



Fig 1 EZ-Blocker in position.

ventilation procedure was repeated. During anaesthesia, blood gas samples were obtained and neither hypercarbia nor hypoxia occurred at both sides of single-lung ventilation. Video-assisted thoracic surgery was successfully performed and the surgeon satisfaction was very good. The patient was extubated without complications and transferred to the post-operative anaesthesia care. No discomforts like sore throat or minor injuries at the trachea were detected. We think that the development of a smaller EZ-Blocker could help anaesthetic management for paediatric thoracic surgery a lot and further clinical studies could improve EZ-Blocker administration.

Declaration of interest

None declared.

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doi:10.1093/bja/aet365

Quadriplegia after interscalene block for shoulder surgery in sitting position

Editor—A female patient, aged 50 yr, was undergoing shoulder arthroscopy. Owing to anticipated difficult airway, awake fiberoptic tracheal intubation was tried but was abandoned due to lack of co-operation. A rapid sequence induction of general anaesthesia was achieved with propofol 150 mg and succinylcholine 100, and trachea was intubated after in-line stabilizing of the neck. The anaesthesia was maintained with sevoflurane and nitrous oxide in oxygen.

Then interscalene block was performed using the posterior approach.¹ A total volume of 30 ml local anaesthetics (10 ml lidocaine 2% and 20 ml bupivacaine 0.5%) was injected with the patient lying in the lateral position. The positioning of the patient was changed to sitting position for surgery.

Immediately after the positioning, the patient developed severe hypotension and bradycardia (arterial pressure 60/30 mm Hg and heart rate 40 beats min⁻¹), which responded to ephedrine boluses (up to 45 mg) and i.v. fluids. After the surgery, the recovery of spontaneous breathing was delayed and the patient had atonia of all four limbs. The patient was transferred to the intensive care for mechanical ventilation. After about 4 h, the patient started to fight on the ventilator with good tidal volume and lower limbs movement. The trachea was extubated successfully.

Neurological examination revealed 4/5 motor power for all lower limbs muscles with intact sensation and reflexes of both sides, 3/5 motor power for the left upper limb (operated side) with numbness, and 1/5 motor power for the right upper limb with complete impairment of deep sensation, and sluggish touch and light sensation.

MRI of cervical spine was done and it showed significant cord oedema of recent origin involving a long segment of the cervical cord (Fig. 1).

Subsequently, the patient showed remarkable improvement in the next 5 days with return of all neurological functions except monoparesis of the right upper limb with numbness. She was then discharged to a general ward.

A day after her discharge, she was readmitted to the intensive care unit because of relapse of her neurological dysfunction with weakness and numbness in all limbs. A second MRI was done which revealed the same signal intensity of the same cervical regions, suggesting myelomalacia from C2 to C7. Steroid treatment was restarted and the patient showed variable neurological changes in the next 10 days. The last MRI at this stage showed resolved oedema, but hyperintense segments from C2 to C7, suggesting underlying ischaemia. We believe that acute onset and later fluctuating course of neurological damage did not concur with the highly possible aetiology of inadvertent injection of local anaesthetics into the substance of the cervical spinal cord or its spaces.² But other co-factors played a major role such as failed trial of awake fiberoptic intubation, sitting position which was described frequently in literature to cause spinal cord ischaemia, especially in posterior fossa surgery and the posterior



Fig 1 Sagittal plain cervicothoracic MRI with increased intense signal and cord oedema.

approach of interscalene block with its proximity to neural structures.

Declaration of interest

None declared.

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doi:10.1093/bja/aet368

Acupuncture for treatment of therapy-resistant post-dural puncture headache: a retrospective case series

Editor—Post-dural puncture headache (PDPH) is a severe iatrogenic complication after epidural anaesthesia, spinal anaesthesia, or lumbar puncture.¹ Current empirically based

therapies of PDPH often provide insufficient pain reduction.^{1,2} Untreated or therapy-resistant PDPH may seriously reduce the quality of patients' life and lead to recurrent hospital admissions.^{1,3}

We describe five consecutive female patients with PDPH, where acupuncture was successfully used to treat the headache. Two patients developed PDPH after spinal block for foot surgery and three parturients after accidental dural puncture during epidural anaesthesia. Standard conservative therapy included recumbency, fluid infusion, and systemic analgesia (for details, see Table 1). In all these cases, standard conservative therapy of PDPH failed to improve the symptoms. The patients were all asked if they wanted to try acupuncture before epidural blood patch was considered. All patients gave their informed consent before treatment with acupuncture and the local ethic commission approved this investigation.

Stainless steel disposable acupuncture needles with a diameter of 0.25 mm and length 25 mm were inserted bilaterally (if appropriate) to a depth of 1–2 cm depending on the underlying anatomical structures and were not manipulated. After insertion, the needles remained in place for 25–30 min. Acupuncture points were chosen from the list: BL 2, BL 10, BL 60, BL 62, GB 20, LI 4 LR3, and SI 3 (Fig. 1), which was recommended for treatment of headache by the experts.⁴ For auricular acupuncture, the needles were inserted bilaterally at points MA-TF1, MA-AH9, and MA-AT1.⁵

All patients reported more than 50% reduction in PDPH intensity immediately after the acupuncture treatment (Table 1). In three cases, acupuncture was repeated on the next day. In all cases, the analgesics were stopped or their dose was decreased in the hours following acupuncture treatment. None of the patients required treatment with a blood patch. After acupuncture, the patients returned to normal daily activities and were discharged home without further delay.

Our observation supports two previous case series, where six out of eight parturients with PDPH due to accidental dural puncture during application of epidural anaesthesia were successfully treated with acupuncture and thus avoided more aggressive therapy like epidural blood patch.^{6,7} The resolution of headache after acupuncture in all these cases, including five patients from our report, could have been due to: (i) specific effects of acupuncture; (ii) non-specific (including non-specific physiological and psychological–placebo) effects; or (iii) the natural course of the disorder that resolves spontaneously between 1 week and 6 months.¹ Three patients reported relapse of the headache after a first application of the needles, which allow the assumption that the condition was not spontaneously resolving at that time-point. Unfortunately, we did not perform the 6 month follow-up in order to reveal the potential late recurrence of PDPH, which should be done in future investigations.

It seems that acupuncture has the potential of an easy to apply, low-risk therapeutic alternative before escalation to invasive blood patching. Randomized trial using acupuncture as