

# Low back pain in pregnancy

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## Summary

The aim of this case report is to discuss the subject of acupuncture in pregnancy and which acupuncture points, or areas, are safe to needle. Low back pain in a 21-year-old Caucasian primigravida at 24 weeks gestation was incapacitating and acupuncture was offered. Prior to pregnancy investigations had excluded a serious organic cause and acupuncture was employed successfully to control pain and improve function. Acupuncture can be offered to sufferers of low back pain in pregnancy after risk / benefit analysis is undertaken and informed patient consent is obtained.

## Keywords

*Acupuncture, forbidden points, low back pain, pregnancy, safety, oxytocin.*

## Introduction

Low back pain (LBP) and pelvic pain affects between half and three-quarters of all pregnant women, usually during the time between the sixth and ninth months of pregnancy, but it may appear in the first trimester.<sup>1,2</sup> Pain and disability originates from the lower back, the sacro-iliac joints and the symphysis pubis.<sup>3</sup> The exact aetiology is uncertain. Relaxin, a polypeptide hormone produced by the corpus luteum, and fluid retention within connective tissue are thought to relax the pelvic and lumbar ligaments.<sup>1,4</sup> Changes in posture brought on by the biomechanical effects of an enlarging uterus and a general increase in maternal weight are also likely to be relevant.<sup>1</sup> Risk factors for low back pain in pregnancy may include smoking, strenuous work, and a past history of low back problems.<sup>2</sup>

Activities of daily living may worsen the LBP and necessitate time off work. LBP is the leading cause of sick leave during pregnancy in Sweden.<sup>1</sup> Symptoms are usually worse in the evening and can affect sleep and generally get worse as the pregnancy progresses.<sup>5,6</sup> It has been shown that women with severe low back pain during pregnancy have an extremely high risk for experiencing a new episode of severe low back pain during another pregnancy. Even when women were not pregnant, if they had previous low back

pain they suffered more often and used more sick leave due to low back pain.<sup>7</sup> Another study has concluded that pre-pregnancy low back pain predicts renewed pain during pregnancy and dysfunction of back muscles has been established in low back pain.<sup>8</sup>

I would like to discuss a case of chronic mechanical low back pain in pregnancy. Back pain is probably one of the most common indications for referral to an acupuncturist.<sup>9</sup> The origin of the pain is often not precisely known even with sophisticated imaging such as magnetic resonance imaging (MRI).<sup>3</sup> Often patients are unhappy when their doctors are not able to give them an exact diagnosis. The diagnosis and treatment of low back pain can be elusive. Even when an exact diagnosis is found its treatment, or management, is often far from adequate, be it medical or surgical.

## Presentation

In February 1996 NB was involved in a road traffic accident (RTA) when the car in which she was a passenger skidded on ice, hit a wall and rolled over. At the time she was seen in the local Cottage Hospital and later discharged after appropriate examination. She claimed that her low back pain was related to this accident.

In 1997 she was referred to the local Back Pain

Service clinic and at the time it was thought that she was suffering from a *'possible L5 pars interarticularis defect with low back pain'*. She had pars blocks on two separate occasions; some relief of pain after a week followed both blocks. The relief lasted for approximately six weeks. She was still at work and finding it difficult to carry on because of episodic pain.

The X-rays and MRIs were reviewed and the clinic doctor *'was unable to define the pars defect clearly'*. The MRI scan had suggested a defect in the L5 area. CT scans of the L4/5 and S1 area were arranged, with reverse gantry films, in order to define the pars intra-articularis properly. At the last clinic record it was recorded that the CT scan had failed to show any evidence of a pars intra-articularis defect and *'I think therefore we were treating a red herring previously'*. At this clinic attendance she told the clinic doctor that she was in the early stages of pregnancy and as such had had to reduce her prescribed oral analgesia, but was keen to have some sort of pain control throughout her pregnancy. She was consequently referred for a trial of acupuncture.

She reported low back pain that was worse on lifting and standing with occasional *'pins and needles'* in the top of her legs. She scored her pain on the Visual Analogue Scale (VAS) varying from 20 to 55 out of a maximum of 100.<sup>10</sup>

I used a hand-held VAS scale on which there is a pointer for the patient to indicate the level of their pain. The patient moves the pointer to the appropriate place on the scale which has a lower limit of 'No Pain' and an upper limit of 'Worst Pain Ever'. These correspond to 0 and 100 respectively on the numerical scale shown on the reverse of the tool, which is only visible to the therapist.

