Acupuncture for Prophylaxis of Intrathecal Morphine Induced Itch in Elective Caesarean Delivery: A Randomized Controlled Double Blind Study

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Abstract

Objective: The objective of this prospective randomised double blinded placebo controlled trial was to assess the efficacy of acupuncture for prophylaxis of intrathecal morphine induced pruritus in patients undergoing Elective Caesarean delivery.

Methods: After ethical approval and informed consent parturients scheduled for elective Caesarean section under spinal anaesthesia with intrathecal morphine, were randomised to receive acupuncture (Group 1) or sham acupuncture (Group 2). In Group 1 acupuncture was applied unilaterally at the Quchi acupoint for 30 minutes before initiation of spinal anaesthesia. In Group 2 sham acupuncture was applied at a non – acupoint 2 cm lateral to Quchi for 30 minute before initiation of spinal anaesthesia. The primary outcome was the incidence of pruritus and the secondary outcomes were severity of pruritus, patient’s satisfaction with anti-pruritic prophylaxis and the need for rescue anti-pruritic medications.

Results: The results showed statistically significant differences between acupuncture and sham acupuncture, in favour of acupuncture. There was significant difference in the incidence of pruritus (27% vs 77%) and VNRS consistently at 1 h, 4h, 8h and 24h between the groups.

Conclusion: Acupuncture at Quchi (LI 11) significantly reduces the incidence and severity of pruritus after subarachnoid opioids as a part of prophylactic multimodal approach.

Keywords: Acupuncture, Pruritis, Caesarean section, Quchi (LI11), Randomized double blinded clinical trial

Caesarean section is the most common surgery among women and spinal anaesthesia is the preferred choice of anaesthesia for majority of them. Intrathecal morphine is commonly used for pain relief for Caesarean delivery and has been shown to be highly effective1. However it is associated with many side effects and the most common of these is pruritis. The incidence of pruritis varies between 30% and 100%2. The exact mechanisms of neuraxial opioid-induced pruritis remain unclear. Pruritis can be disturbing and often causes dissatisfaction in these parturient especially in the postnatal period. Many drugs like antihistamines3,4, 5 HT3 receptor antagonists5,6, opioid antagonists7, NSAIDS8, propofol9 have been used to prevent or treat this side effect, but have been only marginally effective. The treatment of neuraxial opioid-induced pruritis still remains a challenge.

Acupuncture (from Latin ‘acus’- ‘needle’ and
‘pungere’ – ‘to prick’) has been used in China for thousands of years to treat pruritis. Some research has suggested that acupuncture at specific points is effective in preventing and treating pruritis\textsuperscript{10,11,12}. Few randomised controlled double blinded studies have shown significant results on the prevention of pruritis\textsuperscript{13,14}.

To the best of our knowledge, the efficacy of acupuncture for prophylaxis of intrathecal morphine induced pruritis in patients undergoing elective Caesarean delivery has not been evaluated. Therefore we designed a randomised double blinded study to determine whether acupuncture can decrease the pruritis when combined with conventional measures to prevent pruritis. The primary objective of the study was to determine whether acupuncture would decrease the incidence of pruritis associated with intrathecal morphine. Our null hypothesis was that there would be no difference in the incidence of pruritis between acupuncture and sham acupuncture. The secondary objectives were to determine the difference in severity of pruritis, maternal satisfaction with anti-pruritic prophylaxis and need for rescue anti pruritic medications.

1 Methods
1.1 Participant
The study was single centre, prospective, randomised, double blinded, parallel, placebo controlled and recruited ASA I – II parturient undergoing elective Caesarean delivery under spinal anaesthesia with intrathecal morphine for post operative analgesia. Exclusion criteria included patient refusal, ASA III – IV, pre existing pruritis, eczema, bleeding tendencies, known allergy to any of the medications used in the study or any contraindications for spinal anaesthesia.

1.2 Study design
Before patient enrolment the study protocol was approved by the local institutional ethical committee. Each parturient included in the study signed a written informed consent. The study was registered with ClinicalTrials.gov (reg. no. NCT01283477) and we followed the CONSORT and STRICTA 2010\textsuperscript{15,16,17} recommendations for reporting randomized, controlled, clinical trials and interventions in acupuncture.

