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Parapharyngeal Tumor: An Unusual Case Report

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Abstract

Angiofibromas are highly vascularized benign lesions that mainly arise in adolescent male patients in the region of the nasopharynx. Extra nasopharyngeal angiofibromas are rare entities. We present a case of an unusual site of angiofibromas. It is a 39-year-old patient, male referred to our hospital for a right cervical and oropharyngeal swelling that has been evolving for 7 years and increased rapidly in size 4 months ago. A computed tomographic (CT) scan with contrast agent injection revealed the presence of a mass obliterating the right parapharyngeal space without specific aspect. After complete removal, an angiofibroma was found in the histological analysis. Angiofibromas should be added to the differential diagnosis of the parapharyngeal tumors as they require specific management, especially avoiding invasive biopsies.

Keywords

Angiofibroma, Parapharyngeal Tumors, Extra Nasopharyngeal Angiofibroma

1. Introduction

Angiofibromas originate predominantly in the posterior lateral wall of the nasopharynx. Extra-nasopharyngeal angiofibromas have rarely been reported. Primary sites of extra-nasopharyngeal angiofibromas are mentioned to be the nasal septum, maxillary sinus, and ethmoids. Parapharyngeal angiofibroma is a diagnostic surprise for the clinician due to its strange localization [1]. The clinical diagnosis can be difficult, as the symptomatology is variable and non-specific, Imaging studies are very useful to study this deep anatomical region and orientate to the vascular type of angiofibroma. Histological analysis is essential to confirm the diagnosis of angiofibroma and eliminate differential diagnosis, especially minor

salivary gland tumor [2].

In this article, we report a case of a 39-year-old patient, admitted to our department for parapharyngeal angiofibroma revealed by a cervical and oropharyngeal swelling.

2. Case Report

A 39-year-old patient, male, with a history of polysubstance use disorder (No precipitating factors identified on questioning) and treated viral hepatitis C, there was no history of prior surgery or familial malignancy, referred to our hospital for a progressive right cervical and oropharyngeal swelling that has been evolving for 7 years and increased rapidly in size 4 months ago. The patient reports a gradual change in his voice quality and swallowing difficulty recently.

Clinical examination revealed the presence of a firm right submandibular mass, mobile, non pulsatile and painless. At the opening of the oral cavity we noticed a bulging of the soft palate, the right tonsillar fossa was pushed medially realising an asymmetric aspect of the oropharynx, no lesions were apparent in the pharyngeal mucosa. No stridor or respiratory compromise. Our patient had a poor oral hygiene and partial edentulism. Cranial nerve examination (VII, IX, X, XI, XII) was normal. (**Figure 1**)

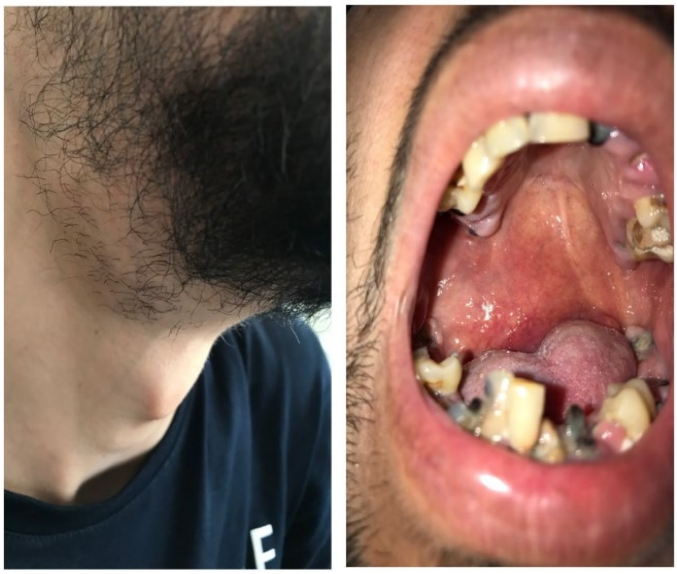

Figure 1. Image showing the appearance of the mass at the cervical inspection and at the mouth opening.