There was no past medical history of note, no known allergies and no significant family history of disease. She had been taking paracetamol for her pain but this had been stopped due to her pregnancy. She was living with her parents at the time and working in a local garage as the stores manager. This involved some computer work. She had previously trained as a car mechanic and had finished her apprenticeship. She neither smoked cigarettes nor drank alcohol.

This 21-year-old Caucasian female was 180cm

tall and 24 weeks pregnant, in her first pregnancy. The patient was observed walking with a normal gait from the waiting area into the clinic room. Her posture was good and she had a normal lumbar lordosis. The back was examined for trophic oedema, which could not be elicited. Trophic oedema is the change seen in the skin and subcutaneous tissue due to presumed sympathetic overactivity in a neurosegment affected by pain. Examination did not reveal any relevant trigger points. Her physical examination was normal apart from pain being elicited on digital pressure over the spinal processes from L2 to L5. My impression was that this patient was suffering from non-specific mechanical low back pain.

### **Treatment and Results**

I planned a regimen of treatment based on a combination of classical acupuncture points for 'back pain' and the concept of 'segmental dysfunction'.<sup>11</sup> An alternative or supplementary treatment option would be to add appropriate auricular points.<sup>12</sup>

At the first treatment in January 2000 (VAS 20-55), after full examination and explanation of the acupuncture technique to be used, I decided to treat her in a left lateral position due to her 24-week pregnancy. I gently needled BL25 bilaterally for one minute. I used Seirin No.5 (0.25x30mm) sterile single use needles (J Type with tube). At her second treatment one week later, she reported having a little more back pain after the first treatment (VAS 42). I chose to treat her again, gently, using BL23 and BL25 bilaterally for five minutes only. A week later she reported her lower back pain was better and only gave her trouble if she sat or stood for too long. I repeated the second treatment for 10 minutes. At her fourth treatment a week later (VAS 44), she said she had slept in the car while being driven home by her father. The above treatment was repeated for 15 minutes. At her fifth treatment, being now 27 weeks pregnant, she reported her low back pain a little better (VAS 30) and her leg ache a little worse (VAS 60). On this occasion I added BL57 bilaterally with a treatment time of 20 minutes. Two weeks later she reported her back pain *'a lot better'* but was troubled by cramps in her legs. I repeated the fifth treatment and added

Huatuojiaji points at the level of L2 and L4 bilaterally with a 20-minute needle retention time. Three weeks later, being 33 weeks pregnant, she reported only two bad days in the last three weeks. I repeated the previous treatment again for 20 minutes and we decided to review her treatment in 12 weeks time, which would be about four weeks postpartum. She was due to stop work in two weeks time. Eleven weeks later and three weeks postpartum, she reported only getting a little pain in her lower back, while lifting her baby (VAS 5-10). She had no leg pain or cramps. I treated her with BL23 and BL25 bilaterally along with Huatuojiaji points at the same levels, for 20 minutes. Six weeks later she reported being 'a lot better' and thought that she may not need too many more treatments. I repeated the previous treatment and I decided not to give her another appointment and I would contact her in 3 to 4 months for follow-up. Over the telephone three months later she reported being 'not too bad' and did not think she needed any further treatment at the present time. I told her she could be reviewed at the request of her General Practitioner. This patient showed an excellent response to acupuncture in a potentially difficult treatment area. The patient did not experience any side effects.

### Discussion

#### *Does acupuncture work for back pain?*

Acupuncture does seem to work for back pain, although there is ongoing debate. Even two systematic reviews on back pain published within months of each other, seem to come to differing conclusions.<sup>13,14</sup> This patient put the cause of her LBP down to a RTA in 1996, some four years before her first acupuncture treatment in 2000. If the RTA initially caused her LBP, she may have perpetuated it by work that involved prolonged positions in certain postures and performing certain tasks. Work involving prolonged positions in certain postures or performing certain tasks may predispose to developing back problems.<sup>15</sup> It may have been that she was getting better on her own and the acupuncture treatment just happened to coincide with her natural recovery. If she was suffering from 'segmental dysfunction' as a result of a chronic problem resulting from her RTA,

the acupuncture treatment may have helped her recovery from her chronic painful condition.<sup>11</sup> In respect to 'segmental dysfunction' it is interesting that there is now a suggestion that significant electro-conductive changes occur in dermatomes involved in the pathological processes of sciatic neuralgia.<sup>16</sup>

