

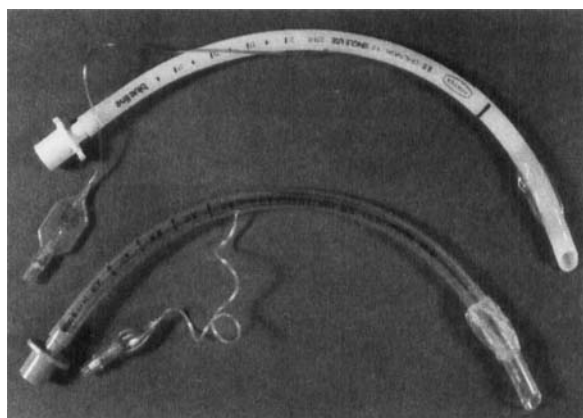


Fig. 2. Pilot tube take off point in 8 mm ID Argyle and Portex tracheal tubes.

it lies beneath the tape it may be difficult to spot unless specifically looked for.

A kinked pilot tube has previously been reported to lead to failure of cuff deflation [1] and difficulty in

extubation [2]. These problems can be avoided either by choosing a make of tracheal tube where the pilot tube takes off from an area other than the fixation site (Fig. 2), or if this is not possible, then by fixing the tube with care to prevent pressure on the junction between intramural and free parts of the pilot tube, so as to avoid kinking. In this regard, Tanski and James [2] pointed out that the take off point of the pilot tube in modern plastic tubes is considerably higher than in the older Magill red rubber model and suggested that manufacturers consider returning to the previous position. However, as this has not been done, we would like to re-emphasise the need for care.

Craigavon Hospital,
Craigavon BT63 5QQ

S. BHANUMURTHY
W. MCCAUGHEY
J.L. GRAHAM

References

- [1] SIVANESWARAN N, O'LEARY J. Failure of endotracheal cuff deflation. *Anaesthesia and Intensive Care* 1984; **12**: 88.
- [2] TANSKI J, JAMES RH. Difficult extubation due to a kinked pilot tube. *Anaesthesia* 1986; **41**: 1060.

Anaphylactic reaction to aprotinin during cardiac surgery

A substantial reduction of blood loss and blood requirements after cardiopulmonary bypass have been reported following prophylactic treatment with the proteinase inhibitor, aprotinin. As aprotinin is a polybasic polypeptide that is derived from bovine organs, there is always the possibility of sensitisation to the agent and an anaphylactic reaction after a second administration. This has been reported in the 1970s when aprotinin was used for the treatment of acute pancreatitis. In 1976, Proud and Chamberlain reported a fatal case of anaphylactic shock in a 67-year-old patient treated with aprotinin for acute pancreatitis [1]. Since the introduction of aprotinin for the treatment of the bleeding tendency in cardiac and orthopaedic surgery, several severe reactions have been reported [2,3]. A 25-year-old patient operated on three times for knee surgery experienced cardiovascular collapse and bronchospasm after the third administration of aprotinin. Anti-aprotinin IgE antibodies were detected by radioallergosorbent test (RAST) in samples taken 8 weeks after the last surgical intervention [3].

IgE and IgG antibodies to aprotinin have been detected in a high proportion of sera from patients receiving aprotinin therapy and who had adverse reactions [4]. Recently, in cardiac surgery, an IgE-mediated anaphylactic reaction to aprotinin has been reported in a 3-year-old boy requiring open-heart surgery because of a congenital heart defect and re-operated on 2 months later for pleural decortication [5]. We report a patient who experienced, after aprotinin administration, a sudden decrease in arterial pressure and in whom aprotinin-specific IgE serum antibodies were detected.

