



A CASE REPORT OF DEXMEDETOMIDINE AS A SEDATIVE FOR REVISION TRACHEOSTOMY IN COMPROMISED AIRWAY.

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ABSTRACT

A tracheostomy is usually performed in patients with severely compromised airways. This is done under local anesthesia. Dexmedetomidine can provide sedation and might be a better choice because it causes minimal respiratory depression along with procedural sedation. In our case we used Dexmedetomidine for conscious sedation in a patient with a critical airway who underwent awake tracheostomy. Dexmedetomidine is a selective alpha 2 agonist having sympatholytic, anxiolytic, analgesic and sedative properties. Unlike other commonly used sedative agents, dexmedetomidine provided adequate sedation with minimal respiratory depression.

KEYWORDS : Tracheostomy, Dexmedetomidine, Conscious sedation.

Introduction

In patients with severe airway narrowing and compromise, awake tracheostomy is a viable option for airway management. Sedation of patients may be hazardous keeping in mind the risk of respiratory depression and the deterioration of the airways. So, anesthesiologists should be very careful in managing such case scenarios. A safe and effective method of sedation helps in relieving the anxiety and discomfort of the patients. Dexmedetomidine is a highly selective 2-adrenergic agonist and has been reported as a sedative causing minimal respiratory depression and moderate analgesic effect⁽¹⁾. Due to such properties it may be used for sedation in the patients with difficult airways for tracheostomy procedures. However, reports on dexmedetomidine sedation in patients with severe airway stenosis are limited.

Here, we report a case of sedation with dexmedetomidine during tracheostomy under local anesthesia in patients with severe airway stenosis.

Case Report

A 65 year old hypertensive man with a BMI of 22.6 presented for tracheostomy revision due to stenosis of the tracheostomy site. He had been diagnosed with carcinoma larynx 7 years back and was operated for the same in which total laryngectomy and tracheostomy procedures were done. On physical examination, the patient was moderately build and moderately nourished. His vitals were stable. He had a polypoid, thick skin lesion around the site of tracheostomy. CT Neck showed the narrowest width of the tracheostomy site was 2.8 mm. The patient had foreign body sensation, odynophagia and dyspnea. Preoperative arterial blood gas analysis (ABGA) in room air showed a pH of 7.4, PaCO₂ of 43.0 mmHg, PO₂ of 88.6 mmHg, HCO₃ - of 25.6 mmol/L and an oxygen saturation of 95.8%. Because his airway was compromised, tracheostomy revision was planned under local anesthesia. As the heart rate and blood pressure of the patient were stable, we decided to use dexmedetomidine for procedural sedation due to its sedative and analgesic properties without causing any respiratory depression as compared to other sedatives. Upon arrival to the operation room, the patient had stable vital signs: blood pressure of 154/94 mmHg, heart rate of 88 beats/min and an oxygen saturation of 98% on room air. We started dexmedetomidine sedation with a loading dose of 0.5 µg/kg for 10 minutes. A bispectral index (BIS) was used to monitor the sedative state of the patient. The patient was oriented having a Ramsay sedation scale 2 with a BIS score of 95. At this point, we changed the rate of infusion to 0.5 µg/kg/hr. Two minutes later, the surgical procedure was

started and 2% lidocaine was infiltrated to the incision site. The BIS of the patient fell to 85 while having a Ramsay sedation scale score of 2. An endotracheal tube with an internal diameter of 5.5 mm was inserted into the site of tracheostomy and the patient maintained spontaneous breathing without any complaint. Arterial blood gas analysis showed a pH of 7.42, PaCO₂ of 36.0 mmHg, PaO₂ of 220.0 mmHg, HCO₃ - of 22.4 mmol / L and an oxygen saturation of 99.3%. The tracheostomy site revision was made successfully. After 10 minutes, we turned off the dexmedetomidine. The whole procedure was done without any events.

Discussion

We presented a patient who needed an anesthetic plan for management during a compromised airway. During awake tracheostomy, an adequate level of sedation and analgesia is needed for safe and effective management of the patient. Dexmedetomidine produces sedative effects by acting on the 2-receptors in the locus ceruleus and analgesic effects originating from central nervous system⁽²⁾. Contrary to popular sedatives such as benzodiazepine and propofol, dexmedetomidine appears to not cause respiratory depression within a clinical dose range⁽³⁾. Because of the minimal respiratory depression, dexmedetomidine can be used safely while maintaining spontaneous breathing during airway manipulation⁽⁴⁾. However, dexmedetomidine does have some adverse effects as well. Dexmedetomidine frequently produces hypotension, hypertension and bradycardia, and also decreases cerebral blood flow without concomitantly decreasing the cerebral metabolic rate for oxygen⁽⁶⁾.

David and De Marchi presented a case report on dexmedetomidine sedation for awake tracheostomy in a patient with severe narrowing of the airway⁽⁸⁾. In our case, a loading dose of 0.5-1.0 µg/kg and subsequent infusion dose of 0.5-0.6 µg/kg/hr provided adequate sedation. Liao et al. reported that dexmedetomidine provided better oxygen saturation and could be equally well-tolerated for conscious sedation compared with midazolam⁽⁹⁾. In a report by Rong et al. comparing dexmedetomidine and remifentanyl, the dexmedetomidine group provided greater patient satisfaction and lower recall of airway manipulation procedures with minor hemodynamic side effects⁽¹⁰⁾.

Hence, we conclude that dexmedetomidine is an effective sedative agent in patients with critical airways.

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