Computed Tomography (CT) scan revealed a large mass of the right parapharyngeal space without a specific appearance. (**Figure 2**)

Biopsy decision was avoided due to high suspicion of a vascular tumor. A complete trans-cervical removal of the tumor was performed (**Figure 3**), and then addressed for histological study. (**Figure 4**)

The tumor is a benign vascular angiofibroma.

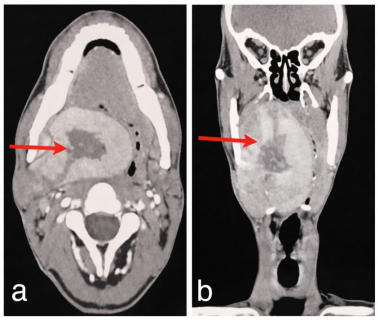

Figure 2. (a): Axial CT view shows the mass obliterating the right parapharyngeal space and extending to the midline. (b): Coronal CT view shows the mass occupying the right parapharyngeal space.

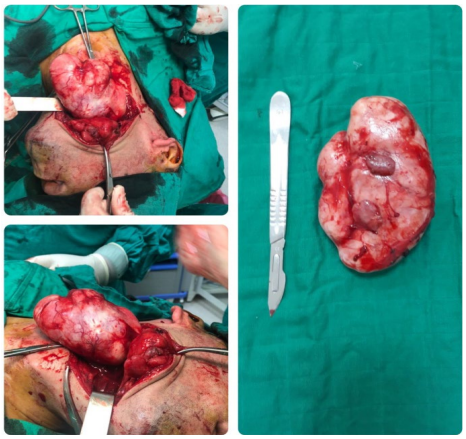

Figure 3. Picture of the parapharyngeal space tumor of firm consistency popping out after exposure and its totality after complete removal.

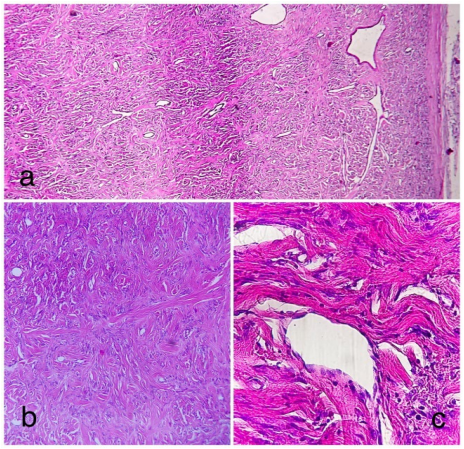

Figure 4. Histological examination (hematoxylin and eosin stain). (a) Tumor proliferation composed of vascular structures of variable size, bordered by a single layer of regular endothelial cells (H&E, ×100); (b) Associated collagenous mesenchymal proliferation arranged in dense felting with numerous fibroblasts (H&E, ×200); (c) Higher-power view highlighting dense collagen bundles and fibroblastic proliferation within the mesenchymal component (H&E, ×400).

On follow up after a period of 2 years, no evidence of tumor recurrence was observed. (**Figure 5**)

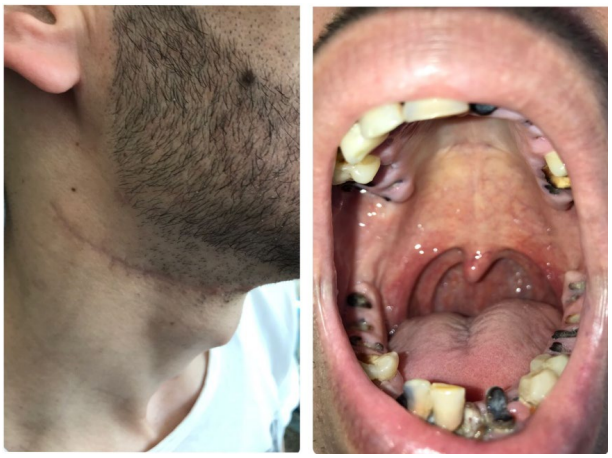

Figure 5. Post operative image showing good healing with a free aspect of the oropharynx.

