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Case Report

Cricoid chondroma presenting as upper airway obstruction: A report of a rare case ☆,☆☆

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ABSTRACT

Laryngeal chondroma is a very rare laryngeal tumor that commonly presents as dysphonia and dyspnea. A combination of clinical, histological, and radiological data has paramount importance for accurate diagnosis of this rare disease. It is difficult to differentiate laryngeal chondroma from chondrosarcoma solely based on radiological imaging; therefore, radiologists need to specify the origin of the tumor and the level of extension. Here, we describe a case of a 60-year-old male patient who presented with upper airway obstruction. Radiologic imaging with a contrast-enhanced CT scan of the neck was done and showed a lobulated mass lesion with popcorn-like calcification arising from the endolaryngeal surface of the cricoid cartilage. An emergency tracheostomy was done, and at the same time, a biopsy was taken from the lesion intraoperatively.

Introduction

Laryngeal chondroma is a rare neoplasm that accounts for less than 1% of all laryngeal tumors and 0.12% of tumors of the head and neck [1]. It is a benign tumor that commonly, originates from cricoid cartilage [1,2], 75% of the time [2].

Laryngeal chondroma has a peak incidence in the 7th decade of life [3]. The symptoms depend on the original tumor location, size, and extension and can range from asymptomatic neck mass to symptoms including shortness of breath (dyspnea), stridor, snoring, neck mass, hoarseness of voice, dysphagia, and obstruction of upper airway [1,2,4]. Dysphonia and dyspnea are common in the cricoid cartilage le-

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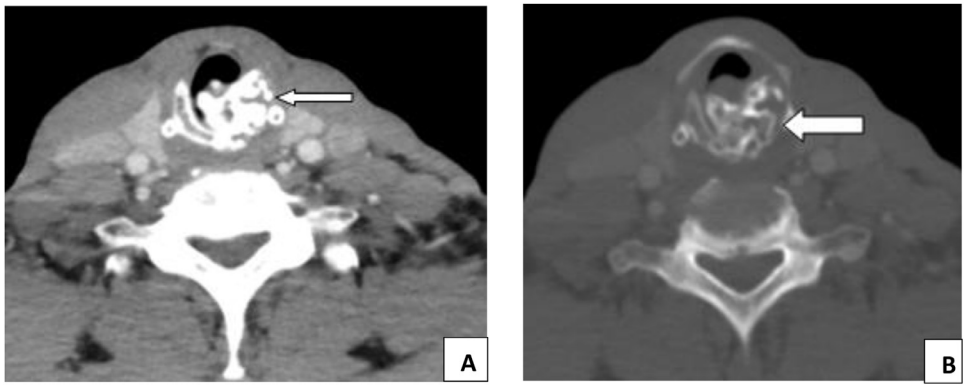

Fig. 1 – Axial postcontrast CT scan soft tissue (A) and bone (B) window showing a lobulated calcified mass (white arrows) arising from the endolaryngeal surface of the posterior lamina of cricoid cartilage.

sions; dysphagia may occur when the tumor extends toward the hypopharynx [2]. The differential diagnosis for laryngeal chondroma encompasses low-grade chondrosarcoma, chondrometaplasia, adenocarcinoma, squamous cell carcinoma, and metastatic tumors, among others. The diagnosis is dependent on clinical, histological, and radiological information. Surgical excision is required for the management of laryngeal chondroma. However, the recurrence can result from incomplete excision [3].

Here, we aim to present a case of chondroma of the cricoid cartilage in a 60-year-old male patient who presented with upper airway obstruction requiring emergency surgical intervention.

Case presentation

A 60-year-old male presented with long-standing intermittent shortness of breath of 5 years duration, which worsened and became persistent over a few days. He had no difficulty swallowing. On physical examination, the patient was tachypneic. An indirect laryngoscopic exam was done initially but didn't confirm any lesion in the oropharynx, supraglottis, glottis, or the accessible parts of the subglottis.

Then, radiologic examination with contrast-enhanced CT scan of the neck was done, which showed a 30.9 × 23.1 mm lobulated lesion with popcorn-like calcifications arising from the endolaryngeal surface of the posterior lamina of the cricoid cartilage (Figs. 1 and 2). The mass had significantly narrowed the subglottis. However, there was no evidence of invasion into nearby anatomic structures.