A 58-year-old patient with mitral insufficiency was operated on for mitral valve replacement. During surgery, aprotinin was administered. Two months later, a reoperation was required. After induction of anaesthesia, 50 ml of aprotinin (Trasylol) were administered before the start of cardiopulmonary bypass. A sudden decrease in arterial pressure from 120/70 to 42/25 mmHg and an increase in heart rate to 120 beat.min⁻¹ occurred immediately after the end of the aprotinin infusion, followed by marked flushing of the skin of the face. No bronchospasm was observed. The administration of adrenaline 0.3 mg and Ringer lactate solution 400 ml restored the arterial pressure. The events, clinical signs and possible sensitisation after aprotinin

injection given 2 months before, evoked aprotinin anaphylaxis. The serum tryptase, the specific mastocyte enzyme, measured 40 min after the clinical events was normal (1.1 µg.l⁻¹; normal < 1 µg.l⁻¹) (RIA, Pharmacia, Uppsala, Sweden). Urinary methylhistamine assessed at the same time was increased (results expressed as a ratio with serum creatinine were 357; normal < 178) (RIA, Pharmacia, Uppsala, Sweden). The aprotinin IgE antibodies were present in the patient's serum, the day of the incident. The sepharose-aprotinin IgE-RIA was carried out as described previously for anaesthetic drugs [6]. In summary, aprotinin was coupled to epoxy-sepharose at pH 9. The IgE-RIA assay was performed by incubating 50 µl of the solid drug-phase with 50 µl of patient serum. After washing, the gel was incubated with 50 µl of iodinated anti-IgE (30 000 dpm, Immunotech, Luminy, France). The result expressed as the percentage of radioactivity bound to the gel suspension was 3.5%. It was considered positive since the ratio with a negative sample was 2.6%. Inhibition of IgE-binding to the solid drug-phase was checked by prior incubation of the serum with increasing amount of aprotinin (Trasylol). The result was 30% and positive, confirming that these IgE antibodies were specific for aprotinin. Skin tests were done 6 weeks later. The intradermal reaction at 10⁻¹ and the prick test with aprotinin were positive.

Due to the increased use of aprotinin in cardiac surgery, an increase in the rate of hypersensitivity reactions to aprotinin can be predicted. Furthermore, some biological glues contain aprotinin which could be a concealed cause of sensitisation. Prospective studies have to evaluate the performance of prick tests before administration of aprotinin to patients known to have had previous aprotinin therapy [2].

Department of Anaesthesia
and Intensive Care,
Hôpital Central,
CHU de Nancy,
54037 Nancy, France
Medical Biochemistry Laboratory,
Faculty of Medicine,
54505 Vandœuvre-lès-Nancy, France

P. DEWACHTER
C. MOUTON

C. MASSON
J.-L. GUÉANT
J.-P. HABERER

References

- [1] PROUD G, CHAMBERLAIN J. Anaphylactic reaction to aprotinin. *Lancet* 1976; ii: 48–9.
- [2] ROYSTON D. High-dose aprotinin therapy: a review of the first five years' experience. *Journal of Cardiothoracic and Vascular Anaesthesia* 1992; 6: 76–100.
- [3] SCHULER TM, FROSC PJ, ARZA D, WAHL R. Allergie vom Soforttyp: anaphylaktische Reaktion auf Aprotinin. *Münch. Med. Wochenschr.* 1987; 129: 816–7.
- [4] YANAGIHARA Y, SHIDA T. Immunological studies on patients who received aprotinin therapy. *Japanese Journal of Allergy* 1985; 34: 899–904.
- [5] WUTHRICH B, SCHMID P, SCHMID ER, TORNIC M, JOHANSSON SGO. IgE-mediated anaphylactic reaction to aprotinin during anaesthesia. *Lancet* 1992; 340: 173.
- [6] GUÉANT JL, MATA E, MONIN B, MONERET-VAUTRIN DA, KAMEL L, NICOLAS JP, LAXENAIRE MC. Evaluation of new reactive solid phase for radioimmunoassay of serum specific IgE against relaxant drugs. *Allergy* 1991; 46: 452–8.

Awaiting the levering laryngoscope

We were very pleased to read the report of McCoy and Mirakhur (*Anaesthesia* 1993; 48: 516–9). Indeed, the levering laryngoscope described by the authors should be very useful in cases of difficult visualisation of the larynx. During the last year, we have used a modified blade, similar to the levering laryngoscope, which has been very helpful in instances of difficult intubation. Our modification consists of a constant, inward 20° angle of the tip, 4 cm from the end of a standard Macintosh blade.

