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Saccular Cyst of the Larynx - A Clinical Case

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ABSTRACT

Saccular cyst of the larynx is a benign supraglottic lesion, filled with mucus. It forms from the laryngeal sac, which is a soft tissue mass that is an extension of the laryngeal ventricle. Due to the extreme rarity, the true prevalence of the disease is unknown, although congenital laryngeal cysts have been reported to affect 1 in 300,000 newborns. The gold standard for diagnosing of saccular laryngeal cysts is laryngoscopy. Treatment of saccular cysts can only be done surgically, using endoscopic or external access. It is believed that endoscopic CO_2 laser excision is the treatment of choice.

KEYWORDS: Saccular cyst; larynx; case report; CO_2 Laser; endoscopy

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INTRODUCTION

Saccular cyst of the larynx is a benign supraglottic lesion, filled with mucus. Anatomically, it is located between the false vocal cord and the thyroid cartilage[1]. It accounts for ¼ of all laryngeal cysts[2] and 2-5% of all benign laryngeal lesions[3]. Due to the extreme rarity, the true prevalence of the disease is unknown, although congenital laryngeal cysts have been reported to affect 1 in 300,000 newborns[4].

Symptoms vary depending on the age of the patient, the location and size of the cyst. In infants, the predominant symptom is respiratory obstruction, while in older children and adults – it is voice disorder[5]. If the saccular cyst is congenital, it should be differentiated, in particular, with subglottic stenosis, laryngomalacia, vocal cords paralysis, tracheomalacia, laryngeal membrane, laryngocele. The saccular cyst of the larynx is, as usual, unilateral.

Although the saccular cyst is benign, it is located in the larynx and because of that can lead to shortness of breath, stridor and respiratory obstruction. Moreover, there have been described cases, that suggest the association of saccular cyst with laryngeal cancer in adults[6]. With well-timed and accurate evaluation and early management, the negative consequences and necessity for open access surgery[7] can be reduced. The purpose of our publication is to make sure that practical otorhinolaryngologists are acquaint with the evaluation of this rare disease and to determine the best management plan.

CLINICAL CASE

A 13-year-old boy, was admitted to the Department of Pediatric Otorhinolaryngology of the Lviv Regional Children's Clinical Hospital with complaints of prolonged hoarseness, shortness of breath on exertion and the presence of a lesion on the left side of the neck.

Boy is a second child in family, development at early age corresponded to peers. At the age of 6, he periodically experienced hoarseness after a severe voice load or episodes of acute respiratory viral infection. At the age of 8, the child was examined by an otolaryngologist, who diagnosed a laryngeal cyst. The child was suggested to undergo further investigations, but his parents refused to do it.

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At the admission: condition of a child of moderate severity, there is shortness of breath and moderate retraction of the intercostal spaces. The voice is very hoarse, almost absent. According to the mother, this occured 3 days ago, after the rise in body temperature due to acute respiratory infection.

On examination: on the left anterior part of the neck, at the level of the thyroid cartilage, there is a lesion, approximately 5x5 cm, dense on palpation, not painful. The skin over it is not changed (photo 1,2).

Photo 1, 2. Patient at the admission

Direct laryngoscopy (photo 3): on the left side near the epiglottis, closer to the left pyriform sinus, there is a large round cystic lesion, which expands the aryepiglottic fold laterally and significantly narrows the lumen of the larynx and glottis.

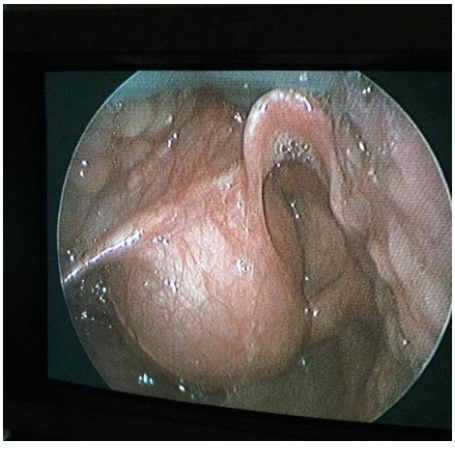

Photo 3. Picture of direct laryngoscopy in our patient

Ultrasound of the neck (photo 4): while scanning the anterior surface of the neck, a liquid lesion with clear, clear contours, size 3.02x2.4x4.18 cm and an approximate volume of 16-20 ml is visualized. During doppler the blood flow in the lumen of the lesion is not detected.

