Anaesthesia for the bleeding tonsil

Tonsillectomy is a common procedure, with over 50 000 operations performed annually in the UK (Royal College of Surgeons of England, 2005). Just over half of these patients are under 15 years of age. Postoperative complications of a tonsillectomy include dysphagia, nausea and vomiting, pain, infection and bleeding.

Bleeding can be divided into primary bleeding within 24 hours postoperation (0.6% incidence), and secondary bleeding within 28 days postoperatively (3% incidence) (Royal College of Surgeons of England, 2005). Primary bleeding can be torrential and therefore remains a paediatric surgical emergency.

Patients are at a considerable risk of aspiration of gastric contents as the stomach usually contains a sigificant volume of blood, which is highly emetogenic. The risk of aspiration, and therefore serious morbidity and potential mortality, increases substantially on induction of anaesthesia (Lawson, 2006). Thus, the choice of induction technique for this group of patients is of paramount importance.

Awake fibreoptic intubation is not a realistic option in this group of patients for a variety of reasons. It is likely to be technically difficult because of blood obscuring the view. Setting up equipment and topically anaesthetizing the airway can be time consuming and the majority of paediatric patients will not comply with this procedure. Consequently, the debate continues as to whether inhalation or intravenous induction is more suitable.

Inhalation induction

One method of induction of anaesthesia is via inhalational anaesthesia, usually with sevoflurane, oxygen and nitrous oxide via facemask. Placing the patient in the left lateral position during the gaseous induction is thought to reduce the risk of aspiration of gastric contents.

The notable of this method of gaseous induction is that the patient remains spontaneously ventilating and so if there are any difficulties with securing the airway the volatile agents can be switched off and the patient will wake up (Allen et al, 1973). It is also possible to intubate without the use of muscle relaxation and therefore avoid the associated risks of suxamethonium, which is the obvious choice of muscle relaxant in this scenario.

Inhalation induction also has some drawbacks. Most anaesthetists have had less experience in holding facemasks and intubating patients in the left lateral position. It takes much longer to achieve intubating conditions and requires the usually anxious child to be compliant with a close-fitting mask for a period of time. During this additional time, the tonsillar beds will continue to bleed and potentially cause coughing, laryngospasm or aspiration (Ferguson and Semenor, 2005).

There is also a tendency with inhalational anaesthesia to 'over-anaesthetize' which may further compromise the blood pressure in an already hypovolaemic patient. On the other hand, attempting intubation too early during gaseous induction can itself result in laryngospasm and complete airway obstruction in an already likely difficult intubation.

Intravenous induction

The alternative method of induction is to perform a rapid sequence induction using cricoid pressure to attempt to protect against aspiration during induction. This is much quicker than gaseous induction and arguably provides better intubating conditions in the child in which one expects an oedematous, blood-obscured larynx.

Hypotension is commonly associated with the use of intravenous induction agents, and the true extent of the volume deficit is often revealed on induction. Thus cautious dosing of induction agent is of paramount importance. There are also concerns regarding the use of suxamethonium and the risk of bradycardia in the paediatric population.

The main disadvantage of intravenous induction is that it induces apnoea in a patient who is likely to be a difficult intubation. Despite the short duration of action of suxamethonium in most patients, the potential hazard of muscle paralysis could still lead to the 'can't intubate, can't ventilate' scenario which could lead to critical hypoxia until the paralysis has worn off. If rocuronium was used instead of suxamethonium for rapid sequence induction, this could be rapidly reversed using sugammadex if a can't intubate, can't ventilate scenario was encountered. However, sugammadex is not routinely available in British hospitals at present.

Conclusions

Anaesthesia for the bleeding tonsil is complex and requires an experienced anaesthetist to deal with it effectively and quickly. Both methods of induction have their own advantages and disadvantages, which makes the assessment of that particular child (and previous anaesthetic) vital in the decision-making process.

Whichever anaesthetic technique is used, the ear, nose and throat consultant and anaesthetic consultant should be present (Lawson, 2006). The ear, nose and throat surgeon should be scrubbed and ready to perform an emergency tracheostomy, if there is failure to intubate the trachea.

As long as the potential hazards of the induction are recognized and planned for, at present either method is acceptable. **BJHM**

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