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Case Report

Giant cell tumor of the larynx: A case report

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Abstract

Giant cell tumors (GCTs) most commonly arise in the metaphyseal–epiphyseal regions of long bones but may also occur in the head and neck. Laryngeal involvement is exceptionally rare, with only 46 cases reported in the international literature to date. We present the case of a 32-year-old man without significant comorbidities who was admitted with complaints of hoarseness and dysphagia. A diagnosis of laryngeal GCT was established through fine-needle aspiration (FNA) cytology and subsequently confirmed by postoperative histopathological examination.

Keywords: Giant cell tumor, laryngeal cancer, partial laryngectomy, thyroid cartilage.

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INTRODUCTION

Giant cell tumors of the larynx are exceedingly rare. To date, only 46 cases have been documented in international literature, beginning with the first report by Wessely in 1940 (1). The purpose of this case report is to add to the existing body of knowledge by presenting the clinical, pathological, imaging, and treatment findings of a patient with laryngeal GCT, together with a concise review of the literature. Moreover, we highlight our surgical experience in a patient in whom essential laryngeal functions, including speech and swallowing, were successfully preserved following partial laryngectomy, which was selected as the treatment of choice. We address potential long-term outcomes of laryngeal GCTs and discuss current treatment modalities.

CASE REPORT

In this case report, we describe a 36-year-old man with a GCT originating from the left thyroid cartilage, who was initially treated symptomatically for hoarseness and was later referred to our clinic with complaints of left-sided neck swelling, dysphonia, and dysphagia. The patient had a history of chronic tobacco use and regular alcohol consumption. He reported that his symptoms had begun with persistent hoarseness approximately one year prior to presentation and had shown a gradual and progressive worsening over time. On direct fiberoptic nasopharyngolaryngoscopic examination, a smooth-surfaced submucosal mass with extralaryngeal extension was observed, involving the left aryepiglottic fold and obliterating the left pyriform sinus. The right vocal cord was mobile, whereas the left vocal cord showed restricted mobility (Figure 1). Computed tomography (CT) showed revealed a 3 cm mass extending from the left paraglottic space to the extra laryngeal region, containing a 2.5 cm cystic component and causing airway narrowing in the intralaryngeal region (Figure 2). The patient underwent a direct laryngoscopy-guided biopsy, and a diagnosis of giant cell tumor was established. Immunohistochemically, positivity for H3.3G34W (H3F3A) and SATB2 in tumor cells represents a highly specific diagnostic finding, and this staining pattern was demonstrated by molecular studies performed on tumor tissue in the present case (Figure 3). A supracricoid partial laryngectomy with cricohyoidopexy was performed via an open approach (Figure 4). The surgery was uneventful, with no significant intraoperative bleeding or complications, and did not require additional reconstruction. Postoperatively, the patient achieved satisfactory vocal outcomes with gradual improvement over time. At the 19-month follow-up, there was no evidence of tumor recurrence, and near-complete functional recovery was achieved in terms of speech and swallowing.

DISCUSSION

GCTs are common skeletal tumors that occur mainly at the distal end of the femur and the proximal end of the tibia (2). Giant cell tumors account for about 4% of all primary bone tumors, and approximately 2% of them are located in the head and neck region (3). In the head and neck, GCTs are most frequently found in the maxillary region and at the base of the skull (2). Giant cell tumor of the larynx is a rare entity, with 46 cases reported in the literature. The first case was reported by Wessely et al. in 1940, and the most recent by Umar Riaz et al. in 2024 (1). According to the literature, laryngeal GCTs are more common in males than females. The thyroid cartilage is the most frequently affected site, followed by the cricoid cartilage and the epiglottis. The most common treatment modality is surgery, followed by combined surgery and radiotherapy, radiotherapy alone, chemotherapy combined with surgery, denosumab combined with surgery, and chemotherapy combined with surgery (4). Although these tumors are generally benign, they may rarely behave in a locally aggressive manner, recur, or give rise to pulmonary metastases (5). Only one case of GCT with osteosarcomatous malignant transformation has been reported. That patient

