[GA2-65] Dexmedetomidine for the prevention of emergence delirium in children undergoing adenotonsillectomy

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Patients undergoing adenotonsillectomy are noted to have a higer incidence of emergence delirium (ED) when compared with non-airway surgery. ED is traditionally treated with medications such as propofol, fentanyl, and morphine, which can depress respiratory drive. Since these patients often suffer from obstructive sleep apnea, it is prudent to identify alternative means for managing ED. Dexmedetomidine is a centrally-acting alpha 1 agonist that causes sedation without respiratory depression. Based on the current literature, we hypothesized that patients who receive a single bolus dose of dexmedetomidine intraoperatively would have lower incidence of emergence delirium than those who do not.

We conducted a retrospective review of 385 patients, aged 12 months to 18 years with ASA Physical Status 1 and 2, who underwent adenotonsillectomy at Yale-New Haven Children's Hospital between August 2011 and March 2012. Patients were assigned to the control group if they did not receive dexmedetomidine and to the intervention group if they received a single bolus of dexmedetomidine (at any dosage). Our primary outcome was incidence of ED, defined by necessity of a rescue sedative within 10 minutes of arrival to PACU or impression of the PACU nurse. Secondary outcomes included time to first analgesic dose, pain (FLACC) scores, incidence of PONV, and length of PACU stay. All the statistical analyses were performed using SAS software, v9.3 (Cary, NC). A p-value of less than 0.05 was considered to indicate statistical significance.

Between the control and intervention groups, the only difference was in the primary agent for maintenance of general anesthesia (Sevoflurane 86.29%, Desflurane 12.9%, Isoflurane 0.81% in the control group; Sevoflurane 70%, Desflurane 29.09%, Isoflurane 0.91% in the intervention group). This was corrected for in our analysis. For our primary outcome, the incidence of emergence delirium in the control group was 45.56% and 21.82% in the dexmedetomidine group ($p<0.0001$). With regard to secondary outcomes, patients in the dexmedetomidine group had a longer time to first analgesic dose (median 32 vs. 11 minutes, $p<0.001$) and lower pain scores on arrival ($p<0.001$) and at 5 minutes ($p<0.0001$). When adjusted for primary agent used for maintenance, patients receiving dexmedetomidine still had longer time to first analgesia and lower pain scores at 5 minutes ($p=0014$ and $p=0.0021$, respectively). There was no difference in PONV between the two groups. Length of stay was longer in the dexmedetomidine group than in the control group (median 156 vs. 142 minutes, $p<0.0001$).

Based on this restrospective review, we conclude that administration of a single bolus dose of dexmedetomidine is associated with reduced incidence of emergence delirium, lower FLACC scores during the first 5 minutes of the PACU stay, and longer length of PACU stay. For future evaluation, we propose a randomized, controlled trial utilizing different scales to attempt to distinguish delirium from pain in the PACU.
