Radiology Case Reports 19 (2024) 1575–1578

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case Report

Giant cell tumor of paralaryngeal soft tissues, extending to the laryngeal cartilage ☆,☆☆

Leomar Benicio Maia Segundo, MD[a,*], *Sílvia Marçal Benício de Mello, MD*[a], *Marcus Vinícius Furlan, MD*[b], *Antonio de Rosis Sobrinho, MD*[b], *Lucas Faria Abrahao-Machado, PhD*[c]

[a] *Head and Neck Radiology department - Hospital Beneficência Portuguesa. Rua Maestro Cardim, 637, São Paulo, Brazil*

[b] *Head and Neck Surgical department - Hospital Beneficência Portuguesa. Rua Maestro Cardim, 637, São Paulo, Brazil*

[c] *Senior pathologist at Laboratório Bacchi, Rua Major Leônidas Cardoso, 739, Botucatu, Brazil*

ARTICLE INFO

Article history:
Received 18 August 2023
Revised 7 January 2024
Accepted 9 January 2024

Keywords:
Giant cell tumor
Soft tissues
Paralaryngeal mass
Larynx
Head and neck

ABSTRACT

Paralaryngeal mass with secondary extension to the thyroid cartilage involving confluent cysts, subjected to conservative surgical treatment with a diagnosis of giant cell tumor of soft tissues, a neoplasm morphologically similar but genetically unrelated to osseous giant cell tumors.

Introduction

Giant cell tumors of soft tissues (GCT-ST) are fibrohistiocytic neoplasms that bear morphological resemblance to, yet are genetically distinct from, giant cell tumors of the bone. Typically arising in the superficial soft tissues of the extremities or trunk, they occasionally manifest in other anatomical sites, including the head and neck region (7%) [1,2]. While GCT-ST generally exhibits a benign clinical course, distant metastases can infrequently occur.

This case report underscores the unusual presentation of this entity as a paralaryngeal mass with secondary extension to the thyroid cartilage, featuring multiple confluent cysts and fluid levels. Furthermore, it highlights the surgical management aimed at preserving laryngeal function.

☆ Acknowledgments: There was no financial support for this article, and there are no conflicts of interest to disclose.

☆☆ Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

* Corresponding author.
E-mail address: leomarbmaia@gmail.com (L.B. Maia Segundo).

https://doi.org/10.1016/j.radcr.2024.01.024

Case report

This case report was approved by the Research Ethics Committee of Hospital Beneficência Portuguesa de São Paulo (registration number: 5.515.596; Certificate of Presentation for Ethical Review - CAAE number: 59995422.0.0000.5483).

A 70-year-old male patient presented to the emergency department with a complaint of painless nodulation in the left cervical region, mild dysphonia (hoarseness), weight loss of approximately 10 kg, dysphagia for solids, halitosis, and purulent gingival secretion.

Upon physical examination, a large painless nodulation in the left cervical region was observed, seemingly related to the thyroid cartilage. Computed tomography and magnetic resonance imaging were requested for a more comprehensive characterization of the lesion (Fig. 1).

Cytology of the left cervical cystic lesion revealed a Bethesda II diagnosis (likely colloid goiter). On the same date, a biopsy of this lesion diagnosed thyroid tissue without atypia, with interstitial lymphocytic infiltrate and areas of cystic appearance with giant cell reaction. In this context, colloid goiter was the preferred diagnosis.

The patient underwent left exploratory cervicotomy followed by total thyroidectomy, extending to the thyrohyoid, inferior cricopharyngeal, cricothyroid, and the external lamina of the thyroid cartilage musculature. On the second postoperative day, the patient developed a small subcutaneous emphysema in the left cervical region, presented a minor fistula, and was conservatively treated with compressive dressing, antibiotic therapy, and nasoenteral feeding.

The patient improved clinically, without dysphonia or bleeding and was discharged after 10 days.

Macroscopic images showed a nodular solid-cystic tumor measuring 4.5 × 4.0 cm adherent to peri-thyroid soft tissues and the thyroid cartilage lamina. Histopathological analysis revealed a mesenchymal lesion composed of nodules containing a mixture of round, oval mononuclear cells, and multinucleated giant cells resembling osteoclasts, randomly arranged around cystic-hemorrhagic spaces, with peripheral metaplastic bone formation. Immunohistochemical study showed CD68 expression in giant tumor cells and SATB2 expression in the metaplastic bone areas of the stroma. Tumor cells have showed no immunoreactivity for histone H3.3 G34W (Fig. 2).