3. Discussion

Parapharyngeal space (PPS) tumors are rare and account for only 0.5% of all head and neck neoplasms. Its majority are benign, malignant tumors account for 12.7% - 20% [3].

Angiofibromas originate predominantly in the posterior lateral wall of the nasopharynx Extra-nasopharyngeal angiofibromas have rarely been reported and its primary sites are mentioned to be the nasal septum, maxillary sinus, and ethmoids [4].

Parapharyngeal angiofibroma is a diagnostic surprise for the clinician and an unusual, rare entity. Currently, the prevailing hypothesis suggests these tumors may originate from testosterone-dependent vascular malformations [1].

Parapharyngeal tumors are manifested as asymptomatic laterocervical masses or pharyngeal bulges. They may be revealed incidentally during a consultation or imaging for another health problem. The symptomatology is influenced by the tumor's anatomical location, direction of growth, size, and involvement of adjacent nerves [2].

Our patient had symptoms related to tumour mass effect: voice change and swallowing difficulty as the tumor increased in volume, without any neurologic deficit.

Neurological deficits, when present, may be partial or complete, and patients can report hoarseness, dysphagia, dysarthria, or persistent coughing. The presence of pain, trismus, or sensory disturbances raises suspicion for malignancy. The tumor may cause cranial nerve palsies, particularly affecting nerves VII, IX, X, XI, and XII, through direct invasion or compressive effects [2].

Radiological explorations are fundamental for the evaluation of parapharyngeal tumors due to the limitations of clinical examination in this deep anatomical re-

gion. It provides important information including location (pre- or post-styloid space) and neoplasm extent (size, invasive spread and associated lymph node involvement). The additional administration of contrast product may indicate the vascular nature of the tumor [2].

Parapharyngeal tumors may occasionally exhibit multicentric growth patterns. Gadolinium-enhanced Magnetic Resonance Imaging (MRI) is regarded as the preferred diagnostic tool for detailed assessment of these lesions. In patients unable to undergo MRI, contrast-enhanced CT provides an acceptable alternative [5].

Unlike their nasopharyngeal counterparts, extranasopharyngeal angiofibromas may lack significant vascularity on conventional angiography, which does not preclude their diagnosis [6].

Our patient underwent a cervical CT scan with biphasic injection of contrast product, it showed a large mass centered on the right parapharyngeal fatty space (**Figure 2**), this mass is oval, with a large vertical axis, well-limited, heterogeneous with a necrotic center and a strongly enhanced periphery after injection of contrast product. It is the site of multiple intra-tumoral blood vessels and reaches the base of the skull at the top. Posteriorly, it comes in contact with the internal and external carotid arteries.

This non-specific radiological aspect with these different vascular reports and its highly vascular contrast-enhancing CT appearance did not convince us to perform a trans oral biopsy or a fine needle aspiration biopsy given the risk of hemorrhage.

MRI, considered the gold standard for PPS tumors, was not obtained due to limited availability in our setting.

Moreover, Preoperative angiography with embolization was considered but not performed because contrast-enhanced CT demonstrated a well-circumscribed lesion without major arterial encasement, the tumor was considered amenable to safe surgical resection with controlled intraoperative hemostasis, and endovascular embolization was not available at our institution.

Nonetheless, fine needle aspiration (FNA) demonstrates high diagnostic precision, with particularly strong sensitivity and specificity in identifying malignant tumors. When performed in the parapharyngeal space, FNA proves valuable in diagnosing conditions such as lymphoma, primary malignancies, and metastatic lesions, thereby facilitating appropriate diagnostic workup and therapeutic planning [2]. While providing less informations for the diagnosis of angiofibroma where most of the smears are grossly hemorrhagic with few spindle cells only [7].

Moreover, Transoral biopsy of a PPS tumor is infrequently recommended due to its potential risks. This approach may result in damage to the internal carotid artery or cranial nerves, particularly if these structures are displaced or anatomically variant. Additionally, such a procedure can modify the tumor's characteristics and promote the formation of adhesions with surrounding pharyngeal tissues, complicating subsequent management [2].