underwent successful partial laryngectomy with adjuvant chemotherapy and had no recurrence after 6.3 years of follow-up (6). The differential diagnosis of a patient presenting with anterior neck swelling and a mass involving the thyroid cartilage includes chondroblastoma, chondrosarcoma, osteoblastoma, giant cell-rich osteosarcoma, foreign body reaction, brown tumor due to hyperparathyroidism, and GCT (2,7). Imaging studies are usually insufficient to differentiate these entities; therefore, histological examination is necessary for a definitive diagnosis (4,7). Giant cell tumors are lesions with contrast-enhancing soft tissue components. The presence of hemosiderin and collagen matrix accounts for their low signal intensity on T2-weighted MRI. This imaging characteristic is valuable in the differential diagnosis, as chondroid tumors typically demonstrate high signal intensity on T2-weighted images due to the presence of hyaline cartilage (8). In GCT, the mononuclear component expresses receptor activator of nuclear factor kappa-B ligand (RANKL), alkaline phosphatase, and markers of the osteoblast lineage. Immunohistochemistry is highly sensitive and specific for tumors harboring the histone H3F3A G34W mutation. Although both this marker and SATB2 were positive in our case, the anti-histone G34W antibody is a valuable diagnostic tool for supporting the diagnosis of GCT and distinguishing it from other lesions. However, a limitation of this marker is that a small subset of GCTs harbor G34 mutations other than G34W, which cannot be detected by this antibody (5). The literature supports surgical treatment as the standard approach for laryngeal GCTs. However, the role of novel therapeutics, such as denosumab, in potentially minimizing treatment-related morbidity continues to evolve. In the postoperative period, it may be difficult to distinguish residual tumor from granulation tissue using clinical and imaging methods. Therefore, postoperative baseline imaging should be performed, and the patient should be followed for at least 5 years using the same imaging modality (8).

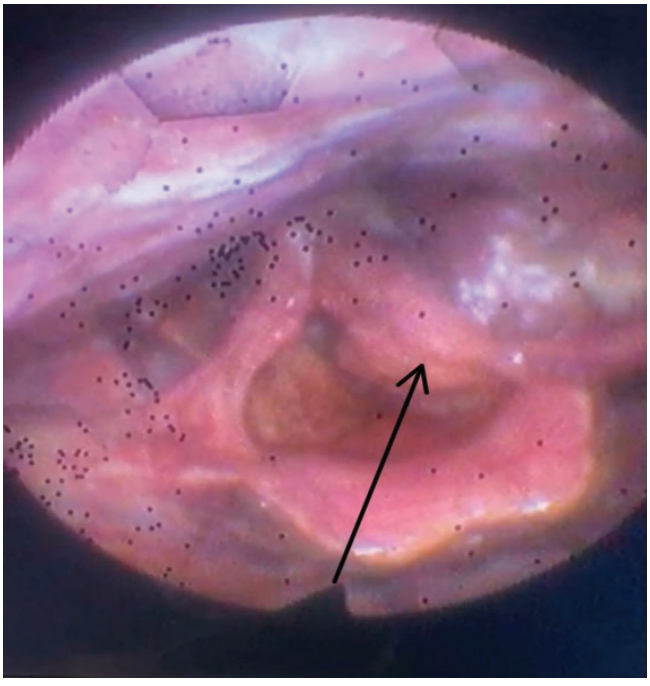

Figure 1. The fiberoptic endoscopic view revealed a smooth-surfaced submucosal mass with extralaryngeal extension, involving the left aryepiglottic fold and obliterating the left pyriform sinus.