On the morning of surgery patients were randomly allocated to one of the two treatment groups ‘A’ or ‘B’ using centralised internet randomisation provided by Sealed Envelope\textsuperscript{TM}.com. Randomisation was blocked using random permuted blocks to ensure that the two groups are balanced periodically.

The acupuncture point specifically selected in this study is most important for treating pruritis as per a standard Chinese acupuncture textbook\textsuperscript{18}. Quchi (‘koo-chee’) meaning ‘crooked pond’ in Chinese is the number 11 point on the Large Intestine (L.I.) meridian. Meridians are pathways around the body, through which vital energy (known as ‘Qi’ or ‘Chi’) flows to maintain normal body function. The Large Intestine meridian starts at the forefinger (LI 1) and travels through the throat to the nose (at LI 20). Quchi has a particular effect on the head and face (trigeminal area) where the pruritis from intrathecal morphine is more pronounced, probably due to high concentration of opioid receptors in the spinal nucleus of trigeminal nerve.

The QuChi point has been used to treat conditions such as hay fever, eczema and skin problems. It has been shown that it can stimulate part of the immune system and also is beneficial in reducing itching symptoms in patients with kidney disease.

1.3 Interventions
1.3.1 Group ‘A’: Parturient in this group received acupuncture at the point Quchi. Acupuncture was performed in the antenatal ward by the first author who is qualified in acupuncture and had used acupuncture in anaesthetic practice for about five years. After prepping the skin with alcohol swab, a stainless steel acupuncture needle with guide tube was inserted at Quchi (LI11) to a depth of approximately 1-2 cun (tsun; the width of a person’s thumb at the knuckle) unilaterally. The needle was manually stimulated by twisting for 2 minutes or until a DeQi sensation (often described as variable feelings of tension, numbness, tingling and soreness reflecting activation of muscle nerve afferents – A delta and possibly C fibres) was achieved was left in place for 30 minutes and then removed when the patients arrive...
at the theatre reception.

Table 1 Details of the acupuncture point and needling done for the study

<table>
<thead>
<tr>
<th>Number of needle insertions</th>
<th>1 needle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point</td>
<td>LI11 <em>Quchi</em> unilateral</td>
</tr>
<tr>
<td>Depth of insertion</td>
<td>1- 2 <em>cun</em></td>
</tr>
<tr>
<td>Response sought</td>
<td><em>de qi</em></td>
</tr>
<tr>
<td>Needle stimulation</td>
<td>Manual</td>
</tr>
<tr>
<td>Needle retention time</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Needle type</td>
<td>Stainless steel 0.25 x 40 mm acupuncture needle with guide tube</td>
</tr>
<tr>
<td>Number of treatment sessions</td>
<td>Single</td>
</tr>
</tbody>
</table>

1.3.2 Group ‘B’: Parturient in this group received ‘penetrating sham’ acupuncture by the same acupuncturist similarly at non acupuncture point located 2 cm lateral to Quchi but not on any classic meridian. Because of close proximity of both points the patients, data collector and health care workers involved were blinded.

Placebos in acupuncture research most commonly are non penetrating sham, penetrating sham or using telescopic placebo needles. In this study, penetrating sham acupuncture was used for placebo control group where in acupuncture needling is done at wrong point.

The interventions were done with acupuncture needles (32G x 1.5 inch / 0.25 mm x 40 mm) made of surgical grade stainless steel, EO gas sterilized, disposable, packed singularly with guide tube and conformed to international standards (Mac, USA).

A standard anatomical landmark was used for point locations. The acupuncture point used in group ‘A’ i.e. Quchi was located at the lateral end of elbow crease with the elbow flexed at 90 o midway between the biceps brachii tendon and the lateral epicondyle of humerus. The non acupuncture point used in group ‘B’ was located 2 cms lateral to Quchi.

