**Difficult Airway Management Utilizing High-Dose Dexmedetomidine and Ketamine in a 10-month Old with a Retropharyngeal Abscess**

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**Background**

Retropharyngeal abscess (RPA) is a deep neck infection that can present with poor feeding, limitations in neck mobility, fever, stridor and airway compromise. The majority of RPA cases occur during childhood due to infectious drainage into the retropharyngeal lymphatic system. 50% of RPA patients are less than 3 years of age and 70% less than 6 years of age (1). RPA is commonly treated with surgical incision and drainage.

**Case Report**

10-month old 8.6 kg girl presented with history of decreased PO intake, fever, drooling and audible wheezing. Her history was significant for ingesting glass from a broken light bulb 5 days prior. On exam, the patient was grunting with respiratory distress and stridor. CT scan demonstrated a large retropharyngeal abscess (RPA) measuring 3.7 x 2.2 x 3.1 centimeters from C2-C6/7, occupying approximately 1/3 of the patient's neck diameter. She was scheduled for emergent surgical drainage of her retropharyngeal abscess.

After administering a dose of atropine to manage secretions, anesthetic induction consisted of a bolus of dexmedetomidine 3 mcg/kg over 20 minutes. Once sedation was achieved, her nasal vault was anesthetized with lidocaine and oxymetazoline. Ketamine was titrated over 15 minutes at 2 mg/kg and Sevoflurane administered by facemask. The dexmedetomidine infusion was continued at 0.7ug/kg/hr. Fiberoptic evaluation of the airway demonstrated significant anterior displacement of the epiglottis secondary to the edema of the posterior pharynx. A 4.0 uncuffed nasal RAE endotracheal tube was placed fiberoptically to secure the airway. The abscess was drained and the patient was admitted to the ICU intubated and sedated.

**Discussion**

**Dexmedetomidine:**

- An α₂-adrenergic agonist that provides sedation & analgesia while minimizing respiratory depression and airway patency in pediatric patients (2).
- Use in pediatrics is off-label.
- Provides adequate sedation and spontaneous ventilation for awake fiberoptic intubations in adult patients with anterior mediastinal masses compressing airway structures without loss of the airway patency (3).
- Reduces ketamine-induced adverse central nervous system effects (8).

In the pediatric population, dexmedetomidine & ketamine have been used successfully for fiberoptic intubation of patients with Treacher Collins and Pierre Robin (4, 5). In order to decrease secretions, maintain hemodynamic stability and sedate the patient, we used atropine and high-dose dexmedetomidine (3ug/kg) for 20 minutes. The antisialagogue effects of dexmedetomidine maintained visual conditions that can be made difficult with ketamine alone (10). While high-doses of dexmedetomidine have been shown to cause an initial peripheral vasoconstriction leading to hypertension (6), it has also been noted that dexmedetomidine causes bradycardia and hypotension (9). With concomitant use of low-dose ketamine, both our patient and other studies (9) have shown hemodynamic stability. In this case report, Sevoflurane and ketamine were slowly titrated to deepen the anesthetic. Using this technique, we maintained airway patency and the patient tolerated ETT placement with hemodynamic stability.

**Conclusion**

Dexmedetomidine and Ketamine may present a safe anesthetic option in the child presenting for complex airway intervention in the setting of a retropharyngeal abscess.

**References**

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