

From aaargh to zzzzz: the ABC of paediatric anaesthesia

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Andrew McTavish is one of those special breeds who not only relishes complex anaesthesia, but also does so in paediatric patients. Dealing with this group of patients requires careful planning according to accepted practice, and here he discusses some recent guidelines.

Introduction

ENT surgeons perform a disproportionately high number of operations on children, predominantly due to the relatively high burden of infection in this age group. In addition, children with increasingly complex comorbidities are presenting for assessment and surgery at district general hospitals (DGHs) and there is a trend towards keeping these patients at their local DGH for surgery when reasonably possible. Resultantly, ENT surgeons are much more likely to deal with children as a core part of their routine practice, even if they do not work in a specialist children's centre. This has clear implications for both surgeons and anaesthetists working in all hospitals. In assessing paediatric patients preoperatively, either surgeons or anaesthetists may encounter a dilemma regarding best management; this article reviews the latest guidelines and will attempt to summarise three common areas of anxiety for healthcare teams.

Anxiety

Children may be anxious or uncooperative for a huge variety of reasons and often are listed for procedures under anaesthesia. These patients are often younger and may have behavioural problems such as autism. In assessing these patients, the anaesthetist will often have to make a rapid decision about whether to provide a sedative premedication in order to facilitate both anaesthesia and, ultimately, surgery. If no premedication is administered, these patients may require additional time in the anaesthetic room in order to safely and sensitively induce anaesthesia. Surgeons can pre-empt list management problems when scheduling patients and, if there is a child who is likely to need extra time, reduce the number of patients on the list to avoid on the day cancellations.

If the child requires premedication, communication between the surgical and anaesthetic teams is vital. The commonest oral premedication is midazolam. This exerts its peak effect at 20-30 minutes, however the effect is often wearing off at 45-60 minutes, meaning that there is a very narrow time window for transfer to theatre and induction of anaesthesia. It may be necessary to schedule a natural break in the list if a child requires premedication. If a child who requires premedication is not first on the list, excellent communication between surgeon and anaesthetist will allow appropriate timing of administration on the ward and facilitate minimal delays in theatre.

Breathing disorders

In 2009, a working party suggested that children who are under two years old or weigh less than 15kg should be referred to a tertiary centre for adenotonsillectomy [1]. This has been erroneously interpreted as a minimum age and weight for children having any ENT surgery in a DGH setting regardless of the presence of sleep-disordered breathing. A subsequent working party in 2019 has released a new national strategy with clear recommendations [2]. They recommend that clinical evaluation is all that is required in the majority of children with sleep-disordered breathing who require adenotonsillectomy. Clinical predictors of postoperative complication (see information box) will detect the majority of cases requiring referral to a tertiary centre and, in the absence of other comorbidities, most children aged two and over, even in the presence of sleep-disordered breathing, are suitable for surgery in a DGH. Children who are high risk for other reasons should still be referred to a tertiary unit, for example children who have severe cerebral palsy, achondroplasia,

Clinical Predictors

- Age under two years
- Raised BMI
- History of prematurity
- History of asthma
- Syndromic diagnosis
- Cardiac history
- History of failure to thrive
- Recent upper respiratory tract infection

neuromuscular disorders (moderately or severely affected), significant craniofacial abnormalities, mucopolysaccharidosis or significant other comorbidity such as complex or uncorrected cardiac lesions.

The working party has also assessed the role of screening tools such as pulse oximetry and polysomnography in these children. They have concluded that pulse oximetry is of little value and should not be used as a screening tool. Polysomnography remains the gold standard for assessing sleep-disordered breathing, however it is expensive and inconvenient for parents and children to access. In addition, the predictive yield from polysomnography is low, as only one in approximately 192 patients undergoing polysomnography has no other clinical indicators of postoperative respiratory complication. Clinical assessment remains the best predictor of postoperative respiratory complications and, therefore, the decision to refer to a tertiary centre.

Clear fluid guidelines

Fasting times in children have been the subject of some controversy. The guidelines were originally extrapolated from the adult population despite the fact that they may not be applicable to the paediatric

population. Children listed for surgery were sometimes undergoing prolonged periods of fasting with adverse effects including thirst, irritability, poor compliance and metabolic disturbances such as hypoglycaemia requiring treatment.

In 2018, the Association of Paediatric Anaesthetists of Great Britain and Ireland, L'Association Des Anesthésistes-Réanimateurs Pédiatriques d'Expression Française and the European Society for Paediatric Anaesthesiology released a joint consensus statement on the subject, stating unequivocally that "unless there is a clear contraindication, it is safe and recommended for all children able to take clear fluids, to be allowed and encouraged to have them up to one hour before elective general anaesthesia" [3]. A volume of 3ml/kg was recommended, however in order to minimise delays on busy wards, children were divided into age bands based on predicted weight: one to five years, six to 12 years and over 12 years and should be offered up to 55ml, up to 140ml or up to 250ml clear fluid respectively.

Parents are often anxious to avoid any postponement of their child's surgery and surgeons could potentially mitigate this anxiety in clinic by reassuring parents that their child is allowed to have a drink of clear fluid up to one hour before surgery. It is important, however, that parents understand the definition of 'clear fluids'. Clear fluids are water, non-opaque fruit juice, cordial, ready-diluted drinks and uncarbonated sports drinks. Clear fluids should not be thickened. Parents should be counselled that their child is likely to be offered a drink when they arrive on the ward and that this is in keeping with best practice. Reassurance can be given that in the absence of clear contraindications, it is both safe and recommended.

Summary

Paediatric patients may present anaesthetists and surgeons with management dilemmas. Recent national and supra-national guidelines have sought to harmonise and standardise working practices. Surgeons and anaesthetists play a vital role in managing paediatric patients and their parents and both specialties should be aware of the recent developments, particularly in the areas of fasting and children with sleep-disordered breathing. Excellent communication between surgeon and anaesthetist is imperative to achieving the best outcomes for children having surgery in DGHS.

References

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