#### *Is it safe to use acupuncture in pregnancy?*

Using acupuncture during pregnancy is common in China. In this country it may be wise to carry out a risk assessment before using acupuncture in pregnancy. It may also be wise to avoid acupuncture during the first trimester, as this is a frequent time of spontaneous pregnancy loss. The pregnancy loss may be blamed on the acupuncture. About 15% of women with a clinically recognised pregnancy will miscarry spontaneously during the first trimester.<sup>17</sup> The American, and soon to be British, fear of litigation may be more influential than a sensible review of the evidence. An example of this attitude may be seen on the American Association of Medical Acupuncture website (AAMA): Russell J. Erickson, M.D. when reviewing 'Zhou C-L. Acupuncture for vomitus gravidarum.' writes, 'Adding SP4, given any chance of a premature delivery, should not be done in the United States. I am hesitant still, following Dr Helm's advice in the UCLA program, to needle a pregnant woman other than in an urgent situation until acupuncture is more widely accepted and its safety given full cognizance here.'<sup>18</sup>

#### *Are there any points to be avoided?*

PC6 seems to be safe at any stage of pregnancy. Acupuncturists are often advised to avoid using abdominal points, SP6 and LI4.<sup>19</sup> Points that stimulate the segmental nerves that supply the uterus and cervix are also advised to be used with due consideration (T11, T12, L1, L2, S2, S3 and S4).<sup>11</sup> All leg and hand points, low back, loin and abdomen points, especially LI4, GB3, GB21, GB31, ST30, ST36, ST44, ST25, SP6, KI6, KI3 and GV20 are also thought by some to be best avoided.<sup>20</sup>

Table 1 lists one author's extensive list of 'forbidden' points. There seems not to be any hard evidence to support these restrictive

**Table 1 Acupoints contraindicated during pregnancy, according to one author.<sup>19</sup>**

CV2, 3, 4, 5, 6, 7	LU7, 11
PC6, 8	LR1
GB2, 9, 21, 34	SI7, 10
GV3, 4, 5, 6, 7	SP1, 2, 6, 13, 14
HT None	ST4, 12, 24, 25, 36, 45
KI1, 2, 4, 7	TE4, 10
LI2, 4, 10	BL60, 67

directives, but there is a wealth of historic and authoritative literature on which the advice is based.<sup>19</sup>

### **What does the literature say?**

Randomised trials, retrospective studies and case reports support the use of acupuncture in pregnancy in relation to low back pain and pelvic pain.<sup>5,21,22</sup> A meta-analysis of trials of acupuncture for the treatment of back pain concluded that acupuncture was superior to various interventions, although there was insufficient evidence to state whether it was superior to placebo.<sup>13</sup> An interesting observation was that *'individualising the selection of points for treatment and repeating the acupuncture more than four times were associated with larger effect sizes.'* This statement would be in agreement with an earlier systematic review which theorised that individualised acupuncture treatments would be more effective than formula treatments for the treatment of chronic pain.<sup>23</sup> More recently only the number of treatments (six or more versus less than six) was significantly associated with a positive result.<sup>24</sup> This supports earlier evidence that there was a more favourable outcome if greater than four treatments were given as apposed to less than four.<sup>13</sup> There is always another side to the evidence and another systematic review suggests the evidence *'does not indicate that acupuncture is effective for the treatment of back pain'*.<sup>14</sup>

There are a number of acupuncture points that are said to be contraindicated or forbidden in pregnancy. Ancient texts refer to forbidden points many of which would today not be considered to be contraindicated or forbidden. In approximately 300 AD, Wang Xi wrote the book *Mai Jing* (The Classic of the Pulse). The technique

