Dexmedetomidine for deep brain stimulator placement in two children with generalized dystonia

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Introduction: Dexmedetomidine (DEX) is a selective α_2-adrenoceptor agonist with sedative and anesthetic-sparing properties.[1.] We report the use of DEX in two pediatric patients during bilateral deep brain stimulator (DBS) placement for the treatment of generalized dystonia.

Case report: Two children, ages 8 and 12 both with primary generalized dystonia were scheduled for DBS placement due to unsuccessful medical therapy. Premedication with oral midazolam, inhalation induction, and intubation took place prior to head pining for frame placement and brain MRI. A propofol infusion was used for anesthetic maintenance. Once back in the operating room, extubation took place. The patients were sedated with propofol and positioned to perform the craniotomy. When the dura was open, propofol sedation was turned off. Once awake, a loading dose of DEX 1 g/kg over 30 minutes and then a continuous infusion of 0.7 g/kg/hr were administered. The patients did not move or complain of pain. They were hemodynamically stable, with a respiratory rate between 14 and 20 on O_2, 4 L by nasal cannula and an oxygen saturation of 100%. DEX infusion provided successful sedation and analgesia, without interfering with the patient's neurologic assessment. The same anesthetic technique was used later when the patients underwent DBS placement on the contralateral side without complications. After surgery, they were able to stand, showing less spasticity in their upper extremities, and improvement in their speech.

Discussion: DEX is an α_2-receptor agonist with specificity for the α_2/α_1 receptor (1620/1). DEX produces dose-dependent sedation compared to placebo without respiratory depression.[1.]
Several authors, have described the successful clinical application of DEX in pediatric patients and during asleep awake asleep anesthesia.[2,3] In our cases, we used DEX for sedation during DBS placement and no respiratory depression or cardiovascular complications occurred.

Conclusion: Immediate responsiveness during neurological exam makes DEX a safe alternative to other hypnotic agents, especially in pediatric patients.
Is important to recall that side effects are more frequent, if rapid administration of the loading dose occurs or if a higher dose than recommended by the manufacturer is administered for maintenance.[1.]

References:

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