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CASE REPORT

Congenital laryngoptosis: An unusual case

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Abstract Laryngoptosis is a rare anomaly of the larynx. The larynx is localized in a position lower than its normal position. A 15-year-old boy presented with hoarseness of voice. Physical examination showed that the larynx was in an abnormal position. There were no palpated tracheal rings. A low-pitched monotonic voice was the only symptom of laryngoptosis. Magnetic resonance imaging showed that the larynx was almost localized on the manibrium sterni, and the diagnosis was laryngoptosis.

Introduction

The localizations of an adult's larynx and a child's larynx are different. The larynx is localized at the highest level in the neck during fetal stage. Then, it developmentally continues to displace downward [1,2]. Although the larynx is localized between the second and the thirtieth cervical vertebrae during childhood, the adult larynx is localized on the fifth cervical vertebra [2]. Although the transposition of the larynx is a normal condition, there is no consensus regarding which level of displacement of larynx is called laryngoptosis [1].

Case presentation

A 15-year-old boy came to the otolaryngology department with hoarseness. He was attending a religious school, and the presence of a low-pitched monotonic voice was the only symptom. On physical examination, an abnormal position of the larynx was immediately seen (Fig. 1). The larynx was localized almost on the manibrium sterni, and we were not able to palpate any of the tracheal rings below the larynx. There was no predisposing factor, such as trauma, surgery, or infection. His mother did not report any abnormal condition during pregnancy and birth. The other family members and relatives were not affected with laryngoptosis. Indirect laryngoscopy was performed. However, the endolarynx could not be seen and evaluated because of the low position of the epiglottis. Magnetic resonance imaging was taken. In the magnetic resonance imaging, the larynx was localized between the fifth cervical vertebra and the first thoracic vertebra almost on the manibrium sterni (Fig. 2). There was also a deviation of trachea and larynx toward the left side and laryngeal stenosis at the level of sixth cervical vertebra,

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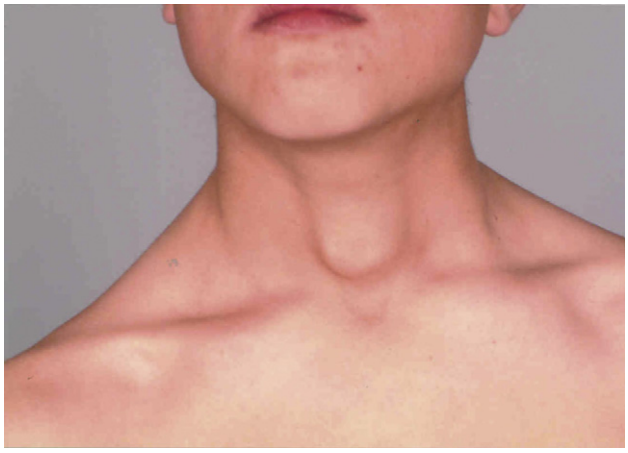

Figure 1. Abnormal localization of the larynx.

shown by magnetic resonance imaging (Fig. 3). The muscles were in a normal anatomical structure in the neck. There were no symptoms that might be seen together with laryngoptosis, such as cervical costae, intrathoracic goiter and thymus hypertrophy. There was no sign of neurological disorder or another anatomical abnormality, either.

Discussion

In the embryonic stage, the respiratory system develops from the primitive pharynx. A part of the embryo, called the laryngotracheal sulcus, develops in front of the primitive pharynx while the embryo is 3.5 weeks old. Then, this laryngotracheal sulcus transforms into the larynx, trachea, and oesophagus. These structures are usually affected together by developmental disorders occurring in the embryonic stage. Although the embryo is 28 weeks old, the larynx completes its development entirely [2]. After birth, the larynx displaces down, and this condition is normal [1,2].

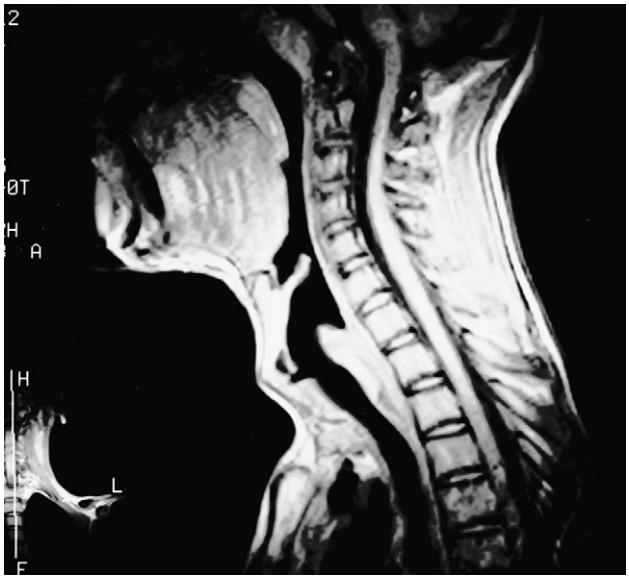

Figure 2. The larynx was displaced between the fifth cervical vertebra and the first thoracic vertebra almost on the manibrium sterni, as shown by magnetic resonance imaging.

