

pental infusions and BSD testing [4]. However, continuous intravenous midazolam infusion is another commonly used agent that will preclude BSD testing and it is almost certain that a similar inconsistency and confusion exists. Accumulation of midazolam and its active metabolite, 1-hydroxymidazolam glucuronide, are known to occur in critical illness, especially in the presence of renal impairment and it may take several days for adequate elimination to occur [5, 6].

In the absence of a clear understanding of how to determine the absence of pharmacological sedation it is logical to explore the feasibility of ancillary investigations to assist with or determine BSD diagnosis. The draft revision of the Code of Practice does indeed mention ancillary investigations such as four-vessel angiography, transcranial Doppler, magnetic resonance angiography, positron emission tomography and evoked potentials. However, the draft was unable to provide significant support for their use due to the lack of clear evidence of their role.

I believe it is vital that we start to record how many UK patients fail to undergo BSD testing due to persisting sedation by adding this data to the Potential Donor Audit. There is a need to reach consensus on the use of ancillary investigations in the diagnosis of death and on the correct method for the assessment of potential residual sedation caused by longer acting agents. We can then move significantly closer to the goal of allowing all brain stem dead patients to donate if that has been their expressed wish.

M. B. Walker
Derriford Hospital
Plymouth PL68DH, UK
E-mail: martin.walker@
phnt.swest.nhs.uk

References

- 1 Department of Health. *A Code of Practice for the Diagnosis of Brain Stem Death*. London: Department of Health, 1998.
- 2 Draft code of practice for the diagnosis and certification of death. <http://www.rcoa.ac.uk/index.asp?PageID=65&NewsID=150> [accessed 4 November 2006].
- 3 Bell MDD, Moss E, Murphy PG. Brainstem death testing in the UK – time for reappraisal? *British Journal of Anaesthesia* 2004; **92**: 633–40.
- 4 Pratt OW, Bowles B, Protheroe RT. Brain stem death testing after thiopental use. a survey of UK neuro critical care practice. *Anaesthesia* 2006; **61**: 1075–8.
- 5 McKenzie CA, McKinnon W, Naughton DP, et al. Differentiating midazolam over-sedation from neurological damage in the intensive care unit. *Critical Care* 2005; **9**: R32–6.
- 6 Hirata K, Matsumoto Y, Kurokawa A, et al. Possibility of influence of midazolam sedation on the diagnosis of brain death: concentrations of active metabolites after cessation of midazolam. *Yakugaku Zasshi* 2003; **123**: 811–5.

The i-gel™ airway for ventilation and rescue intubation

A teenage male patient was scheduled for closure of a colostomy. Two years previously he was noted to have a grade 3 (Cormack and Lehane) view at laryngoscopy. At that time bag and mask ventilation was easy and his trachea was intubated using a McCoy blade and a gum elastic bougie. He had also undergone several uneventful general anaesthetics using a laryngeal mask airway. On this occasion he weighed 64 kg and there were no clinical features to predict difficult intubation. General anaesthesia was induced intravenously and laryngoscopy using a Macintosh blade revealed a grade 4 view despite repositioning the head and neck and external laryngeal manipulation. Two attempts at tracheal intubation with a gum elastic bougie failed. A size 4 Classic™ laryngeal mask airway

was inserted. Despite achieving satisfactory ventilation, two attempts at fibre-optic intubation through the laryngeal mask airway failed. The reason for this failure is unclear, although blood and secretions in the airway due to the previous intubation attempts may have contributed to the failure. A size 4 i-gel airway (Intersurgical Ltd, Wokingham, UK) was placed and ventilation was satisfactory. After confirmation of a good view of the vocal cords with a 4.1-mm adult fibreoptic scope, a size 6.5 mm cuffed tracheal tube was successfully passed through the stem of the i-gel blindly into the trachea at the first attempt. The i-gel was left in place until extubation.

The Difficult Airway Society guidelines [1] recommend use of the LMA Classic or intubating laryngeal mask airway to secure ventilation and oxygenation after failed optimised attempts at direct laryngoscopy, proceeding to secondary tracheal intubation, preferably using a fibrescope. This use of a dedicated airway as a conduit for flexible fibreoptic intubation is considered to be a 'low skill' technique. Besides potential difficulties with fibrescopy, the choice of size of tracheal tube is restricted to those that will pass through the lumen of the airway. Smaller tubes may be too short to allow sufficient protrusion beyond the uncut stem of the airway to position the cuff safely below the cords.

The i-gel is a new single-use, non-inflatable supraglottic airway for use in anaesthesia during spontaneous or intermittent positive pressure ventilation. Its wider and shorter stem suggests that it may be an ideal conduit for intubation using a fibrescope; a size 4 i-gel has a channel length of 192 mm and an



Figure 2 A 7-mm cuffed tracheal tube positioned in a size 4 i-gel airway.

internal diameter of 12.3 mm and will accept a 7-mm cuffed tracheal tube (of external diameter 9.5 mm) with enough protrusion beyond the mask to pass the cuff of the tracheal tube into the trachea (Fig. 2). However, it suffers the same disadvantage of the laryngeal mask technique in that it is almost impossible to remove the device after intubation.

