Acupuncture for acute postoperative pain relief in a patient with pregnancy-induced thrombocytopenia – a case report

Susmita Oomman, David Liu, Mike Cummings

Abstract
A 39 year old woman, scheduled for elective caesarean section in her second pregnancy, developed thrombocytopenia. Therefore, at the time of surgery, spinal anaesthesia and non-steroidal analgesics were avoided and she was given a standard general anaesthetic procedure including fentanyl 100µg and morphine 10mg. In the early postoperative period she received tramadol 100mg and a further 10mg of morphine. These drugs did not control her pain, but caused side effects - in particular nausea and retching. Acupuncture to LI4 and PC6 on the right side produced dramatic pain relief within minutes.

Keywords
Postoperative pain relief, acupuncture, caesarean section, thrombocytopenia, opioids.

Case Report
A 39 year old woman, 40 weeks into her second pregnancy, was admitted for elective caesarean section because of her previous obstetric and medical history. In March 1999 she underwent an emergency caesarean section following failed induction of labour. Her past medical history included an emergency appendicectomy and left salpingo-oophorectomy. Her platelet count at that time was higher than normal at 673x10⁹/l, but no cause for this was found on investigation. She had also experienced several episodes of polyarthritis and viral infection. No cause for her polyarthritis was found, despite comprehensive investigations. In addition, she had lost the vision in her right eye many years previously through panuveitis.

This pregnancy was uneventful until a full blood count taken at an antenatal check up late in the second trimester revealed a low platelet count. One week prior to elective caesarean section her platelet count was 122x10⁹/l, but it dropped to 82x10⁹/l on the day of the surgery (see Table 1). Current practice is to avoid spinal and epidural anaesthesia when the platelet count is less than 100x10⁹/l, in particular because of the increased risk of epidural haematoma if a blood vessel is inadvertently punctured, leading to compression of spinal nerves and paralysis of the lower limbs. The potential risks of spinal anaesthesia were explained to the patient and she agreed to a general anaesthetic for the caesarean section.

The patient received a standard anaesthetic procedure, in which analgesia was provided by opioids including fentanyl 100µg and morphine 10mg. In the early postoperative period she received tramadol 100mg and a further 10mg of morphine. These drugs did not control her pain, but caused side effects - in particular nausea and retching. Acupuncture to LI4 and PC6 on the right side produced dramatic pain relief within minutes.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Range</th>
</tr>
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<tbody>
<tr>
<td>Normal</td>
<td>150x10⁹ to 400x10⁹/l</td>
</tr>
<tr>
<td>Mild</td>
<td>100x10⁹ to 150x10⁹/l</td>
</tr>
<tr>
<td>Moderate</td>
<td>50x10⁹ to 150x10⁹/l</td>
</tr>
<tr>
<td>Severe</td>
<td>less than 50x10⁹/l</td>
</tr>
</tbody>
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At this point, acupuncture was offered as an additional non-pharmacological treatment for pain relief and nausea, and the patient gave her consent. Needles were inserted at LI4 and PC6 on the right side.
Case report

side. On review, 10 minutes later, she had no nausea or retching, her pain score was 2/10, she had her baby next to her, and was comfortable and happy. The needles were retained for about 30 minutes in total, and were stimulated manually several times during that period. Six hours later the patient requested further acupuncture, and LI4 and PC6 were used again, but this time on the left side. She did not need any further opioids overnight and the next day she was able to take oral analgesics if required.

Two days later her platelet count had increased to 105x10^9/l, and before discharge from hospital it was 141x10^9/l.

Discussion

Pregnancy-induced thrombocytopenia occurs in 7-10% of pregnancies. In most cases thrombocytopenia is due to increased destruction of platelets. It is usually detected incidentally on full blood count late in the second trimester. The diagnosis is made by excluding other causes as there is no diagnostic test to distinguish pregnancy-induced from idiopathic thrombocytopenia. The platelet count usually returns to normal by the second week following delivery.

In this case of moderate pregnancy-induced thrombocytopenia, the platelet level had reduced to 82x10^9/l. This meant that we were able to use neither spinal nor epidural anaesthesia for the surgery, nor non-steroidal anti-inflammatory drugs such as diclofenac as an adjunct for pain relief in the postoperative period, as these are known to reduce platelet aggregation and increase the risk of adverse events from bleeding. Consequently, postoperative pain control proved to be a challenge. Further use of opioids only increased the related side effects including nausea and retching.

Pain is an unpleasant sensory or emotional experience associated with actual or potential tissue damage or described in terms of such damage. Fishman, Chief of the Division of Pain Medicine at the University of California, in his book *The War On Pain*, writes that: 'Emotions like depression and anger can increase pain decibel level or lower it. Extreme persistent anxiety can set in motion a reverberating loop of anxiety and pain, which stirs up more anxiety and more pain.' In this case the patient was quite distressed because she expected to have a caesarean section under epidural anaesthesia, and thus be awake for the birth of her child. On the day of the procedure her platelet count had dropped, and consequently she had to have a general anaesthetic instead.

Pomeranz proposed a comprehensive mechanism of action for acupuncture analgesia. Acupuncture needles stimulate type II and III fibres in muscle, to send impulses to the dorsal horn of the spinal cord; in turn, three centres – spinal cord, midbrain and pituitary – are activated to release transmitters including endorphins and monoamines, which block transmission of nociceptive impulses. The stimulation of the pituitary-hypothalamic complex provokes systemic release of β-endorphin into the blood stream from the pituitary gland, accompanied by adrenocorticotrophic hormone (ACTH). Other potential mechanisms suggest that acupuncture may also relieve pain by modulating the hypothalamic-limbic system. Indeed, a recent study utilising positron emission tomography has demonstrated ipsilateral activation of the insular cortex as a specific effect of acupuncture needling.

In a recent review article on perioperative acupuncture and related techniques, Chernyak et al suggest that acupuncture during the postoperative period can potentially serve as an important adjuvant for pain control and for relieving adverse effects of opioids. However, there are few published RCTs of acupuncture for postoperative pain relief, and interpretation of the available studies is complicated by the fact that acupuncture success depends on numerous factors including patient selection and the acupuncturist’s knowledge and skills. Interestingly, some studies have utilised intradermal needles, inserting them before surgery and retaining them for several days. With intradermal needles placed in segmental points on back (Shu points on the inner line of the Bladder meridian) in patients undergoing upper or lower abdominal surgery, Kotani et al demonstrated a 50% decrease in postoperative supplemental morphine consumption, and a 20 to 30% reduction in postoperative nausea. In postoperative pain management, studies have also shown a decrease in postoperative opioid consumption through the use of TENS. And according to a systematic review by Ernst and Pittler, studies of acupuncture for postoperative dental pain are promising.

In the case reported here, acupuncture was offered as a last resort, and it is not clear how the
intervention contributed to the patient’s recovery. Relief of pain and distress seemed to follow soon after insertion of the acupuncture needles. However, it remains possible that other factors contributed to the pain relief.

**Conclusion**

In conclusion, acupuncture may be worth trying as a part of a comprehensive treatment approach for postoperative pain. It is likely to be cost effective, if used by healthcare professionals who are already in attendance. If it improves patient wellbeing overall, it could prove to be a major step forwards for some patient groups.

**Reference List**

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