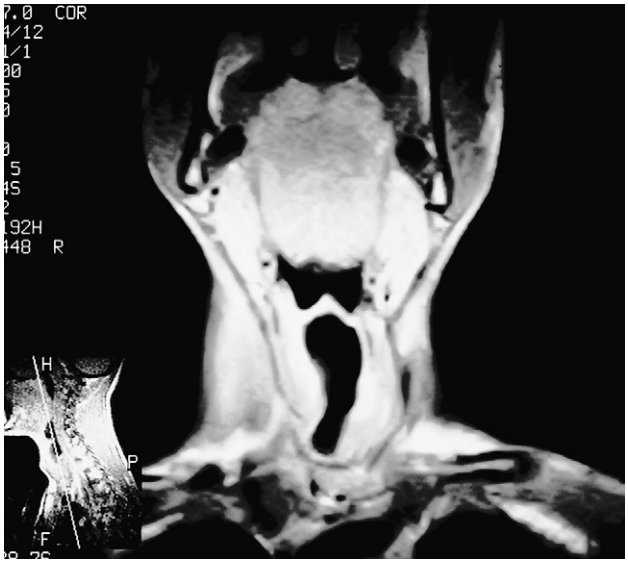

Figure 3. Deviation of trachea and larynx toward left side, laryngeal stenosis at the level of sixth cervical vertebra, as shown by magnetic resonance imaging.

However, we do not have any consensus regarding which level of displacement of larynx should be called laryngoptosis [1]. Nevertheless, we can accept the lack of tracheal rings by palpating in the neck as a criterion for calling a displaced-larynx condition as laryngoptosis based on the limited cases reported so far. The larynx might be located just above the manibrium sterni or even behind it [1,3].

Although the mechanism of congenital laryngoptosis is unknown, some anatomical changes may be significant. In accordance with Dayal and Singh [1], in the same cases, Tucker [4], Jackson [5] and Muslow [6] reported that the hyoid bone displaced to a lower position, and the short thyrohyoid membrane existed. There were tracheal deviation and lack of palpable tracheal rings. Also, in their case, Dayal and Singh [1] have reported the left short sternohyoid muscle that pulled down the hyoid bone as the cause of laryngoptosis. Stewart et al. [3] have reported a case in which the larynx was pulled down by the fibrotic right sternohyoid muscle. Initially, there was an episodic hoarseness, which became permanent with time. With the removal of fibrotic muscle, the larynx was replaced to its normal position and hoarseness improved relatively [3]. In our case, there was no muscle pulling down the larynx, and it was almost on the manibrium sterni, and there were no palpated tracheal rings. There was also a deviation of the trachea toward the left. This means that our case is similar to the ones that have been reported previously by Jackson [5], Muslow [6] and Dayal [1].

It has been considered that congenital laryngoptosis is a developmental insufficiency. In all the cases reported previously, the fact that there were no predisposing factors, such as trauma, infection, signs of any surgical operation, support his thesis [1,3]. According to Raab [7], laryngoptosis may be a sign of pulmonary emphysema. However, this condition is an acquired one. He described the reason for laryngoptosis as the downward displacement of the diaphragm together with the connected mediastinal structures, such as the trachea and the larynx. Here, in the case we

presented, there were none of these predisposing factors. In addition, there were not any hereditary congenial deformities that might support developmental insufficiency.

In conclusion, congenital laryngoptosis does not require a correction operation except for the cases in which laryngoptosis is caused by the shortening of the hyoid muscles. Furthermore, it does not usually pose any danger to life but does bother the patient esthetically. If laryngoptosis exists together with breathing difficulty, it might require tracheotomy. However, if tracheotomy is done, the patient might face serious problems and complications because of the absence of palpable tracheal rings. When general anesthesia is administered, intubation difficulties might occur. In future, if the patient undergoes a surgery of the thyroid, parathyroid, and oesophagus, some difficulties may be encountered because of laryngeal localization.

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