The patient underwent adjuvant treatment with intensity-modulated radiotherapy at a dose of 60 Gy in 30 fractions.

After 1 year of follow-up, the patient was well, with no residual or recurrent lesions on computed tomography (Fig. 3).

Discussion

GCT-ST are fibrohistiocytic neoplasms of uncertain behavior and unknown etiology, first described by Salms and Sissons in 1972 [3]. These tumors typically affect adults, with an incidence peak in the fifth decade of life, and have an equal gender distribution.

GCT-ST often presents as an indolent mass, characterized by slow growth and an expected predominantly benign course, with metastases being exceedingly rare.

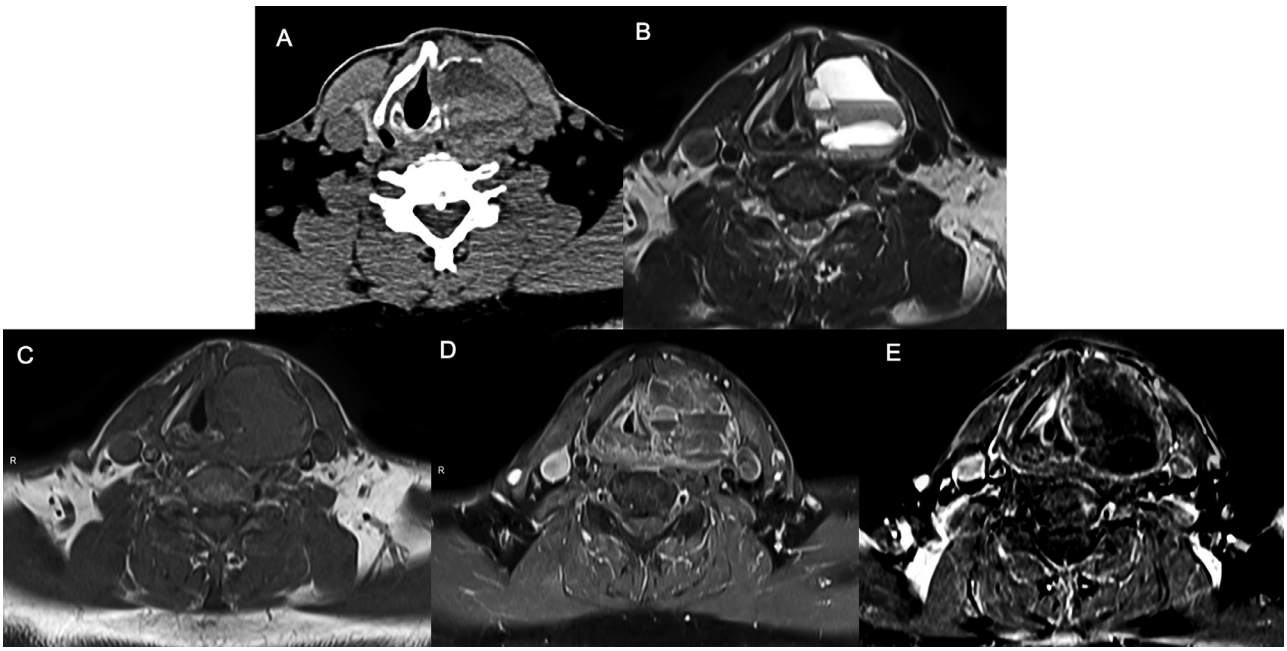

Fig. 1 – (A) Computed tomography (CT) showing left paralaryngeal mass inseparable from the thyroid cartilage lamina, with multiple fluid levels. (B) T2-weighted Magnetic resonance imaging (MRI) provides a better view of the solid-cystic appearance and the extent of the lesion involving the thyroid cartilage. (C) Precontrast T1-weighted MRI shows an intermediate signal lesion; (D) Postcontrast T1 and (E) Postgadolinium T1 with subtraction: left paralaryngeal mass with subtle peripheral enhancement and septal enhancement.

