and thin white coating on the tongue. The use of the heart meridian is considered too strong during pregnancy, however, and alternative points were chosen which are also thought to settle emotional disharmony and assist with insomnia i.e. GV20, TE3, BL20 and REN 14. Yintang was also chosen to enhance melatonin secretion and assist sleep.

In retrospect the patient may have benefited from initial acupuncture to the heavenly gates of LI4 and LIV3 prior to segmental treatment. Acupressure and auricular seeds to these points would have been beneficial. The follow up session could have included GV20 or GV21 and BL20 prior to addressing the nociceptive cause. Essentially the presenting condition could have been treated initially from either a nociceptive or emotional component. However as the case study underlines, both protocols lead to the resolution of both pain and emotional complaints in pregnancy.

Conclusion

The case study provides support for the use of acupuncture in the treatment of both PGP and mild perinatal depression in the pregnant patient. It also provides evidence that no severe adverse effects of acupuncture were recorded. As an individual case study the results cannot be generalised to the pregnant population. However, the case study highlights important areas for further research both with regards to the exact mechanisms by which acupuncture achieves pain and emotional relief and with regards to the use of acupuncture in treating the pregnant patient for pain and emotional complaints. Care should be taken with interpretation of the results; since the patient was also advised on corrective posture and pelvic floor exercises, these variables cannot be discounted from the outcome of the patient’s condition. Despite the limitations, the case study lends support to the use of acupuncture in pregnancy both in addressing musculoskeletal pain and psychological disharmony.
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Biography

I graduated in my Physiotherapy degree at Southampton University in 2000. Previously I had completed a degree in Human Biology at Leeds Metropolitan University in 1996. My initial thesis examined the correlation between HRT and breast cancer in postmenopausal women. My second thesis examined the effect of pain on muscular recruitment within the shoulder girdle compared with controls using surface EMG.

After graduation I worked initially as a rotational Basic Grade Physiotherapist at Kettering General Hospital for 2 ½ years. I subsequently moved to York District Hospital as a Static Senior 2 Musculoskeletal Physiotherapist and worked for the trust for 2 years. I then briefly worked at the Nuffield Hospital in Chester as a Senior 1 Musculoskeletal Physiotherapist for 8 months to cover a maternity leave before taking on my current role as Senior 1 Musculoskeletal Physiotherapist at Hyde Physiotherapy Centre. I undertook my foundation course in Acupuncture in 2003 and have maintained regular CPD since including completing the Acupuncture and Pregnancy Course by Jennie Longbottom. My special interests are acupuncture and manual therapy. I have completed a range of postgraduate courses including The Diploma in Orthopaedic Medicine and the Certificate in Spinal Manual Therapy.

References


