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Lingual tonsillar hypertrophy, an unknown enemy: a case report

Hipertrofia de amígdala lingual, un enemigo desconocido. A propósito de un caso

Isabel Marcotegui Barber, Alejandro Bilbao Ares, Amaia Azcona Salvatierra, Andrés Carrascosa Gil, Andrea Hualde Algarra, Miguel Salvador Bravo

Anesthesia and Resuscitation Service, Complejo Hospitalario de Navarra, Pamplona, Spain.

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Palabras clave: Lengua, Hipertrofia, Manejo de la Vía Aérea, Tonsilitis, Obstrucción de las Vías Aéreas

Abstract

We report an unexpected difficult airway in a patient with unrecognized lingual tonsillar hypertrophy. A 54-year-old hypertensive woman presented for resection of a mediastinal mass under general anesthesia (GA). After induction, mask ventilation was impossible. Laryngeal mask airway (LMA) was used, achieving suboptimal ventilation. Fiberoptic intubation through LMA was attempted but tube advancement was hindered by a protruding mass. Finally, intubation was achieved using the Frova introducer. After completion of the surgery, the patient was transferred, intubated, to the postanesthesia care unit. Ear, nose, and throat assessment concluded that the mass was a hypertrophied lingual tonsil. Unexpected lingual tonsillar hypertrophy can complicate GA, making mask ventilation, and even intubation impossible. It is considered a frequent cause of unexpected difficult airway. Diagnosis cannot be made by standard airway physical examination. Once recognized, fiberoptic intubation is mandatory in subsequent surgeries.

Resumen

Presentamos el caso de una vía aérea difícil imprevista debido a hipertrofia de la amígdala lingual no conocida. Mujer de 54 años, hipertensa, que ingresa para resección de masa mediastínica bajo anestesia general. Tras la inducción, la ventilación mediante mascarilla facial resultó imposible. Se coloca mascarilla laríngea (ML) y se consigue ventilación de forma subóptima. Se intenta intubación guiada por fibroscopia a su través, pero se objetiva masa protruyente que impide la progresión del tubo. Finalmente se intuba mediante introductor Frova. Tras finalizar la cirugía, la paciente se traslada intubada a la Unidad de Reanimación Postanestésica (URPA). Se realiza evaluación por otorrinolaringología (ORL), que concluye que la masa corresponde a una amígdala lingual hipertrófica.

La hipertrofia de la amígdala lingual puede complicar la anestesia, dificultando la ventilación e intubación. Se considera una causa frecuente de vía aérea difícil imprevista. El diagnóstico no puede realizarse mediante exploración anestésica estándar. Una vez conocida, las intubaciones siguientes deben ser guiadas por fibroscopia.

Introduction

The lingual tonsil (LT) is a normal anatomic structure consisting of lymphoid tissue that is part of Waldeyer's ring in the oral cavity. It is localized in the base of the tongue, between the caliciform papillae and the epiglottis.

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Correspondence: Servicio de Anestesiología y Reanimación, Complejo Hospitalario de Navarra, Irunlarrea 3, 31008 Pamplona, España. E-mail: isamarcotegui@gmail.com

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The prevalence of LT hypertrophy is unknown, but its presence has been described as a frequent cause of unexpected difficult airway.[1] Unlike the palatine tonsils, it lacks a capsule and, as a result, unopposed growth may produce posterior displacement of the epiglottis, hindering intubation, and manual ventilation. Although the etiology of this occurrence is unclear, it has been proposed that it is more frequent in patients with adenotonsillectomy. According to this hypothesis, LT growth would compensate for the absence of the other components of Waldeyer's ring.[2–4]

This condition is undetectable on conventional physical exploration for anesthesia. In fact, the majority of patients described in the literature did not show evidence of difficult airway predictors.[2–8] Symptoms are usually nonspecific, characterized by odynophagia, dysphonia and, in severe cases, it may present as obstructive sleep apnea syndrome or upper airway obstruction. Treatment is usually conservative, avoiding airway irritants, and surgery is indicated when there is evidence of symptomatic airway obstruction.

We present the case of a patient with unrecognized lingual tonsillar hypertrophy.

Case description

A 54-year-old hypertensive woman, smoker, treated with enalapril and torasemide, scheduled for videothoracoscopic resection of a mediastinal mass 44 and 18 mm in size (incidental finding on imaging test). She had been diagnosed of lymphoid follicular hyperplasia 20 years before, which resolved uneventfully. The patient was completely asymptomatic.

Difficult airway predictors were identified during the pre-anesthetic assessment: retrognathia, Mallampati III and diminished thyromental distance. The patient had marked nasal speech. The pre-operative neck and chest computed tomography (CT) scan also showed signs of adenoid hypertrophy (bilateral and symmetrical tissue growth in the nasopharynx and both valleculae).

