

Optimal utilization of sedative and analgesic potential of dexmedetomidine in a child with severe kyphoscoliosis for vitreoretinal surgery

Dear Editor,

Dexmedetomidine is a highly selective α -2 adrenergic agonist used for sedation and analgesia. It has been extensively studied for sedation in pediatric intensive care and radiology suite.^[1] Here, we describe a child with severe kyphoscoliosis for ophthalmic surgery managed under dexmedetomidine and peribulbar block.

A 10-year-old 20-kg boy was scheduled for vitreoretinal surgery. He was a known case of congenital kyphoscoliosis involving cervical and thoracic spine. His breath-holding time was 8 s and effort tolerance was <4 metabolic equivalents. The chest radiograph revealed right dorsal scoliosis from D-2 to D-12

vertebrae with Cobb's angle of 105° [Figure 1]. The pulmonary function test revealed forced vital capacity (FVC) 30.04%, forced expiratory volume in 1 s (FEV1) 29.04%, and FEV1/FVC ratio of 100.8% suggestive of restrictive lung disease. There was mild pulmonary hypertension in echocardiography.

In view of severe restrictive lung disease, we proceeded with a peribulbar block under dexmedetomidine sedation. The procedure was explained to the child and consent was obtained from his father. They were reassured that there won't be pain or discomfort. In the pre-anesthesia room, the child was premedicated with 40 μ g of dexmedetomidine intranasally. Eutectic mixture of local anesthetics (EMLA) was applied over a prominent vein in the dorsum of hand and over upper and lower eyelids [Figure 1]. After an hour, the child accompanied by his father was taken inside the operation room. Routine monitors (ECG, SPO₂, and noninvasive blood pressure) were attached. Supplemental oxygen was provided through nasal prongs. An intravenous cannula was secured and dexmedetomidine infusion was started at 1 μ g/kg/hr. After achieving Richmond Agitation and Sedation Scale (RASS) of 3, peribulbar block was performed with a



Figure 1: (a) Eutectic mixture of local anesthetics for peribulbar block and intravenous cannulation. (b) Severe kyphoscoliosis with Cobb's angle of 105°

27-gauge needle. A total of 5 ml (2.5 ml of 2% lignocaine and 2.5 ml of 0.5% bupivacaine) was injected at inferotemporal region. The child did not show any movement in response to the injection. After 10 min, dexmedetomidine infusion was reduced to 0.5 µg/kg/hr. The total duration of surgery was 45 min and the child was awake at the end of surgery.

Scoliosis with Cobb's angle more than 100° is associated with severe restrictive lung disease, alveolar hypoventilation, ventilation-perfusion (VQ) mismatch, pulmonary hypertension, and increased perioperative morbidity.^[2] General anesthesia in these patients further worsens the pulmonary function leading to postoperative mechanical ventilation and prolonged ICU stay. Regional anesthetic techniques are associated with less impairment of postoperative cardiorespiratory function.^[3] But in children, regional anesthesia procedures are done under deep sedation or general anesthesia.^[4] Nasal dexmedetomidine has high bioavailability thereby provides reliable and effective sedation. The sedation mimics a natural sleep but still easily arousable and cooperates during the procedure.^[5] Unlike midazolam it provides analgesia, prevents vomiting, shivering, and emergence delirium. Respiratory depression or apnea is very rare. The nasal premedication reduced the need for loading dose of IV dexmedetomidine thereby provided stable hemodynamic conditions. The analgesic property of dexmedetomidine along with EMLA cream facilitated IV cannulation and peribulbar block without any movement. To summarize, dexmedetomidine can be safely used for sedation during monitored anesthesia care in kyphoscoliosis children. It provided smooth sedation and stable cardiorespiratory conditions.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given his consent for images and other clinical information to be reported in the journal. The guardian understands that name and initials will not be published and due efforts will

be made to conceal patient's identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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