Effect of Dexamethasone or Clonidine When Given as an Adjunct to Ropivacaine for Caudal Analgesia on Duration of Analgesia Compared to Placebo in Children

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INTRODUCTION

A variety of adjuncts have been added to local anesthetics to prolong duration of a single injection caudal block. Clonidine is commonly used. However, it may lead to sedation and is expensive. In adults, dexamethasone has been used as an adjunct to prolong the action of epidural blocks. (1)

We hypothesized that dexamethasone may prolong the action of ropivacaine at a lower cost. In this prospective, randomized, double blinded, placebo controlled study, in children we evaluated the effect of adding preservative free dexamethasone, 200 μg/kg to ropivacaine 0.2%, 1 ml/kg, compared to placebo on duration of postoperative caudal analgesia and on the number of children requiring pain medication at PACU and during the first 24 hr postoperative study period.

METHODS

Institutional and parental written consent were obtained. Forty Children, 6 month-6 yr. old, ASA 1 or 2, scheduled for elective outpatient urologic procedures were enrolled. Children with back problems, skin infections, mental retardation, delayed development or bleeding disorders were excluded.

Children were randomized into 3 groups, using a computer generated randomization sheet. Children in Group 1 received placebo, Group 2 received clonidine, and Group 3 received dexamethasone. Study medication was prepared by a research pharmacist.

ANESTHESIA

Premedication: Midazolam p.o. was administered to older children. Anesthesia consisted of sevoflurane in oxygen. An IV was placed and the airway was maintained using a laryngeal mask. The caudal block was placed under an aseptic technique, 22 gauge short bevel needle, 1 ml/kg 2% ropivacaine mixed with 1 ml of study medication, after obtaining negative repeated aspiration for blood and CSF.

If a caudal block was difficult to place, or a child developed a 30% increase in heart rate or blood pressure on surgical incision, fentanyl 1 μg/kg IV was administered, child was dropped from the study. If a child did not respond to surgical stimulus, sevoflurane concentration was decreased to an end tidal of one MAC.

At PACU, morphine sulphate, 0.05-0.1 mg/kg IV was administered if a child had a pain score >3 using the Children Babies and Infant Pain Scale. After hospital discharge, children received acetaminophen p.o. for pain. An independent observer called parents at the end of the 24 hr study period and inquired about time for first pain medication.

Power calculation was based on a previous adult study (1). A sample of 33 per group was required at 5% significance level and 80% power.

STATISTICAL ANALYSIS

Continuous variables were summarized by mean (± SD) and compared among the groups using one way ANOVA. Discrete variables were summarized by frequency (%) and compared among the groups using Fisher Exact test and logistic regression. Caudal duration was analyzed using Kaplan-Meier Survival analysis.

RESULTS

There was no difference in demographics among the groups using one way ANOVA. The median duration of caudal block for Group 1 was 4.9 hrs; for Group 2 was 9.2 hrs and for Group 3 was 10.7 hrs (p=0.356). The number of children who required pain medication at PACU and during the first 24 hr study period did not differ among the groups.

CONCLUSION

This study suggests that adding dexamethasone to ropivacaine may prolong caudal duration.

REFERENCE