

## Efficacy of acupuncture in prevention of postoperative anaesthesia-related shivering

Dear editor

Postoperative shivering still occurs as a complication of general anaesthesia.<sup>1-2</sup> Shivering depends on age, sex, duration of anaesthesia and type of anaesthetic agent(s).<sup>1-3</sup> Primarily due to anaesthetic agents such as isoflurane, this type of shivering presents as spontaneous muscular activity in patients with normal body temperature after general anaesthesia for specific operations.<sup>4-5</sup> With advances in alternative medicine in recent decades, acupuncture is increasingly known as an effective method in managing complications of surgery and anaesthesia. However, the most efficacious point of stimulation still needs investigation.

A prospective non-randomised clinical study was performed on 228 patients admitted to the department of surgery at Shariati Hospital between March 2011 and June 2011. The Research Ethics committee of Tehran University of Medical Sciences in Tehran, Iran approved the study protocol on human subjects and patients completed an informed consent before entering the study. Patients received general anaesthesia for elective surgery with standardised surgical techniques performed by one of the authors (ZK). Anaesthesia was induced with sodium thiopental (5 mg/kg) and atracurium besylate (0.5 mg/kg) followed by midazolam (0.03 mg/kg) and fentanyl (2.5 µg/kg). After tracheal intubation, subjects were mechanically ventilated with a mixture of 50% O<sub>2</sub> and 50% N<sub>2</sub>O. Standard monitoring was performed during the surgery. Anaesthesia was maintained with 1 minimum alveolar concentration isoflurane, inspired at a fresh gas flow rate of 4 litres/min. Further, boluses of fentanyl (1 µg/kg) and atracurium besylate (0.2 mg/kg) were given every 30 min.

**Table 1** Demographics and primary characteristics of patients

Gender	Combined group (n=115)	Single group (n=113)	p Value
Age in years, mean±SD	37.59±13.54	37.13±14.40	> 0.05
Sex			> 0.05
Male	65 (56.5%)	64 (57.1%)	
Female	50 (43.5%)	48 (42.9%)	
Shivering	11 (9.6%)	29 (25.7%)	0.001

A total of 115 subjects were assigned into the case group with concomitant stimulation of PC6 and LI4 points while 113 patients in the control group was treated by acupuncture only at the PC6 point. Sterile needles (Energy, China) with a diameter of 0.2 mm were inserted to 5 mm depth of acupuncture points following induction of anaesthesia, rotated for 5–10 s and kept in situ until the end of the operation.

The mean±SD age of patients and male/female ratio did not differ significantly between the single group and the combined group ( $p>0.05$ ) (table 1). There was also no significant difference between the two groups in terms of surgical procedures and protocol of anaesthesia. Shivering occurred in 11 patients (9.6%) in the combined group compared to 29 patients (25.7%) in the single group, which revealed a statistically significant difference ( $p=0.001$ ). However, the incidence of postoperative shivering in our study was low (overall 17.5%). A lower incidence of postoperative shivering occurs as a result of improved anaesthetic protocol over time and administration of prophylactic anaesthetic regimens,<sup>6</sup> which were not different between our groups. Although acupuncture has shown benefits for management of postoperative complications,<sup>7-8</sup> no study has compared the effectiveness of stimulation of different acupuncture points on postoperative anaesthesia-related shivering. Our experience with this group of patients showed that combined stimulation of PC6 and LI4 points is associated with lower incidence of postoperative shivering. We could find no published

study on this topic with which to compare our findings. Hence, further investigations are needed before any recommendation on the use of acupuncture can be made.

Saeed Shoar,<sup>1,2,3</sup> Sara Esmaeili,<sup>2,3</sup> Zhamak Khorgami,<sup>1</sup> Mohammad Naderan,<sup>1,2</sup> Nasrin Shoar<sup>2,4</sup>

<sup>1</sup>Department of Surgery, Shariati Hospital, Tehran University of Medical Sciences (TUMS), Tehran, Iran

<sup>2</sup>Development Association of Clinical Studies (DACS), Student Scientific Research Center (SSRC), Tehran University of Medical Sciences, Tehran, Iran

<sup>3</sup>Department of Acupuncture Medicine, Tehran University of Medical Sciences, Tehran, Iran

<sup>4</sup>Department of Medicine, Shahid Beheshti Hospital, Kashan University of Medical Sciences (KUMS), Kashan, Iran

**Correspondence to** Dr Nasrin Shoar, Development Association of Clinical Studies (DACS), Student Scientific Research Center (SSRC), Tehran University of Medical Sciences (TUMS), Tehran, Iran, No 12345, School of Medicine, Poorsina Street, Qods Street, Keshavarz Boulevard, Tehran, Iran; nasrinshoar@gmail.com

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