In view of a potentially difficult airway, we decided to use the Airtraq (Prodol Meditec, Vizcaya, Spain) laryngoscope. After standard monitoring and adequate pre-oxygenation, general anesthesia (GA) was induced with fentanyl 150 μg and propofol 150 mg. We abstained from administering any muscle relaxant before securing correct manual ventilation. However, the latter was impossible, despite placement of an oropharyngeal cannula, optimizing positioning, and 2-person ventilation. At that point, an I-gel (Intersurgical Ltd., Workingham, England) #4 laryngeal mask (LM) was used as a rescue device for ventilation, difficult airway cart was requested, as well as assistance from a second, more experienced, anesthetist. CO_2 was detected through the supraglottic device using capnography, although the curve showed suboptimal morphology with great air leak at low pressures. SpO_2 was maintained above 94% during the entire process.

In an attempt of optimizing ventilation, 50 mg of rocuronium were administered, and fiberoptic-guided intubation was attempted. A mamelonated mass was found to obstruct almost the entire lumen of the LM, preventing the advancement of the fiberoptic endoscope. Considering that the patient was oxygenating normally, we decided to perform direct laryngoscopy to secure the airway by means of orotracheal intubation. We found a grade III on the Cormack-Lehane scale and a protruding mass which caused posterior displacement of the epiglottis. A Frova introducer was used with this reference to pass a 7.5 mm endotracheal tube (ETT) which was inserted uneventfully, resulting in correct capnography. Next, 100 mg of hydrocortisone were administered as anti-edema prophylaxis and a Uniblocker (Fuji Systems Co., Bunkyo, Japan) bronchial blocker was placed in the right main bronchus to facilitate the surgical approach by means of single-lung ventilation. The surgical procedure lasted 60 minutes and concluded with no other complications. Given the difficulty managing the airway and the finding of the pharyngeal mass, we decided to keep intubation in the postoperative recovery room. The case was discussed with the otolaryngology (ear, nose, and throat [ENT]) specialist who carried out a new fiberoptic exploration which confirmed that the mass corresponded to hypertrophied LTs. Two hours after surgery, following a leak test, the patient was extubated uneventfully (Fig. 1).

Considering that the hypertrophied LTs did not cause symptoms for the patient, a wait-and-see approach was adopted, with follow-up by the ENT service. The difficult management of the airway was explained to the patient, and the advisability of using awake fiberoptic endoscopy for future procedures was documented in the clinical record.

Discussion

The documented finding of lingual tonsillar hypertrophy with displacement of glottic structures is an indication for awake fiberopetic-guided orotracheal intubation. However, this finding after GA induction becomes a life-threatening emergency. Although infrequent, a patient who cannot be ventilated or intubated is perhaps the most feared occurrence for anesthetists. LT hypertrophy has been described as one of the main causes of this situation[1–14] but, unfortunately, it is impossible to detect as part of routine airway assessment. At present, ultrasound has been found to be useful for predicting a difficult airway,[15] and in the case of LT hypertrophy, signs of extrinsic airway compression might be observed.

In the case described here, the only characteristic that could have reflected the abnormal LT growth was the patient's marked nasal speech. Likewise, although she did not have a history of adenotonsillectomy, she had

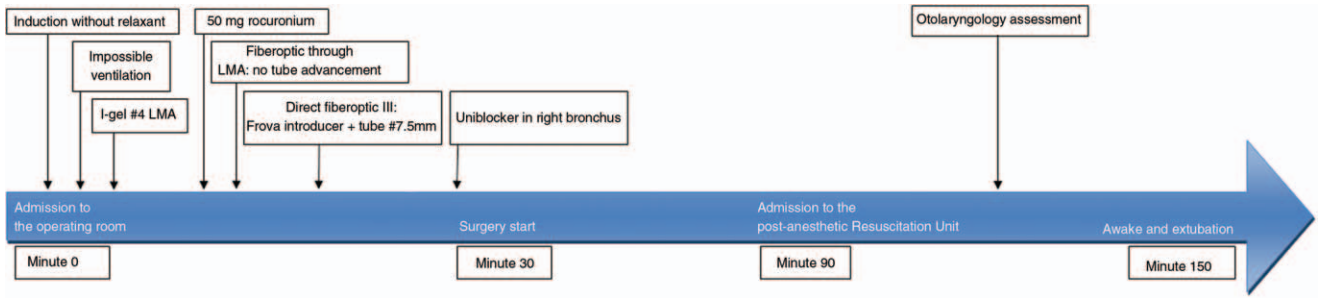

Figure 1. Time line of clinical events and results. LMA = Laryngeal mask airway.
Source: Authors.

presented a condition that could have been associated with this growth, namely, lymphoid follicular hyperplasia. After analyzing the case, it is evident that additional investigation into this matter was warranted, even requiring airway exploration by an ENT specialist. Moreover, the pre-operative CT scan report described a nasopharyngeal and vallecular tissue growth, although not obstructive of the airway in any way, probably reflecting LT hypertrophy. In a secondary review by the same radiologist who wrote the report, scan over the same structure confirmed very significant growth (Fig. 2).

