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Case report

Lingual Tonsil Hypertrophy: rescuing the airway with videolaryngoscopy

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Abstract Lingual tonsils are lymphatic tissues located at the base of the tongue that may hypertrophy causing difficulty and sometimes inability to ventilate or intubate during anesthesia. Routine airway assessment fails to diagnose lingual tonsil hypertrophy. There is limited experience with use of videolaryngoscopy in cases of lingual tonsil hypertrophy. We present a case of difficult airway due to unanticipated lingual tonsil hypertrophy successfully managed by atypical video laryngoscope positioning.

1. Introduction

Lingual tonsil hypertrophy (LTH) can lead to unanticipated difficult airway during anesthesia. It is important to recognize early and institute adequate measures. Numerous case reports describe difficulties encountered with this surprising pathology along with successes and failures in securing the airway using different techniques. There is limited experience with use of videolaryngoscopy in cases of LTH. Since its advent in 2001, the video laryngoscope has proven to be a valuable tool in rescue airway management which led to its inclusion in the difficult airway algorithm [1]. We present a case of unanticipated difficult airway due to LTH successfully managed by video laryngoscope in a post–liver transplant recipient. Written informed consent for publication of this case report was obtained directly from the patient.

2. Case description

A 46-year-old woman presented for incisional hernia repair. Patient's body mass index was 28 with a medical history significant for gastroesophageal reflux disease, adenotonsillectomy, and liver transplant. Her medications included tacrolimus, mycophenolate, amitriptyline, aspirin, lansoprazole, and gabapentin. Preoperative airway evaluation revealed a Mallampati class 2 airway with normal mouth opening, neck mobility, dentition, prognathism, and a thyromental distance of 6 cm. She had a history of easy intubation with direct laryngoscopy when she presented for liver transplantation 4 years prior. After placement of routine monitoring and preoxygenation, a modified rapid sequence induction with cricoid pressure was performed using 50 μg of fentanyl, 100 mg of lidocaine, 100 mg propofol, and 50 mg rocuronium. Three attempts at

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direct laryngoscopy by 2 anesthesiologists using #3 and #4 Macintosh blades failed to identify the laryngeal inlet; she had a Cormack-Lehane grade 4 view. The patient was difficult to ventilate, but oxygen saturation remained greater than 90% using a 2-handed bag-mask technique with jaw thrust maneuver and an oral airway. Decision was made to use a GlideScope video laryngoscope, which revealed enlarged irregular friable soft tissue that bled freely upon contact. The polypoid tissue obscured the epiglottis, adhered to the base of the tongue, and extended superiorly on both sides into the pharynx. The GlideScope was gently inserted deep and then retracted slowly against the posterior surface of the epiglottis to reveal the glottis and place the tube under vision. Patient was extubated uneventfully after surgery. Postoperatively, an explanation was given to the patient regarding difficulties encountered with the airway. Given the concern for posttransplant lymphoproliferative disorder, a rare but deadly process that can present with adenotonsillar hypertrophy, patient was referred for workup and surgical excision.

During postoperative otolaryngology visit, patient reported having mild dysphagia, muffled voice, and snoring. Fiberoptic nasal examination revealed moderate adenoid hypertrophy with extremely enlarged lingual tonsils which occupied the vallecula, abutted the epiglottis, and filled the pharyngeal airway leaving empty only a small amount of room posteriorly.

The patient underwent lingual tonsil coblation surgery a month later. Successful intubation was achieved on the first trial using GlideScope after propofol and succinylcholine induction. Detailed immunohistopathology examination and chromosome analysis demonstrated hyperplasia of lymphatic tissues with no malignancy.

3. Discussion

Unanticipated difficult intubation remains a serious problem for anesthesiologists with LTH a primary culprit. The lingual tonsils are lymphatic tissues located at the base of the tongue between the circumvallate papilla anteriorly and the epiglottis posteriorly. Lingual tonsils are fragile, not encapsulated, and bleed easily. Hypertrophied lingual tonsils have considerable variation in size ranging from few millimeters to 6 cm [2,3]. Enlarged lingual tonsils can occupy the entire vallecula, override the tip and lateral borders of the epiglottis, and displace the epiglottis posteriorly and inferiorly [2,4,5].

Lingual tonsils hypertrophy due to chronic infections, immunosuppression, gastroesophageal reflux disease, chronic allergies, and as a compensation posttonsillectomy and/or adenoidectomy [4,6]. The differential diagnosis of LTH also includes ectopic thyroid, thyroglossal duct cysts, dermoid cysts, angiomas, lymphangiomas, adenomas, fibromas, papillomas, squamous cell carcinomas, minor salivary gland tumors, and lymphomas [3]. Most conditions go unnoticed during routine preoperative evaluation because patients are mostly asymptomatic or present with vague symptoms (sore throat, dysphagia, globus sensation, snoring, alteration of voice, chronic cough, dyspnea, odynophagia, and obstructive sleep apnea) [4,6]. The degree of hypertrophy of the lingual tonsil, especially in females, may play a role in the incidence of abnormal sensation of the throat [7].

LTH diagnosis can be achieved by indirect laryngoscopy, fiberoptic scope, magnetic resonance imaging, lateral neck x-ray, and computed tomographic scan. LTH can likewise be detected using a simple laryngeal mirror [3,8]. Prevalence of LTH in normal population is 2% to 3% [9-11]. The incidence is increased manifold in patients on immunosuppression reaching up to 10% in adults and 28% in pediatrics posttransplant [12,13].

4. Ventilation

LTH can present in patients with unsuspicious, seemingly normal airway anatomy and negative airway history causing unanticipated inability to ventilate or intubate anesthetized patients [2,4,14-17] leading to a surgical airway [2,14,17,18] or death [2,18]. In a retrospective study of 33 adult patients with unanticipated failed intubation due to LTH, facemask ventilation was difficult or impossible in 35% of cases [4].

The dynamic nature and fragility of LTH mean that control of airway may change from "can" to "cannot" ventilate with repeated attempts at direct laryngoscopy [15,19-21] or laryngeal mask airway (LMA) insertion [15,20]. Ventilation difficulty may be compounded by supine patient positioning along with use of general anesthetics and neuromuscular blockade [17] that can cause pharyngeal relaxation with posterior movement of the tongue and epiglottis. Likewise, previous successful intubations do not totally exclude subsequent difficulty. Reports describe patients presenting with LTH and unexpected difficult airways having been intubated some weeks to years prior without problems [2,16,17,19].

5. Laryngeal mask airway

Although the LMA is part of the standard difficult airway management algorithm and can be a life-saving tool in cannot intubate/cannot ventilate situation, it may be of limited efficacy as a supraglottic ventilatory conduit in the presence of LTH [14,17,22]. Multiple LMA insertions in presence of LTH can induce airway trauma, bleeding, and edema [17,21] making intubation more difficult [4,17,23]. Some authors reported successful airway management using the LMA with LTH [8,17,20,24,25]; others have reported inadequate or failed ventilation [14,19,26] or expressed concerns over possible inadequacy of the LMA in the presence of periglottic obstruction and bleeding [23,25,27,28].

Similarly, the ILMA and LMA-Ctrach, although anticipated to be helpful [8], have met successes and failures during