With the CT scan findings, an initial imaging impression of cricoid chondroma was made. The patient was then admitted for emergency tracheostomy, and at the same time, a biopsy was taken from the lesion. During sampling, the mass had bony hard consistency, and multiple whitish, firm glassy tissues measuring 1.5 cm on aggregates were collected for histopathological analysis.

Upon histologic examination, the tumor was hypocellular, composed of uniform, monotonous, and bland-looking chondrocytes evenly distributed in a basophilic matrix with a single nucleus per lacuna. There were no mitotic activities or nuclear pleomorphism. In addition, there were areas of ossifications present (Fig. 3). With these features, a histologic diagnosis of chondroma was made.

Discussion

Laryngeal chondromas are slow-growing tumors that have a higher incidence in males. However, the sex ratio varies among studies, ranging from 2:1 to 10:1. They commonly originate from the posterior plate of the cricoid cartilage, resulting in dyspnea and hoarseness [1]. In our case, the patient's age, sex, symptoms, and tumor location were all consistent with the characteristic description of the disease.

Laryngoscopy and a physical examination can be used to make the initial diagnosis of laryngeal chondroma [1]. When it comes to imaging, CT scan is the imaging of choice because it enables accurate localization, vascularization, and relation with the surrounding mucosa. On CT, laryngeal chondroma is described as a calcified, well-defined, smooth, and hypodense mass. Magnetic resonance imaging (MRI) can be helpful in describing the surrounding connective tissues of the lesion; however, in cases where calcifications are present, its diagnostic value decreases [1]. Radiologically, it is difficult to differentiate chondrosarcoma and chondroma; therefore, necessitating histopathology for confirmation. The CT features of laryngeal chondrosarcoma include an endolaryngeal soft tissue mass with or without extension beyond the larynx, and calcification can occur in 70%-80% of the cases [5]. A systematic review of 592 cases of laryngeal chondrosarcoma showed that calcifications were better detected by CT, than X-ray, ultrasound, or MRI, which detected calcification in 76.3%, 16.3%, 2.5%, and 1.3% of cases with calcification, respectively [6]. In the presented case, contrast-enhanced CT was used, and it showed a lobulated and calcified mass significantly narrowing the airway and no extension to the surrounding anatomic structure.

Histology of the tumor can show lobular growth, a small cell count, homogenous cellularity (less than 30-40 nuclei per high power field), and cells in lacunae with typical nu-

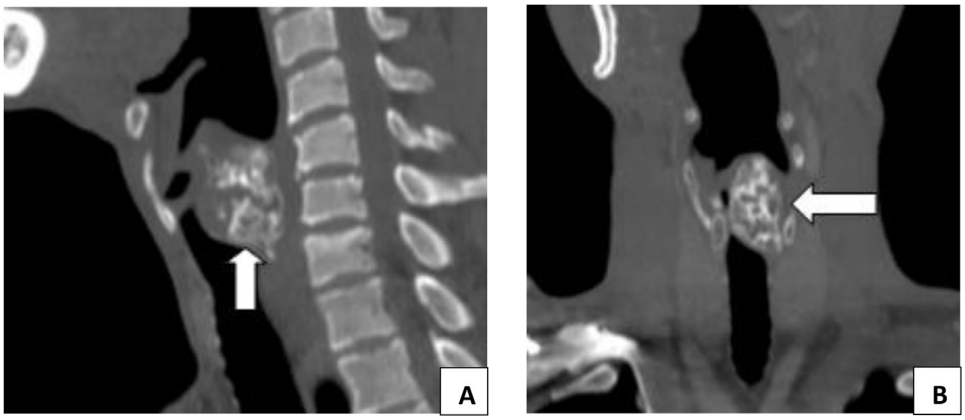

Fig. 2 – Sagittal (A) and Coronal (B) CT images showing a calcified mass (white arrows) arising from the endolaryngeal surface of the posterior lamina of the cricoid cartilage significantly narrowing the air way.