of pulse diagnosis was systematised during this period and the principles of tonification, sedation, moxibustion, meridians, eight extraordinary channels and forbidden points were established. Needle diameter, insertion depth and stimulation applied to the needle may have had an influence on what points were deemed forbidden. Needles were originally made of stone and bone, followed by bronze, silver and gold as the Dynasties passed.<sup>25</sup> Better anatomical and neurophysiological knowledge may have improved our understanding of so-called forbidden points today. Many authors have reviewed the literature and have concluded that there are no absolute contraindications but there may be relative contraindications.<sup>19,26-27</sup> Chen seems to imply that if we remember the anatomy and physiology of the human body, and needle the point correctly, then *'there will be no risk even in puncturing the so-called forbidden points'*.<sup>28</sup> Dale points out, *'the issue is more a matter of how the acupoint is stimulated rather than which one is selected'*.<sup>19</sup> Zita West advises avoidance of BL31 and BL32 prior to 37 weeks.<sup>29</sup> She also lists LI4, SP6, GB21, BL67 and abdominal points, to be avoided. A recent retrospective study reported only one potentially serious side effect in 167 consecutive cases treating for LBP in pregnancy and they used LI4, ST36, GB34, BL60, GV20 and tender points in the low back area, as well as other points.<sup>22</sup> With regard to this patient, I considered that the risks of acupuncture treatment were less than the risks of the patient taking analgesic drugs during pregnancy. The patient was also concerned about prolonged use of analgesics though her pregnancy. The patient gave her consent to treatment after full and appropriate discussion.

Acupuncture, either ear or body, should be used with appropriate knowledge of the theoretical effect of each point selected. Not only is the particular point important but also how it is stimulated. 'Forbidden' points vary according to different schools and authors. A good number of forbidden points are prescribed by different schools for certain indications during pregnancy.<sup>26</sup> One author seems to have used all the 'forbidden points' of pregnancy without any complications, but does advise gentle stimulation at the exact anatomical site of the appropriate point.<sup>20</sup>

*What are the risks of acupuncture particular to pregnancy?*

*Direct effects:*

- *Anatomical considerations:* avoid direct trauma to foetus and placenta. Some CV, KI, ST and SP points lie over the gravid uterus, and needling depth and orientation will be important.
- *Infection:* consider potential risk to: a) uterine contents and b) oedematous peripheries.

*Indirect effects:*

- *Theoretical segmental influences.* Is there an effect on uterine contraction? The sympathetic nerves controlling the uterus through the pelvic plexus receives preganglionic fibres from T5 to L4, it is therefore theoretically possible that stimulation of acupuncture points within this area may alter the physiologic function of the uterus. We may postulate that a large stimulus causes sympathetic excitation and therefore potential uterine contraction, and conversely a gentle stimulus may cause sympathetic inhibition and therefore uterine relaxation. Carlsson discusses the topic of strength of stimulation in a recent paper.<sup>30</sup> Is there an effect on cervical dilatation? Tsuei suggested that electroacupuncture was effective in inducing labour at term.<sup>31</sup>
- *Hormonal influences.* The long term stress reducing effects of acupuncture may well include activation of oxytocin pathways and mechanisms via the vagus nerve and it has been demonstrated that oxytocin can be released by touch, warmth and light pressure from all parts of the body.<sup>32</sup> Using the hypothesis of the 'integrated acupuncture disease-treatment mechanism' according to Cho et al, we may be able to attribute some of the effects of acupuncture in relation to oxytocin release.<sup>33</sup>
- *General increase in sympathetic tone during treatment.* There is evidence that acupuncture increases sympathetic tone and blood pressure during treatment.<sup>34</sup> After acupuncture sympathetic activity and blood pressure has been shown to decrease.<sup>35;36</sup>

*What safety evidence is there in the literature?*

Two large prospective trials on safety did not comment on pregnancy, so no firm conclusions can be drawn in this population.<sup>37;38</sup> A recent study provides evidence for the safety of acupuncture in early pregnancy, although certain forbidden points and acupuncture techniques were avoided, the authors being guided by traditionalist contemporary practice.<sup>39</sup>

### **Conclusion**

Based on relatively little literature on the subject, and an absence of reports of adverse events, it is suggested that it is probably safe to treat pregnant women with acupuncture. 'Forbidden points' may be better named as the 'Points Requiring Prudent Manipulations' (PRPMs) as there is no evidence indicating absolute contraindication to the use of any particular point in pregnancy.<sup>27</sup> Some points may be PRPMs because of anatomical consideration and some may be PRPMs because they are strong stimulators of the autonomic nervous system. There is evidence that nerves behave differently depending on the size of the stimulus.<sup>40</sup> Further safety data, specifically focused on pregnancy, would be helpful to clarify the issue.

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