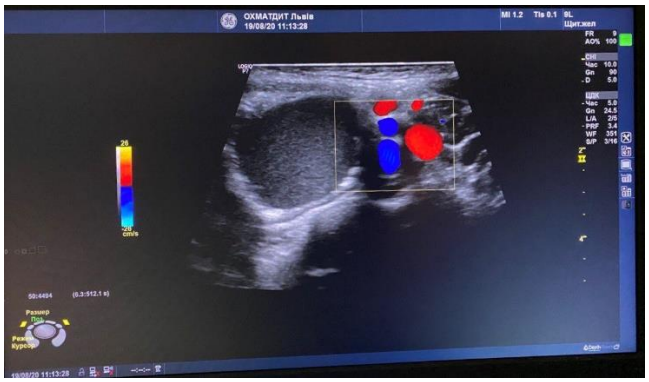

Photo 4. Ultrasound of the neck of our patient

MRI of the neck (photos 5, 6, 7): in the laryngeal cavity tangential to the left wall with the epicenter at the level of the vocal apparatus and spreading to the supraglottis there is a clearly contoured cyst with fluid hyperintensive content on T2 and hypointensive signal on T1, without limitation DWI, size 4,4x3,2x2,4 mm. The cyst penetrates slightly into the subglottic space and causes a significant narrowing of the laryngeal and supraglottic lumen - up to 5x7 mm. The subglottis is narrowed to about 50%.

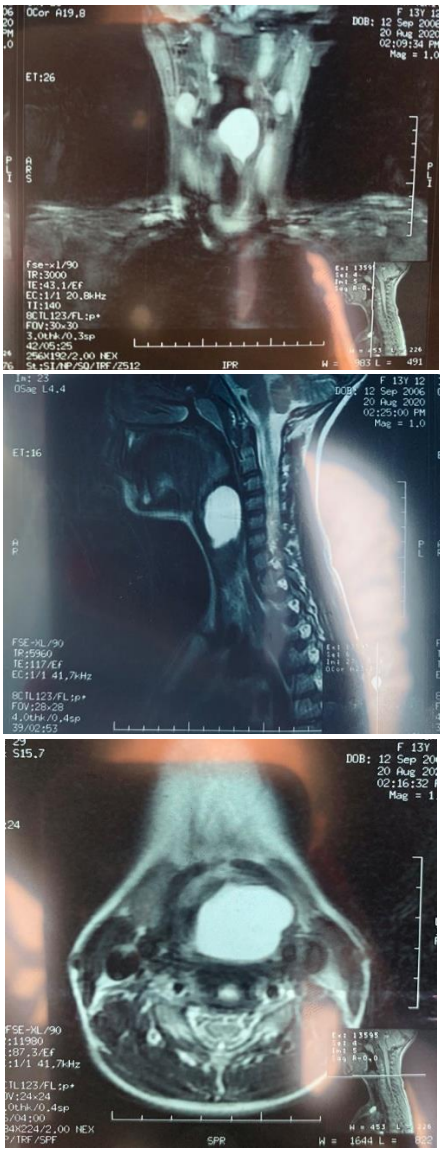

Photo 5, 6, 7. MRI picture of the soft spaces of the neck in the coronal, sagittal and axial sections in the T2 mode

The diagnosis was: "Saccular cyst of the larynx, laryngeal stenosis II stage."

Surgery was performed - endoscopic marsupialization of the saccular cyst of the larynx under endotracheal general anesthesia. Tracheal intubation was performed using a flexible laryngoscope.