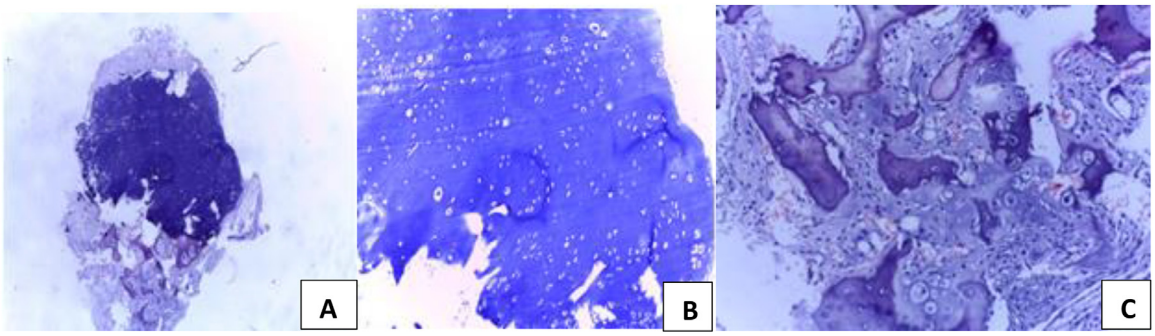

Fig. 3 – Histopathologic analysis: (A) 40× magnification, hematoxylin and eosin stain showing a fibrous connective tissue covered hyaline cartilage matrix. (B) 100× magnification, hematoxylin and eosin stain showing an even distribution of relatively monotonous chondrocytes with bland nuclear features. (C) 400× magnification, hematoxylin and eosin stain showing endochondral ossification embedded in a fibrous stroma.

clei lacking mitotic activity. However, cytology examinations are doubted as helpful diagnostic tools due to their limitations, such as poor representation of the tumor and the difficulty associated with sample collection [1]. The diagnosis of chondroma is further complicated by the challenge associated with differentiating it from low-grade chondrosarcoma [1,3]. Moreover, the diagnosis of the tumor with biopsy is uncertain [3]. It is estimated that in 60% of the cases, chondroma and low-grade chondrosarcoma can co-exist, necessitating a thorough histologic study. Macroscopically, chondromas and chondrosarcomas appear similar, with smooth or slight nodularity over the tumor. According to recent medical publications, in general, chondromas are smaller than 2 cm in size, while chondrosarcomas typically measure greater than 3 cm. However, there are reports of larger-sized chondromas. Studies have shown that the presence of irregular clustering of cells (cluster disarray) and striking plumpness of the cell nuclei can be used to distinguish chondroma from low-grade chondrosarcoma [1]. In our case, even if the size of the tumor was greater than 2 cm, microscopic examination showing the presence of evenly distributed relatively monotonous chondrocytes with bland nuclear features, absence of mitotic activities, or nuclear pleomorphism was suggestive of chondroma.

Treatment options for laryngeal chondroma are variable and depend on the symptoms and local extension of the tumor. These are incisional or excisional biopsy, laryngofissure surgery, and endoscopic procedures. Primary tracheostomy is done for individuals whose airways are compromised [1]. For both benign and malignant tumors, the standard surgical management is the excision of the cartilage segment with free margins [2]. Following surgery, patients must be closely monitored for possible recurrence of laryngeal chondroma [1,2]. Recurrence and malignant transformation are serious outcomes that need attention [1].

Conclusion

Laryngeal chondromas are rare benign slow-growing tumors that should be taken into account when listing a differential diagnosis of upper airway obstruction, particularly in older patients. Radiologists and clinicians should have a high index

of suspicion for early diagnosis and prompt management. A combination of clinical, histological, and radiological data has paramount importance for accurate diagnosis of this rare disease. It is difficult to differentiate them from chondrosarcoma solely based on radiological imaging; therefore, radiologists need to specify the origin of the tumor and the level of extension.

Authors' contributions

All authors contributed to the conduct of this research and read and approved the final version of the manuscript.

Ethical consideration

Written informed consent was obtained from the patient to publish this case report and any accompanying images. Institutional approval was not required in the writing of the case report.

Availability of data and materials

The data supporting the findings of the case are available upon request to the corresponding author.

Patient consent

Written informed consent was obtained from the patient to publish this case report. Personal identifiers are not used in this paper.

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