Suspecting a difficult ventilation, adequate manual ventilation was checked before administering neuromuscular blockers. This action is greatly controversial and the current trend tends to favor early muscle relaxant administration (with the possibility of a specific reversal agent) in the face of a potentially difficult airway, given that bag mask ventilation is made easier by abolishing laryngeal reflexes and increasing chest compliance.[16,17] This improves the first intervention on the airway, either for manual ventilation or laryngoscopy.[18] There is some evidence of improved ventilation with non-depolarizing muscle relaxants in patients with glottic obstructive disease.[19] On the other hand, it has been shown that urgent reversal with sugammadex may trigger the onset of laryngospasm and worsen airway permeability.[20,21] It is possible that manual ventilation could have improved with the early administration of the muscle relaxant; however, given the high suspicion of a difficult airway, we decided to optimize oxygenation with the insertion of a supraglottic device. Had the technique failed, we would have awakened the patient, and in the event of compromised oxygenation, we would have immediately indicated emergent cricothyroidotomy, as recommended by the Difficult Airway Society.[16]

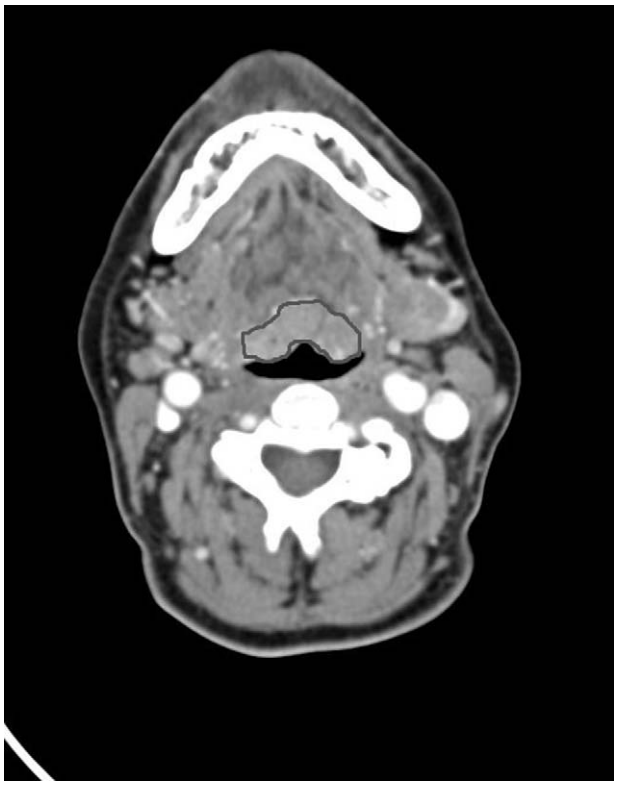

Figure 2. Pre-operative neck and chest CT showing LT hypertrophy marked with a gray contour line. CT = computed tomography, LT = lingual tonsil.
Source: Authors.

Rocuronium was administered after obtaining the capnography reading, even though it was suboptimal given the poor fit of the LM. Fiberoptic endoscopy showed a mass which prevented advancement, requiring departure from the initial plan, and direct laryngoscopy was chosen instead of using the Airtraq. We considered that it would be difficult to introduce and advance the ETT as well as identify the distorted structures with an image that offered little depth. However, we do not know whether vision would have improved and it could have been used instead of advancing a Frova introducer blindly, with the added risk of tissue injury.

LT hypertrophy is dynamic, with size varying over time. For this reason, difficult intubation at a given time does not mean that it will be present again in the future.[14] However, once recognized, fiberoptic guided intubation is advisable while maintaining spontaneous ventilation, because of the risk this condition entails. Therefore, it is crucial to make these patients aware of the intubation problem so that they can warn anesthetists for future interventions.

Conclusion

The LT is a normal anatomic structure found at the tongue base, but its growth may compromise airway permeability, particularly after anesthetic induction. It is not easy to recognize this condition during pre-anesthetic assessment, and it may pose a challenge for airway management. Anesthetists must be aware of this clinical condition and suspect it when faced with an unexpected difficult airway.

Ethical responsibilities

Human and animal protection. The authors declare that the procedures carried out were in accordance with the ethical standards set forth by the responsible human experimentation committee, and consistent with the World Medical Association and the Declaration of Helsinki.

Data confidentiality. The authors declare having followed the protocols of their institution regarding disclosure of patient information.

Right to privacy and informed consent. The authors declare having obtained the informed consent of the patient whose case is reported in this article. Said document is in the hands of the corresponding author.

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Conflict of interest

The authors declare having no conflict of interest.

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