In the present case, preoperative biopsy was avoided because of the lesion's

marked vascularity and the associated risk of hemorrhage. However, CT-guided core needle biopsy (CNB) has been reported as a safe and diagnostically reliable option for selected parapharyngeal tumors [8]. In retrospect, this approach might have been considered to obtain preoperative histological information while maintaining a low complication risk, although the decision would still require careful evaluation in highly vascular lesions.

On preoperative evaluation, the mass raised suspicion for a minor salivary gland neoplasm or other tumors such as paraganglioma, hemangiopericytoma, solitary fibrous tumor, or neurogenic lesions. Parapharyngeal masses may also represent metastatic lymphadenopathy, lymphoma, inflammatory pseudotumor, or infectious processes, including tuberculosis and fungal infections [9].

As for NAs, the treatment of choice for ENAs is surgery [10]. Radiotherapy may be applied for unresectable cases [5].

Trans-cervical excision with horizontal lateral incision was planned. An 11 cm bumpy swelling involving the right para pharyngeal space was found and dissected out, Because preoperative embolization had not been performed, hemostasis was achieved intraoperatively in a stepwise manner by early exposure and vascular control of the major cervical vessels, meticulous capsular dissection in relatively avascular planes, progressive bipolar coagulation of feeding vessels encountered at the tumor surface, clamp-and-ligate control of larger vascular pedicles. Continuous suction, gentle traction-countertraction, and staged devascularization of the mass before final release allowed safe mobilization despite its hypervascular nature, The tumor was in close contact with carotid vessels but no vascular invasion, also, there was no cranial nerve infiltration. Moderate blood loss was controlled, estimated at 100 ml. No intraoperative complications. A complete excision was achieved (**Figure 3**). Post operative course was uneventful, with no neurological deficits. Discharged on day 3.

In PPS surgery, the transcervical approach is widely utilized due to its technical advantages, including optimal neurovascular control and avoidance of oral cavity contamination [2].

Emerging evidence in the literature highlights the role of transoral robotic surgery in selected PPS tumors. Its use has been advocated when cytological analysis suggests benign pathology and imaging confirms preservation of adjacent cranial structures [8].

The postoperative macroscopic evaluation revealed an encapsulated and vascularized piece of bumpy appearance, whitish in color, firm in consistency, measuring 2.5 * 2 cm, surrounded by a grayish parenchyma (**Figure 3**).

Histological analysis showed a benign tumor proliferation with a double vascular and fibrous contingent. The vascular contingent is formed by thick-walled vessels and vascular lakes. The fibrous contingent is composed of a collagenous stroma arranged in a dense felting with multiple fibroblasts. An appearance compatible with an angiofibroma (**Figure 4**). Margins were assessable and free of tumor. The absence of cellular atypia and malignant stromal features excluded: sol-

itary fibrous tumor, low grade sarcoma and hemangiopericytoma. There was no need for immunohistochemistry studies due to classic morphology.

Recent literature indicates that ENAs demonstrate a more favorable prognosis compared with juvenile nasopharyngeal angiofibroma. Systematic reviews report low recurrence rates following complete surgical excision (approximately 5%), with most recurrences occurring early when present. ENAs also tend to exhibit less aggressive vascular behavior and limited skull base involvement, contributing to improved surgical control and outcomes [11]. In contrast, nasopharyngeal angiofibroma carries higher recurrence rates (up to 30% - 40%), necessitating prolonged surveillance. These findings support the generally favorable oncologic behavior of ENA when complete resection is achieved [12].

4. Conclusions

Parapharyngeal tumors are most often benign; however, delayed diagnosis or management may result in significant morbidity due to progressive growth and involvement of adjacent critical vascular and neural structures. Early recognition and appropriate evaluation are therefore essential.

Angiofibroma should be considered in the differential diagnosis of parapharyngeal masses. Comprehensive imaging assessment is mandatory prior to any invasive diagnostic procedure, as biopsy or needle aspiration, without adequate radiologic evaluation, carries a substantial risk of severe hemorrhage.

Ethics Statement

Written informed consent was obtained from the patient for publication of this case report and accompanying images. Institutional ethical requirements were respected according to local regulations.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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