**Introduction**

We describe the use of IM dexmedetomidine & Midazolam for preoperative sedation in 4 adolescents with hospital-related anxiety and developmental delay.

**Case Management**

**Previous Anesthetics:** All four patients had significant anxiety, agitation, and lack of cooperation with previous anesthetics. All refused oral premedication. Three patients required restraint from multiple providers during induction. One patient had a poor post-operative reaction with IM ketamine and required restraint after emergence.

**Pre-operatively:** Three of the four patients were visibly upset and agitated. One of these patients would not enter the preoperative exam room and required sedation in the waiting room. One patient was very calm preoperatively but had history of becoming very upset with IV access or mask inductions. The patient’s histories are summarized in table 1.

**Sedation:** All patients were assessed throughout using the Ramsay sedation scale (Table 2) (1,2). Prior to injection, all patients received topical local anesthetic cream. Each patient received an IM injection of dexmedetomidine 2 mcg/kg (max 200 mcg) and midazolam 0.1 mg/kg (max 10 mg)) in the deltoid muscle using a 21g SafetyGlide Needle (BD Franklin Lakes, NJ), causing minimal distress. All of the patients were sedated to within 15 minutes (table 3). During stimulation from moving or an IV catheter, the patients moved briefly but quickly returned to a sedated state after termination of the stimulation. Oxygen saturation was 96% or greater in three of the patients. One patient weighing 120 kg desaturated to 88% with loud snoring. This was a baseline sleeping breathing pattern per family. His oxygen saturation increased to 96% on RA with an oral airway. Oxygen saturation is summarized in table 4.

**Post-operatively:** Initially, all patients were calm and sedated on arrival to the PACU. One patient became agitated 30 minutes after arrival to PACU requiring a dose of clonidine 25 mcg IV. Another patient became agitated in PACU but calmed when given PO liquid. All patients had regained baseline level of functioning by that night, with no increased agitation, confusion, or behavioral changes per parents’ report.

**Discussion**

Intramuscular dexmedetomidine alone was previously described for sedation for pediatric MRI and CT. In doses of 1-4 mcg/kg, Ramsey 4 was achieved in 95% of patients 3-13 minutes after administration (3). In adults, peak concentration of dexmedetomidine was achieved 12 minutes (avg) after IM injection (4). Wide variability occurred with the range of peak concentration varying from 2-60 minutes. Mason, et. al., saw non-dose-dependent hypotension in 14% of patients (3). Hypotension did not occur in our patients, but hypoxia transiently occurred in one patient.

We observed a similar onset of sedation with 2 mcg/kg of IM dexmedetomidine combined with midazolam. The use of intramuscular dexmedetomidine combined with midazolam provided an effective and safe alternative for preoperative sedation in four developmentally delayed patients with extreme preoperative anxiety.

**References**

1. BMJ 1974;2:656-659  
4. Anesthesiology 1993; 78:813-820