POSTADENOIDECTION ANALGESIC EFFECT OF INTRAOPERATIVE INTRAVENOUS DEXAMETHASONE IN YOUNG CHILDREN

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Methods

- 4 years and younger who undergo adenotonsillectomy without tonsillectomy
- Randomized into 2 groups: placebo or dexamethasone
- Placebo: intravenous saline (0.125 mg/kg) or dexamethasone (5 mg/kg given at surgical start time
- All patients receive the same anesthetic (1-2 propofol 1 mg/kg, fentanyl 1 mg/kg, and 0.1% sevoflurane)
- A gas mixture of nitrous oxide (3 L/min), oxygen (1 L/min) and 3% is administered for maintenance.

Background

- Pain after adenoidectomy without tonsillectomy is significant, requiring analgesics (1). The most common options for oral analgesics include NSAIDs, acetaminophen with codeine, and plain sodium bicarbonate.

- NSAIDs are frequently used, particularly due to higher risk of postoperative bleeding (2, 3, 4).
- It has been suggested that dexamethasone may be equally effective as acetaminophen with codeine for postoperative pain (3), however the latter is still the most commonly used oral analgesic.
- Concerns have been raised about safety of dexamethasone in pediatric patient, especially young children from respiratory depression due to dexamethasone (7).

- A significant number of adenotonsillectomy patients have a history of atopy and respiratory symptoms and thus are at increased risk for respiratory side effects (8).
- Dexamethasone has been used in children to reduce early and postoperative airway reactivity for adenotonsillectomy (9). Studies have shown dexamethasone effect as early as 6 to 12 hours in children and older children.
- Given the fact that children are likely to use periparative analgesia to discharge the patients home and young children are at higher risk for course idiopathic respiratory depression, it would benefit to prove dexamethasone as an effective analgesic which may reduce or omit the requirement of codeine after adenotonsillectomy in young toddlers and infants.

Objective

- To evaluate the analgesic effect of dexamethasone which reflects in postoperative analgesic requirements during the PACU hours after adenoidectomy in young children.
- To evaluate the analgesic effect of dexamethasone after adenoidectomy in young toddlers and infants.
- To evaluate the analgesic effect of acetaminophen with codeine for postoperative pain (6), however the latter is still the most commonly used oral analgesic.

Data Collection & Analysis

- Recovery unit: pain symptoms, pain scales, analgesic requirements, pain relief, nausea, vomiting, and ear tubes.
- Patients who are unable to be evaluated for pain level after discharge will be assigned to a group of missing data.

- All data will be collected, stored and analyzed in a HIPAA-compliant manner to provide results or charts and graphs.

- The primary outcome of the study is to find the effectiveness of the use of analgesics in population of 174 subjects from two groups. The percentage in the therapeutic group will be compared using chi-square analysis. The secondary endpoints of the study include: per-protocol score, 24-hour postoperative evaluation, PACU and 24-hour pain evaluation and monitoring. Clinical and demographic variables will be analyzed using univariate or multivariate analysis. Some descriptive statistics will be used to explain demographic and clinical characteristics. All data were analyzed using a type of emergency per-entry test or nonparametric tests as appropriate.

- Given the short interval of the study and the number of the raw data generated percentage of statistical analysis that may have all statistical data with 95% confidence interval is the potential for being significant. To accommodate for the missing data we increase our sample size to 174 subjects in both 87 groups each.

- Exclusions: Patients who have undergone concurrent procedures (i.e., tonsillectomy, otoplasty, and adenotonsillectomy) and infants who are unable to be evaluated for pain level after discharge will be assigned to a group of missing data.

Risks & Benefits

- Beneficial dexamethasone is an inexpensive, available, FDA-approved drug which has multiple positive effects for tonsillectomy/adenotonsillectomy patients (10, 11). The potential for use to decrease postoperative pain which may reduce the need for supplemental pain medication, especially codeine, thus may reduce the morbidity and mortality from their side effects.

- Risks although it has been seen that dexamethasone usage may increase the risk of bleeding after tonsillectomy and adenotonsillectomy (12). These concerns have been largely disputed by showing that additional bleeding have been reported after adenotonsillectomy (13, 14). The cause of postoperative bleeding is due to local effect and systemic drug effects. Anesthesia and the risk of operative site bleeding after tonsillectomy: a quantitative systematic review. Anesthesia & Analgesia 2008;107(2):217-22.

- Additional benefits may include decreased need for additional pain medication and reduced complications, but due to dexamethasone administration risk it is important to monitor patients closely.

- We have given data and benefit comparison, and we continue to test the potential benefits of dexamethasone usage in children and infants. Safety patient will not be harmed through the study, and we will closely monitor each patient's progress with this method.

References


12. Ngoc Nguyen-Famulare, MD, Muriel Cajuste, DO, John P. Bent III, MD