1.4 Intra operative care

All patients included in the study underwent the same anaesthetic technique using a standardised protocol. All were administered ranitidine 150mg orally on the morning of the caesarean section, followed by 0.3% sodium citrate 30 ml 30 minutes before surgery, Monitoring included continuous electrocardiogram, pulse oximetry, temperature and non invasive blood pressure. Patients were co loaded with warmed compound sodium lactate 1000ml during administration of spinal anaesthesia. Spinal anaesthesia was performed in sitting position with 27 G pencil point Whitacre spinal needle with introducer (Vygon Ltd.) at L3/4 intervertebral space and 0.5% hyperbaric bupivicaine 10 mg (Marcain Heavy Steripack, AstraZeneca Ltd.) with fentanyl 20 mcg (Janssen-Cilag Ltd.) and preservative free morphine 150 mcg (Auden McKenzie Ltd.) was administered. The patient was positioned with left lateral tilt and surgery was allowed to proceed once bilateral sensory block to ethyl chloride spray to T4 dermatome was confirmed. After the umbilical cord clamping, oxytocin 5 units was given as a slow i.v. bolus followed by an infusion if requested by the obstetrician. Co-amoxiclav 1.2 g i.v. was administered as antibiotic prophylaxis. All patients received granisetron 1mg i.v. as prophylaxis for PONV and pruritis. Paracetamol 2g i.v and diclofenac 100mg per rectally were given as a part of multimodal analgesia.

1.5 Post operative care

Postoperative care was standard for both groups. All patients were monitored for 24 hr using dedicated postoperative observation sheet specific for patients who have received intrathecal morphine for complications. Postoperative analgesia was given by paracetamol 1g orally every 6 h and sustained release diclofenac 75 mg orally every 12 h unless
contraindicated. Patients requiring additional analgesia were given tramadol 50 mg orally as required. No supplemental morphine was given within 12 hours unless all other analgesic measures have failed. In the unlikely event that this is needed the anaesthetist was contacted. Pruritis was treated with chlorphenamine maleate 4 mg orally at patient’s request.

1.6 Study parameters
The primary outcome measure of this study was the incidence of pruritis and the secondary outcomes included (1) severity of pruritis (2) patient’s satisfaction with anti-pruritic prophylaxis (3) need for rescue anti-pruritic medications.

Patients were assessed by an investigator (M.I.) blinded to group allocation in the recovery room and thereafter in the postnatal ward for the presence and intensity of pruritis. Time of admission to recovery room was taken as 0 hr and observations were made at 1 hr, 4 hr, 8 hr and 24 hr.

1.7 Incidence of Pruritis
Pruritis was defined as an uncomfortable sensation of irritation of the skin that provokes the desire to scratch or rub the affected site. An 11-point verbal numeric rating scale (VNRS-11) with zero representing no itch and 10 representing the worst possible itch was used to assess the intensity of pruritis. The incidence of pruritis was defined as mean score > 1 over the first 24 hr.

- Severity of Pruritis
  The severity of pruritis was assessed using the following cut off points for the highest score recorded:
  (1) Mild pruritus: <3 points;
  (2) Moderate pruritus: ≥3<7 points;
  (3) Severe pruritus: ≥7<9 points and
  (4) Very severe pruritus: ≥9 points

- Patient’s satisfaction with anti-pruritic prophylaxis
  On the next day the investigator (M.I.) asked the patients after 24 hr to rate their overall dissatisfaction with pruritis over the last 24 hr on a four point scale:
  (1) none;
  (2) mild;
  (3) moderate and
  (4) severe.

A response of either none or mild was considered successful anti-pruritic prophylaxis and a response of either moderate or severe was considered failed anti-pruritic prophylaxis.

1.8 Rescue anti-pruritic medications
Administration of rescue anti-pruritic medications if administered was recorded from the drug prescription card.

Baseline data including demographic characteristics (age, race, body weight, height, body mass index, parity, ASA status) was also documented.

1.9 Statistical analysis
Before the patients were enrolled in the trial, we performed an initial power analysis to determine the number of patients to be recruited. The percentages of patients that meet the primary outcome (i.e. incidence of pruritis) were based on the previous published results. Based on these findings, it was calculated that 44 patients would be required to have a 90% chance of detecting, as significant at the 5% level, a decrease in the primary outcome measure from 74% in the control group to 30% in the experimental group. Allowing for 2% non-compliance, 24 patients are required per group, making a total of 48 patients. Data analysis was done by an investigator (N.H.) blinded to group allocation using SPSS v19.

2 Results
Fifty five patients were assessed for eligibility in the study. Forty nine were included as three of them did not meet the inclusion criteria like ASA > II and preexisting pruritis, two declined to participate and one requested general anaesthesia. Forty nine patients were randomised and all except one in the acupuncture group received the allocated intervention as she withdrew after randomization. Of the remaining forty eight patients, 24 were in the acupuncture group and 24 were in the sham acupuncture group.

