

A child with difficult airway for magnetic resonance imaging: Is dexmedetomidine useful?

Sir,

Magnetic resonance imaging (MRI) poses challenges to the anaesthesiologists in providing adequate sedation without compromising the patient's airway or haemodynamics and ensuring rapid recovery. The additional challenges posed by remote locations make the highest level of vigilance essential during MRI study. Dexmedetomidine has been used as a sole agent or in combination with other drugs for sedation in radiology set up.^[1,2]

Seven-month-old male child, weighing 7 kg, with history of swelling in the floor of mouth was referred to our hospital for MRI scanning. On detailed history, the swelling was present since birth and was increasing in size. There was no feeding difficulty but sleep was disturbed. On examination, a 4 cm × 4 cm swelling completely pushing tongue to one side was seen [Figure 1a]. Rest of the clinical examination was normal. Need for Intensive Care Unit stay was explained to relatives. Equipment for difficult airway was kept ready. Plan was to sedate the child in the preparation

room. All monitors (electrocardiogram [ECG], pulse oximetry, end-tidal CO₂ [ETCO₂]) were attached. In the MRI room, MRI-compatible anaesthesia workstation and multiparameter monitor were kept ready. Intravenous (i.v.) cannula was secured and glycopyrrolate 0.05 mg administered. Dexmedetomidine 7 µg was administered over 10 min as infusion. Sedation was assessed using Ramsay sedation score. Ketamine 10 mg i.v. was given as supplemental sedation after completion of dexmedetomidine infusion to achieve Ramsay sedation score of 6. Then patient was transferred to MRI table and all monitors (ECG, pulse oximetry, ETCO₂) were attached. Stable capnogram was established before proceeding to scan. Oxygen supplementation was given with nasal cannula (2 L/min). Continuous monitoring of vital parameters was done. Procedure lasted for 45 min. No episode of apnoea, desaturation and bradycardia was noted. The child was immobile throughout the MRI scanning. After the procedure, the patient was transferred to recovery room and monitored till recovery. MRI imaging confirmed the extent of swelling, and the tumour was compressing trachea [Figure 1b].

Dexmedetomidine is useful for paediatric sedation in many clinical situations. It is associated with rapid onset and offset and a natural, sleep-like state with minimal effect on respiration. During MRI,

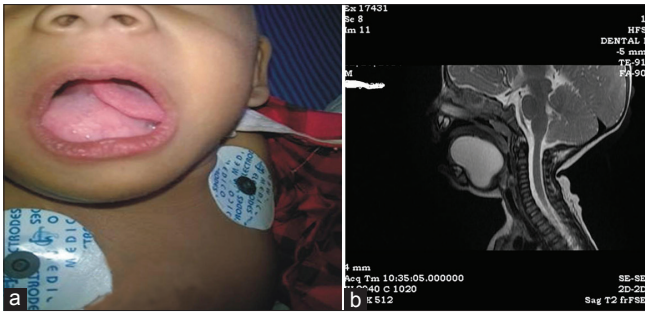


Figure 1: (a) Large tumour in oral cavity pushing tongue; (b) magnetic resonance imaging scan showing tumour compressing trachea

the patient needs to be still for good-quality image. Paediatric patients need sedation and sometimes general anaesthesia for MRI. Many drugs such as chloral hydrate, phenobarbital, ketamine, midazolam and propofol have been used in MRI setting.^[1] Dexmedetomidine alone has been used for sedation in MRI suite with more than 90% success.^[3] These studies noted no apnoea or respiratory depression with high dose of dexmedetomidine. As dexmedetomidine single dose gives adequate sedation for 45–60 min, MRI can be done without need for supplemental sedation. In a study comparing dexmedetomidine plus single bolus dose of midazolam and propofol, dexmedetomidine provided satisfactory condition for MRI and respiratory incidences were similar to the propofol group.^[2] In another study of dexmedetomidine versus midazolam,^[4] the quality of MRI was better with dexmedetomidine and need for rescue medication was less. Comparison of intramuscular (i.m.) ketamine, i.m. dexmedetomidine, and dexmedetomidine–ketamine combination showed that the combination was superior with regard to onset, haemodynamic and respiratory stability.^[5] Quality of MRI and radiologist satisfaction regarding image quality was better in dexmedetomidine–ketamine combination group. The combination of dexmedetomidine and ketamine is useful as the risk of apnoea is minimal with this combination. In a case series of trisomy 21 patients for MRI, dexmedetomidine–ketamine combination provided effective sedation without haemodynamic and respiratory compromise.^[6]

We conclude that dexmedetomidine and ketamine

combination is an option to manage children with difficult airway for sedation in MRI suite.

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