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Intramasseteric Schwannoma mimicking an isolated cheek mass: Case report and review of literature

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ABSTRACT

INTRODUCTION: Schwannoma is a benign well circumscribed tumor of the nerve sheath and it is mostly localized in the head and neck. Intramasseteric schwannoma represents a very rare entity and a few cases have been described in the literature.

PRESENTATION OF CASE: We present a case of an isolated, asymptomatic and slowly progressive right cheek tumor in a middle aged man. Although multiple investigations, including neck scanner and fine needle aspiration, were done, the diagnosis was obscure and difficult before definite surgical resection. Surgery showed an isolated and well-defined tumor inside the masseter muscle which was completely resected. Histopathologic finding confirmed the diagnosis of schwannoma with the characteristic Antoni A and Antoni B cells.

DISCUSSION: Among benign tumors of the peripheral nerves, schwannoma is a specific type that originates from Schwann cells. It is typically slowly growing, neoplasm that is displacing neural structures without direct invasion. History, physical examination, fine needle aspiration, and magnetic resonance imaging are used as diagnostic modalities, however definitive diagnosis and identification of the affected nerve are often difficult up to the time of surgery.

CONCLUSION: Herby we describe a very rare localization of schwannoma arising from masseter muscle in a 30 year old man who presents with painless neck mass. This rare entity should be considered in the differential diagnosis in any patient presented with cheek mass.

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1. Introduction

This work has been reported in line with the SCARE criteria [1]. First described by Verocay, schwannomas, also known as neurilemmomas, neuromas, or neurinomas, are uncommon nerve sheath neoplasms that may originate from any myelinated peripheral (motor or sensory), spinal, cranial or autonomic nerve with the exception of the olfactory and optic nerves. The head and neck region is the most frequent site of soft tissue schwannoma (25–41.5%) [2].

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Although the classic example is an acoustic neuroma, schwannomas are more common as extra cranial tumors mostly in the parapharyngeal space [3–5]. However, only few cases of intra masseter schwannoma have been described in the literature [6].

2. Presentation of case

30 year-old bearded man, previously healthy presented to our academic institution with a right, painless cheek mass that was discovered accidentally during shaving. Physical examination showed a soft, mobile and non-tender right facial mass of 4.0 × 3.0 × 2.0 cm (Fig. 1) likely arising from the superior part of the parotid gland. Otherwise oral, otologic and nasopharyngeal examinations were normal without any facial or neurologic deficit. Laboratory data were within normal limits. Cervical computed tomography (CT) scan showed a 3.5 × 2.5 cm ring enhancing, necrotic lesion (Fig. 2) involving the masseter muscle along the superficial portion and deep to the zygomatic arch without definite intra-parotid extension. Fine needle aspiration (FNA) showed parotid benign acini and



Fig. 1. Right cheek mass hides under the beard (circle).

scantly cellular fluid, which are nonspecific but may represent a hypertrophic process involving the parotid or a cystic mass in the proximity of the parotid. Throughout two months of follow up, the tumor increased in size and decision to remove it was taken. Intraoperatively the parotid gland was completely normal, but just anterior/superior to it; we could palpate a mobile tumor under the masseter muscle. After incising it, we found a smooth, soft, yellowish and well circumscribed tumor of $4.0 \times 3.5 \times 2.0$ cm (Fig. 3). The tumor was completely resected.

Pathologic examination showed a well encapsulated tumor surrounded by a fibrovascular capsule. The characteristic Antoni A and Antoni B areas were seen. Whirling cells and Verocay bodies were observed as well as hypocellular areas containing siderophages with dilated vessels, thick, hyalinized wall and cystic lesions. Immunohistochemical studies showed proliferative cells highly positive for S 100 protein. Few cells were positive for KI 67. The diagnosis was schwannoma with degenerative changes.

3. Discussion

Schwannoma is considered the most common primary tumor of the trochlear, facial, glossopharyngeal and eleventh nerves [6,7,2]. Some uncommon location also described like tracheal, paranasal sinuses, orbit and middle ear [3,8]. It is typically a well circumscribed, slowly growing neoplasm that is grossly encroaching on and displacing neural structures without direct invasion. [4].