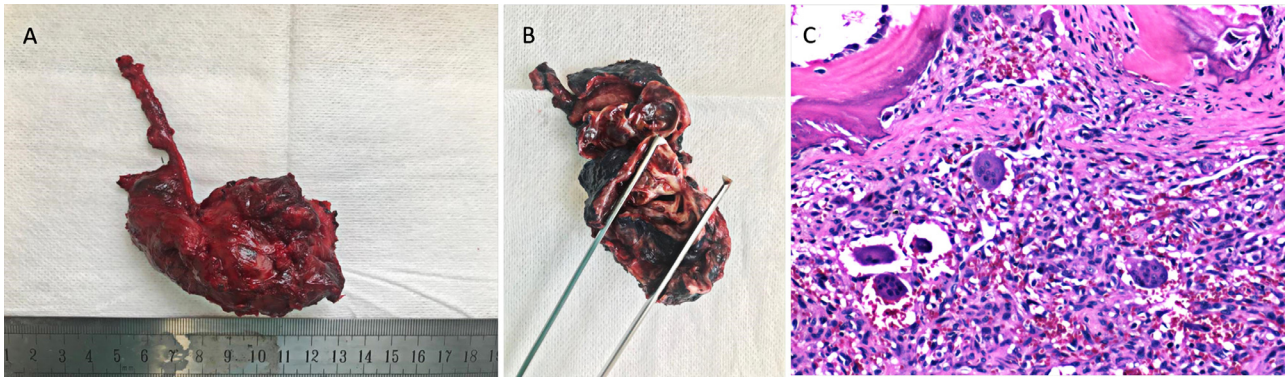

Fig. 2 – (A,B) Postoperative images of the macroscopic specimen displaying the solid-cystic tumor. (C) Photomicrograph (hematoxylin-eosin, 40X) showing a mixture of multinucleated and mononuclear cells immersed in stroma with hemorrhage and metaplastic bone.

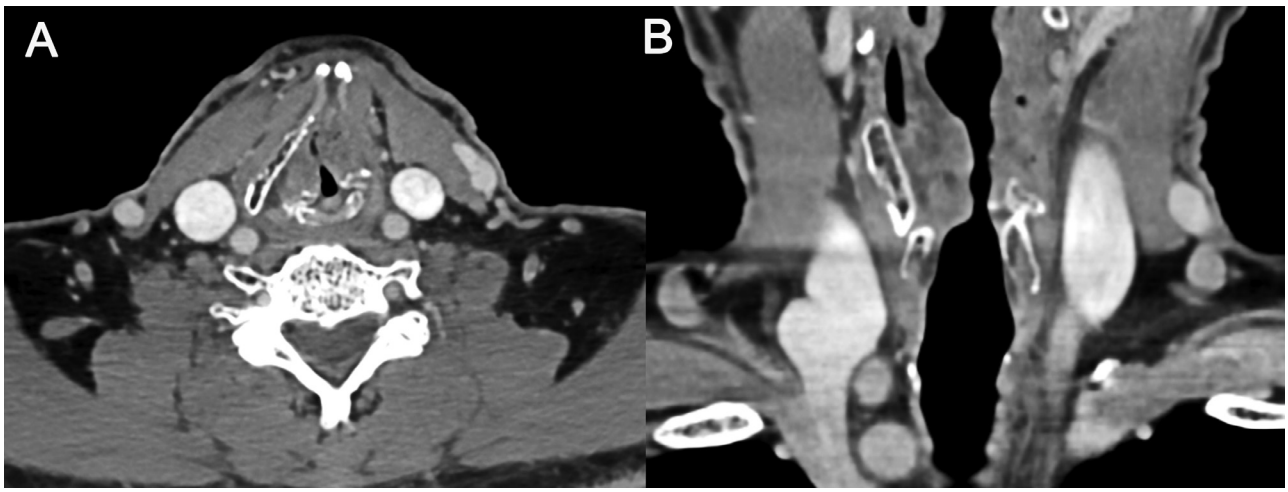

Fig. 3 – Computed tomography (CT) image showing the postoperative follow-up with partial laryngectomy and total thyroidectomy, with no signs of residual lesion or recurrence.

The diagnosis of giant cell tumors of soft tissues is histologically established, and the lesion's location is crucial for diagnosis. Macroscopically, they manifest as well-defined, solid nodular lesions, with colors ranging from reddish-brown to gray. Many tumors exhibit peripheral regions of mineralized bone. They are considered primary neoplasms of soft tissues, histologically and clinically resembling giant cell tumors of bone, as they feature multinodular aggregates of round to spindle-shaped neoplastic cells, along with numerous multinucleated giant cells resembling osteoclasts.