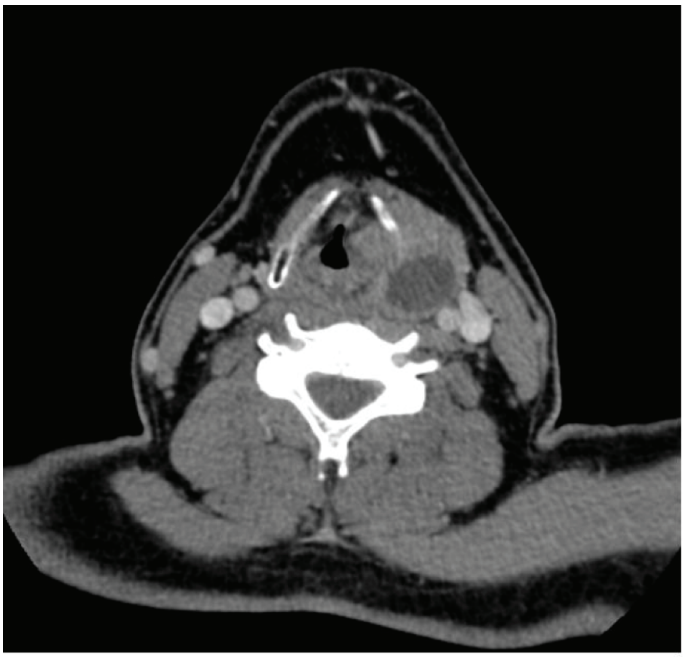

Figure 2. Computed tomography (CT) showing a 3 cm mass extending from the left paraglottic space to the extralaryngeal region, with a 2.5 cm cystic component and resulting in airway narrowing in the intralaryngeal region

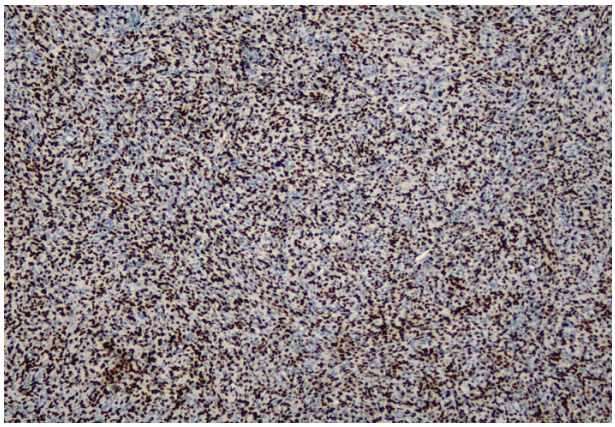

Figure 3. H3.3G34W nuclear immunoreactivity in neoplastic cells, X10.

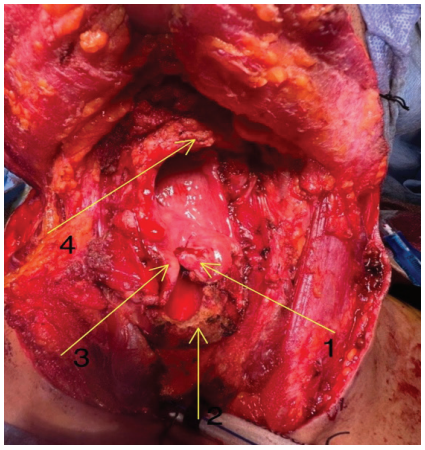

Figure 4. An intraoperative image showing the surgical site (1- left arytenoid,2 - cricoid cartilage, 3-right arytenoid,4 - epiglottis petiole)

CONCLUSION

Laryngeal GCTs are benign tumors with a high cure rate following surgical resection and an excellent prognosis. The literature emphasizes treatment strategies, and studies consistently demonstrate that surgical resection is superior to other modalities in terms of long-term success, while also aiming to avoid the need for additional treatments such as radiotherapy or chemotherapy and their potential complications. In our case, we performed partial laryngectomy, and no recurrence was observed during 9 months of follow-up. Emerging treatment modalities, such as denosumab, are under investigation, and it is anticipated that medical therapies may reduce or potentially eliminate the need for surgery in selected cases in the future.

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