Histologically, they are characterized by a specific hypercellular and spindle cells with elongated nuclei, known as Antoni A areas. As well as by less dense reticular areas characterized by spindle or oval cells with indistinct cytoplasm called Antoni B or reticular-type areas [9,7]. Malignant schwannomas differ from the benign type in their higher mitotic rate, presence of necrosis, infiltrative appearance and their irregular positivity for the S-100 protein [10]. Schwannoma should be differentiated from neurofibroma by employing immunostains to S100 protein (which should be positive in all cases), CD34, and calretinin [11].

Otolaryngologists should be familiar with the different presentations and the potential difficulties associated with the diagnosis and management of schwannomas [8]. History, physical examination, FNA, and magnetic resonance imaging (MRI) are used as diagnostic modalities, however definitive diagnosis and identification of the affected nerve are often difficult up to the time of surgery [7]. The most likely presentation of an extracranial nonvestibular head and neck schwannoma is an asymptomatic longstanding

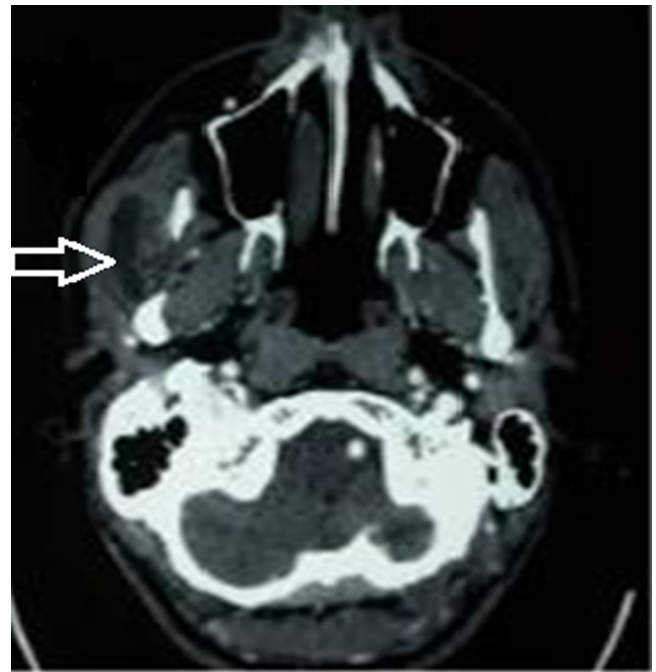


Fig. 2. Computed Tomography scan with contrast showed tumor localized anterior/superior to the parotid (white arrow).

left-sided parapharyngeal space neck mass [9,7]. Regarding the rarity of intramasseter schwannoma, we suspected first a parotid tumor but it was unusually more anterior and superior. Differential diagnosis must include metastatic or reactive lymphadenopathy, some soft tissue neoplasms (like fibroma, leiomyoma, lipoma) paraganglioma, angioma, carotid artery aneurysm, branchial cleft cyst, as well as parotid schwannomas and other neurogenic tumors [2,12,13].

FNA, CT scans and MRI provide good but often limited information in the diagnosis of schwannomas [14]. Although FNA is very useful in most head and neck masses, it has a low accuracy in the diagnosis of schwannoma as described by Zbären et al. [15] and in many cases, only the macroscopic and pathologic findings during surgery provide evidence of it [16].

Radiologically, schwannoma typically demonstrates heterogeneous low density on CT; it is low to isosignal in intensity on T1-weighted MRI image, iso-to-high signal intensity on T2-weighted MRI images and enhances homogeneously on postcontrast T1 weighted MRI [3]. Unfortunately, these patterns of signal intensity are neither specific for neural tumors, nor do they allow differentiation between benign and malignant nerve sheath tumors. Distinctive features that suggest a peripheral nerve sheath tumor include a location in the region of a major nerve, depiction of the nerve entering or exiting the mass, and the presence of certain signs (split fat sign, fascicular sign, target sign) [17].

