

[GA1-45] Comparison of two doses of dexmedetomidine and ketamine for sedation during muscle biopsy in patients with Duchenne Muscular dystrophy

Kako H, Corridore M, Tobias J

Nationwide Children's Hospital , Columbus , Ohio, USA

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**Background:** Duchenne Muscular dystrophy (DMD) presents many potential pitfalls for anesthetic care. However, invasive and non-invasive procedures and corresponding sedation or general anesthesia are frequent and necessary for affected children. There remains a need for the identification of the optimal agents for procedural sedation in patients with co-morbid diseases such as DMD. The current study prospectively evaluated the combination of varying doses of dexmedetomidine (DEX) and ketamine for sedation during muscle biopsy in patients with DMD.

**Methods:** These patients were part of a larger DMD study that required repeated muscle biopsies. All procedures were performed in the operating room using standard ASA monitors including end-tidal CO<sub>2</sub> monitoring (ETCO<sub>2</sub>). DEX 0.5 or 1.0 µg/kg was administered as a loading dose followed by a continuous infusion of either 0.5 or 1.0 µg/kg/h. Ketamine (1 mg/kg) was administered along with the DEX loading. Additional doses of ketamine (0.5 mg/kg) were administered as needed. Sedation scores, respiratory parameters and hemodynamic data were recorded. Additional data included operative and recovery times.

**Results:** The study consisted of 53 biopsies in 19 boys. There were 24 in the DEX 1.0 µg/kg group and 29 in the DEX 0.5 µg/kg group. Mean age and weight were  $9.7 \pm 1.4$  years and  $33.3 \pm 7.7$  kg in the DEX 1.0 µg/kg group and  $8.8 \pm 1.8$  years and  $30.2 \pm 10.8$  kg in DEX 0.5 µg/kg group (p=NS). No clinically significant hemodynamic effects were noted. In particular, there was no hypotension ( $\geq 20\%$  decrease in BP from baseline) or BP change that required therapy. There was a decrease in heart rate (HR) after the loading dose of DEX in both groups. The HR was significantly lower in DEX 1.0 µg/kg group compared to DEX 0.5 µg/kg group ( $85 \pm 20$  vs.  $100 \pm 13$  bpm; p=0.001). Although there was no significant difference between both groups in regard to the time to reach an Aldrete score of 10 ( $23 \pm 35$  vs.  $19 \pm 31$  minutes, P=0.1), total recovery time to discharge was significantly shorter in the DEX 0.5 µg/kg group than the DEX 1.0 µg/kg group ( $146 \pm 65$  vs.  $174 \pm 58$  minutes; P=0.03). The total ketamine dose was significantly greater in the DEX 0.5 µg/kg group ( $3.7 \pm 1.0$  vs.  $2.0 \pm 0.5$  mg/kg; P<0.01). There were no episodes of apnea or hypoventilation manifested as hypercarbia (ETCO<sub>2</sub>  $\geq 45$  mmHg). Upper airway obstruction requiring a jaw thrust was observed in one patient in the DEX 1.0 µg/kg group.

**Conclusion:** The combination of DEX and ketamine is a safe and effective regimen for procedural sedation for moderately painful procedures in patients with DMD. We noted minimal effects on respiratory and hemodynamic function in this high-risk patient population. DEX 0.5 µg/kg as a loading dose with ketamine followed by a continuous DEX infusion of 0.5 µg/kg/h achieved an adequate sedation level with shorter total recovery time compared to the higher dosing regimen of DEX (1.0 µg/kg loading dose followed by an infusion at 1.0 µg/kg/h).

**Disclosure**

No author has a conflict of interest with regard to the study.

**References**

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