[NM-162] Can Acetaminophen PO Given 1-2 Hours Before Bilateral Myringotomy Tube (BMT) Placement Reduce Emergence Agitation (EA) in Children After General Sevoflurane Anesthesia?

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BACKGROUND
Emergence agitation (EA) occurs in up to 67% of patients undergoing sevoflurane anesthesia for bilateral myringotomy tube (BMT) placement. Patients with EA may injure themselves and it may become difficult to monitor vital signs, require the presence of extra staff, and prolong recovery time. The cause of EA is not clearly understood however is likely exacerbated by pain. About 70% of patients undergoing BMT have pain requiring treatment yet peripheral intravenous access (PIV) is uncommon. Agents such as intranasal (IN) dexmedetomidine have been studied, however led to side-effects such as prolonged recovery. In previous studies, patients have received acetaminophen 30 minutes orally (PO) prior to induction or rectally (PR) immediately after induction, so the therapeutic effect of acetaminophen could not be appreciated during emergence. We hypothesize that when acetaminophen PO is given 60-120 minutes prior to emergence, therapeutic concentrations can be reached and decrease EA.
METHODS
After IRB approval, a single-blind randomized controlled trial was initiated. Children (ASA status I or II) between the ages of 6 months to 6 years old undergoing BMT were randomized. The control group received acetaminophen PR 20-40mg/kg after induction, group 1 received acetaminophen PO 10mg/kg 60-120 minutes prior to emergence, and group 2 received acetaminophen PO 20mg/kg 60-120 minutes prior to emergence.
All groups receive a standard anesthetic technique (mask induction with N2O/O2 and sevoflurane, no PIV, and IN fentanyl 1mcg/kg). Blinded observers rate the patients on the PAED (Pediatric Anesthesia Emergence Delirium) scale and CHEOPS (Children’s Hospital of Eastern Ontario Pain Scale) at seven time points. An interim post-hoc power analysis was performed on 65 patients and revealed a sample size of 210 is needed. The study is on-going.
RESULTS
Our primary outcome is EA as measured by PAED and secondary outcome is pain as measured by CHEOPS. Currently, we have not found statistical difference across the 3 groups when looking at maximum PAED or CHEOPS score. Unexpectedly, it appears that the mean PAED score of the control group is actually less than both oral acetaminophen groups, meaning there is possibly more EA seen in children who have received PO acetaminophen. There is no difference in mean CHEOPS score between all groups.
CONCLUSIONS
The goal of this study is to find a practical, non-invasive way to reduce emergence agitation in children without significant side effects. Acetaminophen is a trusted, affordable, and safe medication. If used early to maximize its analgesic effect, perhaps it can decrease post-operative pain for children undergoing BMT placement and therefore may decrease EA. Our interim data analysis reveals that there may be no differences in maximum PAED or CHEOPS scores between the three groups or may even suggest worse mean PAED scores in the oral acetaminophen groups. However, we have insufficient power currently to make definitive conclusions.

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