Complete surgical excision is the standard treatment for schwannoma since radiotherapy and chemotherapy are of limited effectiveness [7]. The classic approach to masseter schwannoma is that of parotidectomy, if possible, correct preoperative diagnosis is important for protecting the nerve of origin from injury [6]. In our case, we were not able to identify the nerve of origin; a small nerve in the masseter muscle must have been involved since such nerves are often obliterated by the tumor. On the other hand, in cases of major nerve involvement, immediate reconstruction and postoperative rehabilitation should be undertaken in the context of a multidisciplinary management team.

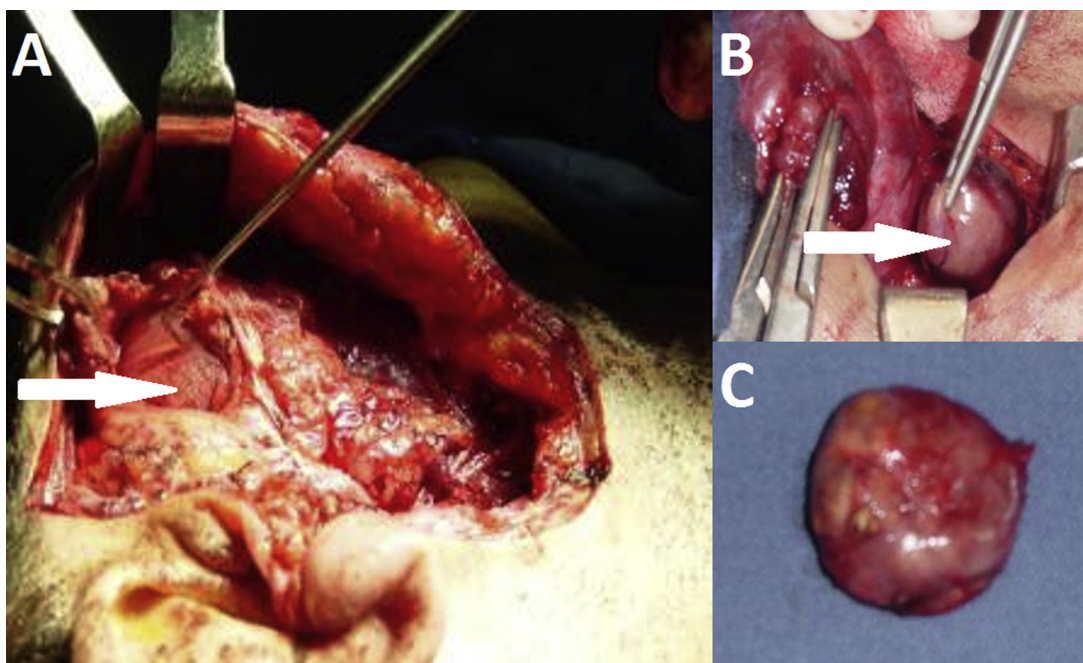


Fig. 3. A, B: Tumor within the masseter muscle (white arrow). C: well encapsulated tumor after complete resection.

4. Conclusion

Our case suggest that schwannoma should be considered an otolaryngologic tumor, as up to 45% of these lesions present in the head and neck, and the diagnosis might be challenging especially with unusual situations like inside the masseter muscle. It is a benign tumor with good prognosis and low recurrence rate but the patient should be always alerted about postoperative neurologic deficit.

Conflict of interest

The authors declare that there is no conflict of interest, financial or otherwise, related to the publication of this study or its findings.

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Ethical approval

Ethical approval has been exempted by our Institutional review board because this is not a research study.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Houssam Abtar: Writing the paper, submission and follow-up.
 Nazir El Khatib: Writing the paper, taking the photos.
 Selim Nasser: Manuscript review.
 Nabil Moukarzel: surgeon who operated the patient, Manuscript review.

Antoine Nehme: surgeon responsible for the in-patient optimization, manuscript review.

Guarantor

Dr. Houssam Abtar.

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