Four patients were lost to follow up, one in each group as the data collector was sick, one in acupuncture group as she required an emergency Caesarean section and one in sham acupuncture as the
needle fell prematurely. The flow of patients through the study is described in CONSORT Fig 1.

![Fig.1](image1)

![Fig.2](image2)

### Table 2 Patient characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Acupuncture</th>
<th>Sham Acupuncture</th>
<th>SDM 95% CI</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>32.86 ± 5.12</td>
<td>33.82 ± 5.51</td>
<td>-0.180</td>
<td>0.550</td>
</tr>
<tr>
<td>Height</td>
<td>164.65 ± 6.18</td>
<td>163.13 ± 6.71</td>
<td>0.236</td>
<td>0.436</td>
</tr>
<tr>
<td>Weight</td>
<td>79.20 ± 12.63</td>
<td>77.15 ± 12.50</td>
<td>0.163</td>
<td>0.589</td>
</tr>
<tr>
<td>BMI</td>
<td>29.37 ± 5.49</td>
<td>29.14 ± 4.32</td>
<td>0.047</td>
<td>0.877</td>
</tr>
</tbody>
</table>

### Table 3 VNRS score for pruritis at 1, 4, 8 and 24 hrs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Acupuncture</th>
<th>Sham Acupuncture</th>
<th>SDM 95% CI</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAS 1 Hour</td>
<td>2.14±2.25</td>
<td>4.55±2.77</td>
<td>-0.955</td>
<td>0.003*</td>
</tr>
<tr>
<td>VAS 4 Hours</td>
<td>2.18±2.53</td>
<td>4.18±3.39</td>
<td>-0.669</td>
<td>0.031*</td>
</tr>
<tr>
<td>VAS 8 Hours</td>
<td>1.73±2.35</td>
<td>3.36±2.85</td>
<td>-0.624</td>
<td>0.043*</td>
</tr>
<tr>
<td>VAS 24 Hours</td>
<td>0.32±1.04</td>
<td>1.59±2.30</td>
<td>-0.712</td>
<td>0.022*</td>
</tr>
</tbody>
</table>

### Table 4 Severity of pruritis after intervention

<table>
<thead>
<tr>
<th></th>
<th>Acupuncture(n = 22)</th>
<th>Sham Acupuncture(n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean of the Highest VNRS score</td>
<td>3.55</td>
<td>5.41</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.385</td>
<td>3.172</td>
</tr>
<tr>
<td>Highest VNRS score recorded</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

### Table 5 Dissatisfaction

<table>
<thead>
<tr>
<th>Dissatisfaction</th>
<th>Acupuncture(n = 22)</th>
<th>Sham Acupuncture(n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Mild</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Moderate</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Severe</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>
CONSORT Diagram showing the flow of patients through the study.

Assessed for eligibility (n=55)

- Excluded (n=6)
  - Not meeting inclusion criteria (n=3) ASA > II
  - Pre existing pruritis
  - Declined to participate (n=2)
  - Other reasons (n=1)

Randomized (n=49)

Allocated to Acupuncture (n=25)
  - Received allocated intervention (n=24)
  - Did not receive allocated intervention (n=1)

Allocated to Sham Acupuncture (n=24)
  - Received allocated intervention (n=24)
  - Did not receive allocated intervention (n=0)

Follow-Up

- Lost to follow-up (Data collector sick) (n=1)
- Discontinued intervention (emerg C/S) (n=1)

Analysis

- Analysed (n=22)
  - Excluded from analysis (n=0)

Analysis

- Analysed (n=22)
  - Excluded from analysis (n=0)