Although GCT-ST shares morphological characteristics with osseous GCT, it lacks mutations in the H3F3A gene that are present in the vast majority of its bony counterpart, suggesting a different pathogenesis and indicating that these tumor types are not, in fact, related [4].

Soft tissues of the extremities are most commonly involved (70%), followed by the trunk (20%), and the head and neck region (7%) [5].

GCT has been described in sites of endochondral bone ossification in the skull base. Previous reports have described GCT of the larynx arising from the endochondral bone of the laryngeal skeleton, except for a case report of an extraosseous subglottic soft tissue giant cell tumor of the larynx [6]. There is no typical radiological appearance.

GCT-ST predominantly exhibits a benign behavior, and local recurrence is uncommon, occurring in approximately 12% of cases [7], making complete surgical excision advisable. Pulmonary metastases are very rare.

Our case presents a pathologically confirmed paralaryngeal giant cell tumor (GCT) involving soft tissue with extension to the thyroid cartilage, characterized by multiple confluent cystic lesions with fluid levels, which is uncommon. Typically, the diagnosis is established through anatomopathological correlation.

There are few reported cases of GCT-ST in the head and neck region described in the literature, and information regarding treatment and postoperative management is limited. As a result, there are variations in treatment approaches depending on the hospital and the experience of the medical team handling the case. Additionally, the need for sys-

temic staging in patients diagnosed with GCT-ST is not well-established, given the low risk of metastasis.

The complete resection of the tumor with clear margins should be performed. GCT-ST are responsive to radiotherapy, which can be administered in cases of surgical excision with compromised margins due to the tumor's proximity to critical structures. Factors influencing the surgical approach and defining the extent of the procedure, such as partial or total laryngectomy, include the potential for recurrence, postoperative function, and quality of life. Complete surgical excision with clear resection margins is expected to be curative.

Conclusion

We present the unusual case of a paralaryngeal GCT-ST with extension to the thyroid cartilage, presenting as a cervical mass with cavities containing fluid, diagnosed histologically. Surgical resection was performed while preserving the larynx, allowing for functional maintenance.

Due to its infrequent occurrence and limited cases described in the literature, knowledge of this entity and its therapeutic management warrant multidisciplinary discussion.

Patient consent

I hereby confirm that written and informed consent for the publication of the case has been obtained from the patient. The patient has been provided with all necessary information regarding the nature of the publication, its purpose, potential audience, and any potential risks associated with the dissemination of their case details. The patient's identity will be protected, and all efforts will be made to ensure confidentiality. The patient has been given the opportunity to review the case details and has willingly agreed to the publication.

REFERENCES

[1] Hafiz Shahd M, Bablghaith Eman S, Alsaedi Amal J, Shaheen Mohammad H. Giant-cell tumors of soft tissue in the head and neck: a review article. Int J Health Sci 2018;12(4):88–91.
[2] Bandyopadhyay A, Khandakar B, Medda S, Dey S, Paul Pabrir C. Giant cell tumour of soft tissue in neck: an uncommon tumour in an uncommon location. J Clin Diagn Res 2015;9(12):ED19–20. doi:10.7860/JCDR/2015/15384.6954.
[3] Salm R, Sissons HA. Giant-Cell tumours of soft tissues. J Pathol 1972;107:27–39. doi:10.1002/path.1711070106.
[4] Lee JC, Liang CW, Fletcher Christopher DM. Giant cell tumor of soft tissue is genetically distinct from its bone counterpart. Mod Pathol 2017;30(5):728–33. doi:10.1038/modpathol.2016.236.
[5] Choi Joon Hyuk, Ro Jae Y. The 2020 WHO classification of tumors of soft tissue: selected changes and new entities. Adv Anat Pathol 2021;28(1):44–58. doi:10.1097/PAP.0000000000000284.
[6] Rochanawutanon M, Praneetvatakul P, Laothamatas J, Sirikulchayanonta V. Extraskeletal giant cell tumor of the larynx: case report and review of the literature. Ear Nose Throat J 2011;90(5):226–30. doi:10.1177/014556131109000509.
[7] Who Classification of Tumours Editorial Board. Soft Tissue and Bone Tumours 2020. http://books.google.com/books?vid=ISBN9789283245025.