Chloral 1. Specialist perioperative allergy clinic services in the UK 2016: Results from the Royal College of Anaesthetists Sixth National Audit Project.

Egner W, Cook T, Harper N, et al.

Clinical & Experimental Allergy 2017; 47:1318–1330.

This presents a survey of specialist service provision for investigation of perioperative drug allergy, via SurveyMonkey, as part of RCoA National Audit Project (NAP) 6.

Methods: 44 centres responded that provide specialist perioperative allergy services, providing retrospective data for 1-year period. Responses were assessed against best practice recommendations of the British Society for Allergy and Clinical Immunology (BSACI), AAGBI and NICE Guidance. This summary focuses on paediatric provision, however both adult and paediatric services are discussed in the article.

Results: All paediatric centres saw <20 patients per year, median 4, (range 1-9). The NAP6 panel designated 20 as the number to maintain expertise. 53 children were investigated for suspected perioperative anaphylaxis, 46 children in 11 paediatric specialist centres and 7 children in combined centres. Paediatric centres had the longest routine waiting times (most waiting >13 weeks).

Few paediatric centres met the BSACI standard of investigating all administered drugs or identifying several or a range of alternatives (perception of rarity of NMBA allergy in children or to limit distressing tests). Only 18% of paediatric centres routinely tested the NAP6 minimum NMBA panel (potential culprit, an NMBA from different class and 2 agents with specific uses, rocuronium and suxamethonium).

Other variations in practice include: anaesthetic involvement in clinics, MDT review in clinic, issuing written and verbal information at clinic visit, availability of blood testing for drug specific IgE, routine testing for latex or chlorhexidine allergy and direct reporting to MHRA by the clinic.

Recommendations: Further anaesthetists with an interest in allergy are needed to encourage learning and enhance anaesthetic involvement in MDT case discussions. Separate paediatric guidelines may be needed in future, as most centres were not adherent to the NAP6 minimum panel.

2. A randomised controlled trial of oral chloral hydrate vs. intranasal dexmedetomidine before computerised tomography in children

Yuen VM, Li BL, Cheuk DK, et al.

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Randomised controlled trial conducted in China. Comparing the use of chloral hydrate and dexmedetomidine for sedation prior to CT scan. Focus of trial on recovery experience assessed by return of normal activity.

Control group (CG) given choral hydrate syrup 50mg/kg and intranasal saline spray. Dexmedetomidine group (DG) given placebo syrup and intranasal dexmedetomidine spray 3mcg/kg. Both groups received sedation drugs 30 minutes prior to CT. Inclusion criteria: ASA 1-2, undergoing sedation for CT. Exclusion criteria: allergy to agents used, history of cardiac arrhythmias, congenital heart disease or severe organ dysfunction.

196 children participated in the study. 67% of children cried after drinking chloral hydrate syrup compared to 46% with placebo syrup (P=0.009). Sedation was adequate in 76% post chloral hydrate and 74% post dexmedetomidine (P= 0.74). (Adequate sedation was at least 'somnolent' on the University of Michigan Sedation Scale). Of 173 children followed-up 4 hours post-discharge, 39% recovered normal function in CG and 42% in DG (P=0.76), as measured by parents. 6 children vomited in CG and none in DG (P =0.03). 16% of DG group experienced bradycardia compared to 3% of CG group (P=0.002). 2% in CG group required supplemental oxygen (P= 0.19).

Conclusion: No difference in proportion of adequate sedation achieved or time taken for return of normal activity between the 2 groups.

3. The efficacy of GlideScope® videolaryngoscopy compared with direct laryngoscopy in children who are difficult to intubate: an analysis from the paediatric difficult intubation registry.

Park R, Peyton JM, Fiadjoe JE, et al.

British Journal of Anaesthesia 2017; 119 (5): 984–992

Repeated intubation attempts are associated with serious complications in both adult and paediatric practice. The PeDI Registry consists of prospectively collected difficult tracheal intubation data and complications. This group compared intubation success rates in children with anticipated or discovered difficult intubation by direct laryngoscopy (DL) or videolaryngoscopy using the Glidescope® (GVL), from 20 international children's hospitals between August 2012 and April 2017 in the PeDI Registry. Inclusion criteria: children < 18 years and difficult intubation based on pre-defined criteria. From a total of 2294 patients, 1295 children met the inclusion criteria.

Success rates were higher in the GVL group vs. the DL group both with regards to initial success (464/877 = 53% vs. 33/828 = 4%, Z-test = 22.2, P < 0.001) and eventual success (720/877 = 82% vs. 174/828 = 21%, Z-test = 25.2, P < 0.001).

There was no difference in complication rates *per attempt* between GVL and DL groups. The DL group had a greater number of associated complications, presumed to be as a result of the increased number of attempts required to achieve success. Whichever device was utilised, each additional attempt at intubation conferred a two-fold increase in complications (odds ratio: 2.0, 95% confidence interval: 1.5–2.5, P < 0.001).

In children <10kg the GVL success rate decreased when compared with GVL group as a whole (eventual success: <10kg= 73% vs. all patients=82%). The GVL success rate in children overall is also lower than in adults.