The postoperative period in the patient was normal. Breathing became better immediately after surgery. 3 days after the operation the patient was discharged home in satisfactory condition.

The patient is currently under observation. He has no complaints, breathing is free. At laryngoscopy after 1 year no signs of recurrence were detected.

DISCUSSION

Saccular cyst is a very rare disease of the larynx. Therefore, it is not surprising that in our clinic for last 20 years of observation we encountered such a case for the first time.

Some saccular cysts can be life-threatening due to airway obstruction, which requires immediate tracheotomy, especially in newborns and infants[8]. It is reported that the probability of transformation of a saccular cyst into cancer is 5-30%[9].

A saccular cyst is formed from the laryngeal sac, which is a soft tissue formation of the larynx and an extension of the laryngeal ventricles. The main function of the laryngeal sacs is the formation of mucus, which lubricates the vocal folds[10]. Saccular cyst is formed when the excretory mouth of the sac is closed due to intubation, infection or pathological tissues of the larynx[11]. The history of prolonged intubation is a contributing factor in children[12], but in our case such a factor was not detected.

Although the differential diagnosis of laryngeal cysts is difficult, determining the exact type of cyst influences the choice of treatment tactics. Laryngeal cysts are of three types - ductal, saccular and laryngocele[13]. The most common ductal cyst, which is formed due to delayed mucus after blockage of the duct of the submucosal gland. It is usually a small mass up to 1 cm. On the other hand, saccular cysts are enlarged laryngeal sacs, which do not have a connection with the laryngeal lumen and are significantly larger than ductal. Conversely, laryngoceles communicate with the laryngeal lumen and are filled with air.

Saccular cysts of the larynx are divided into two types: anterior and lateral[14]. The anterior saccular cyst is located more medially and posteriorly between the true and false vocal cords. The lateral cyst grows more commonly in a posterosuperior direction, between the false vocal cords and the aryepiglottic folds, and more often extends beyond the larynx; it is manifested by a protrusion in the area of the aryepiglottic fold. In our case, we were dealing with a lateral saccular cyst.

The cause of a saccular cyst can be congenital or acquired[15]. In our case, we were dealing with an acquired saccular cyst.

The gold standard of diagnosis is direct laryngoscopy under general anesthesia[16]; flexible laryngoscopy can also be used[17]. Magnetic resonance imaging helps to confirm the contents and prevalence of the cyst[18]. In our case, we did a direct laryngoscopy, MRI and ultrasound.

Treatment of saccular cysts is surgical only. Depending on the size and direction of the cyst, the following methods of surgery are chosen: endoscopic (endoscopic ventriculotomy, puncture with suction, endoscopic marsupialization) or external access (access through the thyro-hyoid membrane or through the laryngofissure). It is believed that microlaryngoscopy using a CO2 laser is the treatment of choice[19].

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Endoscopic access is considered to be the best treatment choice[20]. Although endoscopic surgery for saccular cysts is more complicated, it is more economical and should be preferred.

External access is chosen in case of large spread of the cyst in the lateral direction or in case of recurrence after previous operations. Lateral cervicotomy through the thyroid membrane is used for complex, recurrent or large (more than 3 cm) cysts, but such operations prolong the time of anesthesia and carry the risk of damage to the upper laryngeal nerve[21].

Most reports recommend the CO2 laser as the method of choice, as most ENT departments in Ukraine do not have such a laser (as does our clinic), in our case we used the method of endoscopic marsupialization.

CONCLUSIONS

Our case shows the peculiarity of the diagnosis and treatment of saccular cysts. This information is useful for general practitioners who need to be aware of this rare pathology. Despite the low frequency of this pathology, it is important to know and be able to establish this diagnosis, as well as safe and effective surgery.

Saccular cysts of the larynx, due to their rare prevalence, need further study. As the clinical picture of these cysts can be varied (from airway obstruction to malignancy), the question of their rapid diagnosis and effective treatment remains relevant.

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