

Selected Vignettes from Paediatric Anaesthesia

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What's changed in paediatric anaesthesia recently? Not a lot really! What follows are a few anecdotes derived from the literature and used by me clinically.

Cuffed ETT's

The use of cuffed ETTs in Paediatric Anaesthesia is now common place within Australasia and supported by safety data (1). Monitoring of cuff pressure seems wise but is not universally accepted as a standard of care. SPANZA member's use of ETT cuff monitoring is currently being surveyed by von Ungem-Stemberg et al as an area of controversy within Paediatric Anaesthesia.

Intermittent gauge monitoring of ETT cuff pressure appears common with an aim of keeping pressure < 30cm/H₂O. Cuff pressure would be expected to increase with time as a consequence of temperature and the use of N₂O. Kato et al (2) showed that ETT cuff pressure changes when the head is moved from the neutral position and is usually up (68%). Pressure may rise by more than 20cm/H₂O in some cases (7%) and children less than 8 years appear susceptible. A validated continuous electronic monitoring device used by authors will be demonstrated as an alternative to a gauge.

CVL fixation

Tunnelled internal jugular central venous lines are now our preferred continuous venous access device (CVAD) at Waikato Hospital for children. Malbezin et al (3) paper of over 20 years' experience illustrated 4920 IJV tunnelled lines with a 99.5% success rate. There was a 1.3% complication rate of which 0.6% were venous malposition, 0.5% were failure to cannulate (a learning curve) and 13 life threatening complications. How IJV lines are tunnelled at Waikato will be demonstrated using Cook PICC and Arrow PICC Seldinger Conversion sets. I recommend a review article by Gibson et al titled "Misplaced central venous catheters: applied anatomy and practical management" (4) for all. When selecting the "system", choose the line you want to place first, then select the sheath that will be used in the neck and finally, consider how you will tunnel (Ian Smith RCH).

Airway management for the solo anaesthetist

A dilemma for the solo Anaesthetist following a gaseous induction in a child is, "do I hand the airway over to a non-Anaesthetist and risk loss of the airway while I seek IV access or do I ask another theatre staff member to obtain IV access that may be difficult"?

Another option is to secure the airway with a LMA or ETT and then seek IV access yourself. Intubation may be achieved with deep inhalational anaesthesia using IM suxamethonium as backup. In a RCT by Verghese et al (5) a technique using nasal remifentanyl 4 mcg/Kg demonstrated acceptable intubating conditions in 91.7% at 3 minutes. My experience with this technique will be outlined.

Reducing day of surgery cancellation

Cancellation on the day of surgery impacts on theatre efficiency and is socially disruptive for the child and family. Von Ungem-Stemberg et al (6) in a one year prospective cohort study defined which children were at risk of perioperative respiratory events and the duration of risk. We adapted these findings in a preoperative telephone questionnaire with the purpose of reducing the day of surgery cancellation. This questionnaire, process and results will be presented.

Anaesthetic management for endoscopy

Endoscopy is a frequent intervention requiring Anaesthesia support in children. Usually this is General Anaesthesia where the children's airways are managed with an ETT or LMA. An alternative approach is using sedation and my current regimes are "Remifol" and "Ketafol" (7).

“Remifol” (personal communication Charles Berde to Brian Anderson)

- > 10 years add 50mcg Remifentanyl(1ml) + 19ml Propofol 1%
 - Starting 175mcg/Kg/min (40 Kg = 42mls/hr)
- < 10 years add 100mcg Remifenanyl(2ml) + 18 ml Propofol1%
 - Starting at 150mcg/Kg/min (20Kg = 18mls/Hr)

For “Ketafol” both drugs are context sensitive and the chosen ratio of Propofol:Ketamine depends upon the analgesic requirement and the impact of duration of procedure on wake up times. I use 10:1 Propofol:Ketamine for Endoscopy. Following Propofol 2.5mg/Kg induction, calculate mls/hour of Ketafol on Propofol dose of 15mg/Kg for 15 minutes, then 13mg/Kg for 15-30 minutes, then 11mg/Kg 30-60 minutes and 10mg/Kg thereafter (8). Always titrate to effect!

The power point presentation is available on request from AQUA.

References:

1. Newth et al The Journal of Pediatrics 2004; 144:333-337
2. Kato et al Paediatric Anaesthesia 2014; 24 : 316-321
3. Malbezin et al Paediatric Anaesthesia 2013 :23:974-979
4. Gibson et al BJA 2013; 110(3) 333-46
5. Verghese et al Anesthesia and Analgesia 2008; 107: 1176-1181
6. Von Ungen-Stemberg et al The Lancet 2010; 376: 773-783
7. Coulter et al Paediatric Anaesthesia 2014 Feb accepted for publication
8. McFarlan et al Paediatric Anaesthesia 1999;9:209-216