Formal assessment of this technique as well as clinical evaluation of the routine use of the i-gel are underway in our unit.

S. Sharma

R. Rogers

M. Popat

John Radcliffe Hospital
Oxford OX3 9 DU, UK
E-mail: sabeenasharma@
googlemail.com

Reference

- 1 Henderson JJ, Popat MT, Latto IP, Pearce AC. Difficult airway guidelines for management of the unanticipated difficult intubation. *Anaesthesia* 2004; **59**: 675–94.

Exercise induced anaphylaxis and pregnancy

A 20-year-old primigravida presented at 37 weeks gestation at a routine antenatal appointment with a history of exercise-induced anaphylaxis (EIA). She described the development of a widespread urticarial rash and wheals, followed by chest tightness and oedema of the tongue and face on exertion (for example walking quickly, aerobics, cold weather) and during periods of stress. She had had six hospital admissions since age 18 for these episodes, but had never been ventilated or required admission to ICU. She had been seen in the Emergency Department with facial swelling and urticaria, and was treated with hydrocortisone and chlorpheniramine. She had not been able to identify any ingestible triggers for these symptoms. She took chlorpheniramine when required. She had no other past medical history (including asthma) and had no allergies. She had previously failed to attend an appointment for further investigation, and was awaiting

another appointment, but had modified her lifestyle to avoid the precipitating factors.

Her pregnancy had been unremarkable. She requested a normal vaginal delivery. A delivery plan was agreed with the obstetricians in which hydrocortisone was to be commenced at the onset of labour, initially 100 mg intravenously followed by 50 mg 6-hourly. She was encouraged to have an epidural placed early in labour with the aim of reducing the chance of EIA symptoms being triggered by the stress of labour. She presented to the delivery suite in early labour and an epidural catheter was inserted when she was 4 cm dilated. This provided good analgesia throughout her labour. Hydrocortisone was given as planned and she had an uneventful normal vaginal delivery 12.5 h after admission. She was discharged home 48 h later.

EIA is an uncommon condition first reported by Sheffer and Austen in 1980 [1]. There is an exercise-induced lowering of the mast cell degranulation threshold, causing release of histamine and other mediators. This leads to progression from pruritis and urticaria to the symptoms of anaphylaxis [2]. It is an episodic condition in which the frequency of attacks tends to stabilise or decrease over time. There is one other report of EIA in pregnancy [3]. A patient developed swelling, urticaria and bronchospasm after delivery in her first pregnancy which was presumed to be caused by ergometrine administration. However, a similar episode in her second delivery without use of oxytocin led to a diagnosis of EIA. In both episodes the symptoms were successfully treated with oxygen, steroids and chlorpheniramine. An important question in the peripartum management of EIA is whether the stress of labour will induce symptoms and whether the patient should be advised to have an elective Caesarean section. We believed that the single report of a positive outcome after normal vaginal delivery justified our management plan, as the stress associated with Caesarean section might trigger symptoms. The patient was referred for investigation in the postnatal period,

and was advised that similar precautions might be required in future pregnancies.

R. Gupta

P. Moore

Birmingham Women's Hospital

Birmingham B15 2TH, UK

E-mail: ritugupta@doctors.org.uk

References

- 1 Sheffer AL, Austen KF. Exercise-induced anaphylaxis. *Journal of Allergy and Clinical Immunology* 1980; **66**: 106–11.
- 2 Stratbucker WB, Sammut PH. Exercise induced anaphylaxis. *Emedicine* September 27, 2002: <http://www.emedicine.com/ped/topic724.htm>.
- 3 Smith HS. Delivery as a cause of exercise-induced anaphylactoid reaction: case report. *British Journal of Obstetrics and Gynaecology* 1985; **95**: 1196–8.

Anaesthetic implications of electronic tagging

Electronic tagging is currently used either as an alternative to a custodial prison sentence or to facilitate the transfer of an offender back into the community. The electronic tag, a wristwatch sized short range radio transmitter, was formally known as a Personal Identity Device (PID) and is strapped to the ankle or wrist of a subject and regularly transmits identification data. A receiver in the subject's home confirms the proximity of the tag and informs a monitoring centre if it moves out of range. In England and Wales the radio transmitters must comply with the regulations for short range devices. Operation is licensed on several radio-frequency bands: 417.9–418 MHz, 433.05–434.79 MHz and 868–869.2 MHz. The maximum permitted radiated power (in the 868 MHz band) is very low at 25 mW (effective radiated power).

An MRI scanner is the only medical device likely to cause direct harm to a patient wearing an electronic tag. The powerful magnetic fields will exert both substantial forces on the ferromagnetic