Where a difficult paediatric intubation is predicted, the Glidescope® videolaryngoscope confers a significantly greater chance of successful intubation with no increased risk of complications. Repeated attempts with any device are associated with complications. A rescue plan beyond the GVL is essential.

4. Ultrasound assessment of gastric contents in children undergoing elective ear, nose and throat surgery: a prospective cohort study.

Desgranges F-P, Gagey Riegel A.-C, Aubergy C et al

Anaesthesia 2017; 72:1351-1356

Ultrasound examination of the gastric antrum is gaining popularity in both adult and paediatric practice to assess the volume of gastric contents and theoretical risk of aspiration.

This was a single-centre prospective observational study to assess whether there was a significant change in gastric contents caused by passive ingestion of blood during paediatric ENT surgery, theoretically increasing the risk of aspiration at extubation.

Patients were aged 6 months to 16 years and fasted (6 hours-food and 2 hours-clear liquids). Exclusion criteria: previous upper GI surgery. All children were intubated.

Children were scanned pre induction of anaesthesia and pre extubation, and calculations were made of the antral cross-sectional area (CSA) and gastric volume, using mathematical models that have been previously validated for paediatric practice.

Data from 66 children were analysed. No solid contents were identified in the antrum of any children. The mean (SD) gastric volume was 0.28 (0.30)ml/kg before and 0.27 (0.30)ml/kg after the operation (p=0.82). There was no significant difference between antral CSA in patients with or without a throat pack. There was no significant correlation between duration of surgery and residual gastric volume at the end of the procedure (r=0.11 [95%CI -0.13 to 0.34], p=036). No episodes of regurgitation or pulmonary aspiration were documented during the study period.

The authors surmised that following elective ENT surgery children are not at risk of a full stomach prior to extubation. Should pulmonary aspiration of blood occur after elective ENT surgery, it is unlikely to be related to regurgitation of blood ingested intra-operatively. These findings would support proponents of deep extubation in paediatric ENT surgery. The study did not include their minimum sample size (73) to detect the difference they looked for.

5. Total intravenous anesthesia vs single pharmacological prophylaxis to prevent postoperative vomiting in children: A systematic review and meta-analysis

Schaefer MS, Kranke P, Weibel S, et al

Pediatric Anesthesia. 2017; 27:1202–1209

A literature review and meta-analysis to see whether TIVA conferred the same anti-emetic benefit as the use of a single anti-emetic agent given during volatile anaesthesia for reducing the incidence of POV in children.

As nausea is subjective and difficult to assess in children they looked at the incidence of vomiting in the first 24hrs after surgery. They identified 4 RCTS with a combined total of 558 patients under the age of 18, all examining children having strabismus surgery.

No difference was found in the incidence of vomiting in the first 24hrs post-operatively between the two groups. 3 of the studies reported an increased incidence of the oculo-cardiac reflex in patients receiving TIVA (in all the studies patients received atropine at induction). No differences were noted between the 2 groups in length of stay in PACU. A subgroup analysis comparing TIVA against ondansetron or droperidol found no difference in POV depending on which anti-emetic was given.

The overall rate of POV in both groups was high at 33% and TIVA and pharmacological prophylaxis were similarly effective. However, there were more adverse events in the TIVA groups with increased risk of bradycardia. Potential drawbacks are the relatively low number of patients included overall and that the papers were limited to just strabismus surgery. With its propensity for POV, many anaesthetists may routinely give more than one anti-emetic prophylactically so this analysis may not compare well to real life practice. Additionally all studies took place in the 1990s, with 3 using halothane.

6. Dynamic ultrasound-guided short-axis needle tip navigation technique vs. landmark technique for difficult saphenous vein access in children: a randomised study

Hanada S, Van Winkle MT, Subramani S, et al.

Anaesthesia 2017; 72:1508–1515

This study compared a novel technique for obtaining vascular access against traditional landmark technique. With ‘dynamic ultrasound-guided short-axis needle tip navigation’, the vessel is located with ultrasound and the cannula advanced with real-time visualisation of the needle tip moving up the vein to increase the chance of success.

Time taken to successfully cannulate the long saphenous veins in children greater than or equal to 3kg and aged less than 4 years old, where the vein was assessed as being non-visible, was compared. Patients were randomised to either traditional landmark technique or the ultrasound technique. 3

anaesthetists experienced in the ultrasound technique were involved and 102 patients randomised between the 2 groups.

End points were successful cannulation at first attempt within 10 minutes from applying the tourniquet to flushing the cannula or success after 2 or 3 attempts within 10 minutes or failure following 3 attempts or greater than 10 minutes.

Successful cannulation at first attempt in under 10 minutes was 90% in the ultrasound group versus 51% in the landmark group ($p < 0.001$). The ultrasound group had greater overall success rate within 10 minutes (92% vs 63%, $p = 0.001$) and fewer overall attempts ($p = 0.03$). Saphenous vein diameter (</> 1mm) was another significant covariate of first attempt success with either technique ($p=0.006$).

This is a novel ultrasound technique for small children with difficult venous access, differing from that used most commonly, guiding the needle into the vein before advancing blindly. Veins in small children are easily compressible and this technique may not have similar success rates with those not used to using ultrasound in small infants. It should be noted use of ultrasound also allowed the operator to select the leg with the more 'favourable' vein.

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