Fig. 1

Fig. 4

Fig. 5
The demographic data are shown in Table 2. There were no differences in patient characteristics between the groups. There was significant difference in the incidence of pruritis between the groups (acupuncture group 27% vs sham acupuncture 77%). The mean VNRS for pruritis over the first 24 hours is shown in the Table 3. The mean VNRS for pruritis at 1 hr was 2.14 +/- 2.25 in acupuncture group and 4.55 +/- 2.27 in sham acupuncture group, SDM 0.955, (95% CI 1.579 to 0.331; P = 0.003). The mean VNRS for pruritis at 4 hr was 2.18 +/- 2.53 in acupuncture group and 4.18 +/- 3.39 in sham acupuncture group, SDM 0.669, (95% CI 1.276 to 0.061; P = 0.031). The mean VNRS for pruritis at 8 hr was 1.73 +/- 2.35 in acupuncture group and 3.36 +/- 2.85 in sham acupuncture group, SDM 0.624, (95% CI 1.229 to 0.019; P = 0.043). A statistically significant difference was also seen at 24 hr where the mean VNRS for pruritis was 0.372 +/- 1.04 in acupuncture group and 1.59 +/- 2.30 in sham acupuncture group, SDM 0.712, (95% CI 1.321 to 0.102; P = 0.022). None of the patients required intravenous naloxone in both the groups and the need for rescue antipruritic medication chlorpheralmine was similar in both two groups.

Patients dissatisfaction with pruritis over 24 hr after the Caesarean section is presented in Table 5.

3 Discussion

In this randomized, double-blinded, placebo-controlled clinical trial we found significant effect from acupuncture at the LI 11 acupoint on prevention of pruritis in parturient who received intrathecal morphine as analgesic. The incidence and severity of pruritis were significantly reduced in the acupuncture group compared to the non acupuncture group. Also, patients in the acupuncture group had better satisfaction scores. To our knowledge the use of acupuncture at LI 11 for Caesarean section with intrathecal morphine has not been previously studied.

Intrathecal morphine provides excellent post operative analgesia in Caesarean section performed with spinal anaesthesia. But, the incidence of pruritis in the obstetric population is very high which may be from an interaction between oestrogen with opioid receptors. Pruritis induced by intrathecal opioids is likely due to cephalad migration of the drug in the cerebrospinal fluid and subsequent interaction with the trigeminal nuclei located superficially in the medulla. Opioid receptors are found throughout the brain and spinal cord. High concentrations of opioid receptors are found in the substantia gelatinosa, an area within the spinal cord which is the primary site of action of intraspinal opioids. The trigeminal nucleus which has high concentration of opioid receptors descends into the cervical region of the spinal cord and becomes continuous with the substantia gelatinosa of the dorsal horn. Hence, the most common location of pruritis is in the facial areas innervated by trigeminal nerve.

The mechanism of intrathecal opioid induced pruritis is not fully understood. Although opioids release histamine from mast cells systemically, this does not appear to be the underlying mechanism after spinal or epidural administration. The success of treating pruritis with anti histamines is mainly due to its sedative effects. Another theory is that central 5 - hydroxytryptamine subtype 3 receptors plays a role and hence the usage of ondseretron or granisetron. Propofol at subhypnotic doses is believed to act by inhibition of ventral and dorsal spinal horns in relieving pruritis induced by central neuraxial opioids. At the receptor level, the most likely cause of pruritis is via a direct central effect mediated by central mu opioid receptors (MORs). Therefore, opioid receptor antagonists such as naloxone are used under this context. These compounds can reverse opioid analgesia concurrently and hence are not ideal.

Kappa opioid receptors (KORs) are also involved in the processing and regulation of the itch sensation. Moreover, kappa opioid receptor agonists (KOR agonists) have been demonstrated to be antipruritic. KOR agonists can prevent or reverse intrathecal morphine-induced itch /scratching responses without interfering with intrathecal morphine analgesia in monkeys. Nalfurafine (TRK-820) a novel KOR agonist has been used as antipruritics in hemodialysis patients suffering from uremic pruritus, supports the therapeutic potential of KOR agonists.
Recently, experimental studies have proved that acupuncture has an antipruritic effect and that this effect is mediated by a spinal segment associated inhibitory mechanism. It has been proposed that the antipruritic effect of acupuncture at LI 11 is mediated through kappa-opioid receptor activation. It is known that acupuncture stimulates the release of endogenous opiates namely beta-endorphin, enkephalin, endomorphin which in turn activates the mu- and delta-opioid receptors and dynorphin which activates the kappa-opioid receptor.

The antipruritic effect of acupuncture studied using a rat model of hindlimb scratching showed that plain acupuncture and high frequency EA stimulation applied to acupoints LI 11 and LI 4 decreased pruritis significantly. This anti pruritic effect was found to markedly inhibited by pre-treatment with nor-binaltorphimine (a kappa-opioid receptor antagonist).

