We describe the use of IM dexmedetomidine for preoperative sedation in a child with severe hospital-related anxiety and developmental delay.

Case: A 13 year old, 47 kg teenager with DiGeorge syndrome, autism, and speech apraxia for dental restoration.

Previously, this patient required several healthcare workers to restrain him for induction and emergence. Historically he refused oral midazolam and had a poor postoperative reaction to IM ketamine. Six months prior, he received 4 mcg/kg of PO clonidine preoperatively. That premedication was suboptimal and the patient required restraint by three members of the OR team during induction. Postoperatively, however, he was significantly calmer than after previous anesthetics.

Due to partial success of an alpha-blocker in the past, we used dexmedetomidine, which has a greater sedative effect (2). An IM route was chosen due to previous intolerance of oral medications, and the parents report that the patient tolerates IM vaccines well.

On the day of surgery, the patient took PO diazepam at home, prescribed by the attending anesthesiologist. On arrival to the hospital he was significantly anxious and agitated, ambulating and flailing his arms. Premedication was administered in the waiting area.

We assessed the patient using the Ramsay Sedation Scale (4,5). Before injection, the patient was a Ramsay 1 (anxious, agitated, restless). At 1150, dexmedetomidine 2 mcg/kg and midazolam 0.1 mg/kg (2 cc total volume) were given IM in the left deltoid with a 21 gauge SafetyGlide Needle (BD Franklin Lakes, NJ) causing minimal distress. At 1155 he sat quietly (Ramsay 3 - drowsy, responsive to verbal command). At 1200 he was carried to a preoperative examination room and seated. This stimulation caused agitation (Ramsay 1). At 1215, he was again a Ramsay 5. He maintained a SaO2=>96% on room air throughout. At 1300 he was wheeled to the OR, waking spontaneously with this stimulation, but still a Ramsay 3. At 1305 mask induction was performed with minimal restraint required. The intraoperative course was uneventful.

Initially, he was calm and sedated in the PACU, but required 25 mcg clonidine IV ~30 minutes later for agitation (although sleepy - Ramsay 2). Discharge was 1 hr 45 min after arrival. He resumed his baseline level of functioning that night, with no increased confusion, agitation, or behavioral changes per parent report.

Discussion: IM dexmedetomidine was previously described for sedation for pediatric MRI and CT (3). In doses of 1-4 mcg/kg, Ramsey 4 was achieved in 95% of patients (3) 13 minutes after administration. Similarly, in adults, the peak concentration of dexmedetomidine was achieved 12 minutes (avg) after IM injection (2). Wide variability occurred with the range of peak concentration varying from 2-60 minutes. We observed a similar onset of sedation with 2 mcg/kg of IM dexmedetomidine. Intramuscular dexmedetomidine combined with midazolam provided an effective and safe alternative for preoperative sedation in a developmentally delayed patient with extreme preoperative anxiety.

References:
4) BMJ. 1974;2:656659