Under similar conditions of neck flexion and extension of the plane of the face, by measuring the angle formed between the real laryngotracheal axis (Fig. 1, straight line) and the visual axis of the larynx (light beam axis of the laryngoscope blade, Fig. 1 dashed line), we find a reduction of 5–12° by using the modified blade, which points to the superiority of a tipped-angled blade. Thus far, we have used the modified blade in seven patients with tracheostomies under general anaesthesia and mechanical ventilation, conditions which enable such measurements to be made.

We believe that the levering laryngoscope will be extremely helpful in instances of difficult intubation and await its arrival on the market.

Department of Anaesthesiology
and Intensive Care Unit,
University of Patras,
School of Medicine,
261 10 Patras,
Greece

E.P. PAPAGEORGIOU
K.E. KOKKINIS

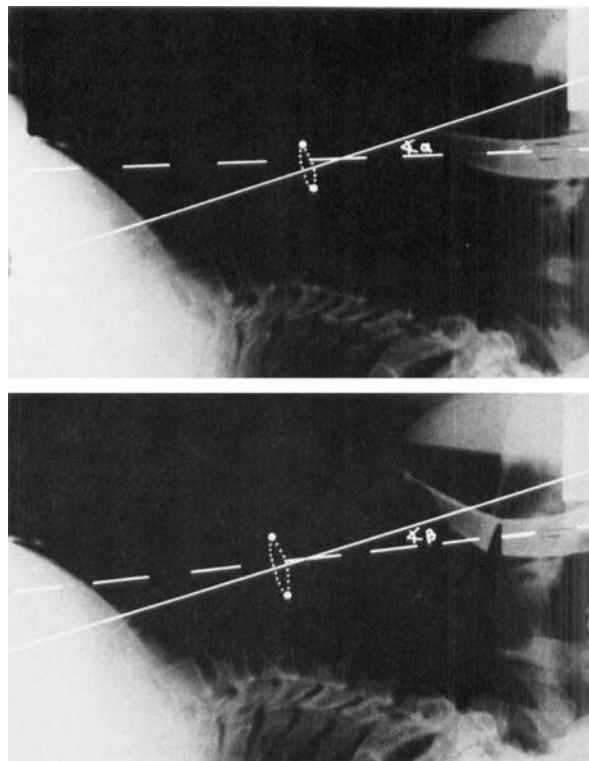


Fig. 1. Reduction of the angle (β) formed by the use of the tipped-angled blade (lower panel) as compared to the angle (α) formed by the standard blade (upper panel).

Does a bloody tap prevent postdural puncture headache?

We were interested to read the article by Khan *et al.* (*Anaesthesia* 1993; 48: 628–9) showing that bloody taps do not provide any prophylactic effect against postlumbar puncture headache. We have recently examined four patients with magnetic resonance imaging following both uncomplicated epidural anaesthesia and following difficult and bloody taps. In all cases bloody tap was associated with blood in the epidural space (Fig. 1) but this was of very small volume when compared to patients receiving epidural blood patches. Furthermore, adherence of blood clot to the thecal sac, which is a constant feature following blood patch, was not seen. A similar volume of epidural blood was also present in two of three patients following uncomplicated epidural.

Although this work is still in progress, we suspect that the volume of epidural haematoma resulting from a bloody tap is probably considerably less than is introduced during epidural blood patching. Furthermore, the development of thecal adherence, as seen in blood patched patients, does

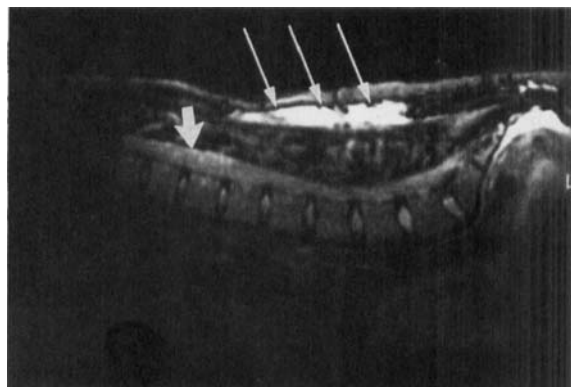


Fig. 1. Parasagittal Short Tau Inversion Recovery (STIR) image 16 h after a bloody tap at L₁/L₂. Note the thin white rim of blood in the epidural space (arrow) and the large haematoma superficial to the spinous processes (long arrows).