The effect of LI 11 acupuncture for itch has been investigated in the non-obstetric population. Previously, acupuncture was shown to have antipruritic effects with healthy volunteers. There are at least two randomised controlled trials evaluating the effect of acupuncture at LI11 on pruritis. A randomised controlled double blinded study was carried out on 10 healthy volunteers. They were randomised into three groups: Acupuncture (LI11), Placebo acupuncture, No acupuncture. Pruritis was evaluated for 20 s each after the histamine stimulus. Significant results were obtained on the prevention of pruritis and also wheal and flare in the acupuncture group. Acupuncture point LI11 was also investigated in a randomised controlled double blinded trial including 40 patients with refractory uraemic pruritis. Pruritis scores were significantly lower in the acupuncture (LI11) group.

Though, LI11 can be easily located based on surface markings and does not require special training, there could be alternative technique of stimulating the point using elastic acupressure bands. However further research is needed to assess if acupressure at LI11 is of any benefit.

The rationale for acupuncture treatment is based on two contrasting approaches: traditional acupuncture (TA) and medical acupuncture (MA). While TA uses the theory of Chinese medicine, MA is based on neurophysiological principle that acupuncture alters brain function through stimulating nerve pathways. Based on the experimental studies, we have rationalised that antipruritic effect of acupuncture at LI 11 is mediated through kappa-opioid receptor activation and that dynorphins are the key link. According to TA and Chinese medicine, stimulation of Quchi clears heat, cools the blood, eliminates wind, drains damp and hence alleviates itching.

The evidence of efficacy, especially, with trials involving acupuncture has to be credible to adopt the practice. We believe the study methodology was appropriate and we followed CONSORT / STRICTA guidelines closely in designing and reporting this study. Clinical trials of acupuncture pose a challenge with regards to the blinding and placebo. With respect to blinding, the study was well blinded that the participants, anaesthesia providers and the data collector was blinded to group allocation. In accordance with the best practice of blinded studies of acupuncture, the success of blinding should be measured early in the trial design and hence we performed a preliminary study in 10 patients who were randomly allocated to receive acupuncture or penetrating sham acupuncture to assess success of blinding. Blinding was assessed by questioning the participants whether they believe they were in real or sham group. Most (90%) were unable to guess to which group they had been allocated. Placebos in acupuncture research most commonly are non-penetrating sham, penetrating sham or using telescopic placebo needles. In this study, penetrating sham acupuncture was used for placebo control group where in acupuncture needling is done at wrong point.

There were several limitations in our study. Pruritis a subjective sensation of itch can be a difficult symptom to assess and quantify. We used the most commonly used visual analogue scale (VAS). Limb worn accelerometers (actigraphs) could have been a more standardised tool, but VAS is still a validated
assessment tool and has been shown to correlate to the subjective feeling of pruritis severity. A main shortcoming of our study is a possible confounding factor from the routine administration of anti pruritic drugs like 5 HT-3 antagonists and diclofenac in these parturients. It was unethical to withhold these drugs in patients who are at risk of pruritis from intrathecal morphine. However, the confounding effect of these adjunctive drugs was negated because similar drugs were administered in both groups. The inclusion of a third group with only acupuncture for prophylaxis for pruritis would have addressed this issue. But our data showed the incidence of pruritis in the non acupuncture and acupuncture group was 27 % and 77 % respectively which is consistent with the previous studies. There were no differences between the groups except that acupuncture at LI11 was included.

This study has shown that providing acupuncture treatment to this group of patients was feasible in a perioperative setting and was without side effects. The acupuncture could be applied prior to the pruritic stimuli compared to 5 HT3 antagonists and other drugs which have to be administered after clamping the umbilical cord in this specific group of patients receiving intrathecal opioids.

Quchi acupoint can also be stimulated by application of pressure (acupressure), or mild electric current (electro acupuncture). Future research should evaluate the efficacy of acupressure using commercially available elastic acupressure bands and electro acupuncture. Based on experimental studies, electro acupuncture has been shown to have more antipruritic effect than manual acupuncture. Finally, this was a prevention study and the efficacy of acupuncture in treating pruritis once it has developed has to be evaluated.

In conclusion, we have shown that acupuncture at Quchi (LI 11) significantly reduces the incidence and severity of pruritis after subarachnoid opioids as a part of prophylactic multimodal approach.

Competing interests
The authors declare that they have no competing interests.

References


