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Case Report
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Cervical Schwannoma of the Vagus Nerve: Two Illustrative Cases

Fernando Henrique Morais de Souza[1], Silvya Nery Bernardino[2], Roberto Sérgio Martins[3], Mariana Bernardino Lêdo de Araújo[4], Rodrigo Alves Malheiros[5], Isabel Nery Bernardino de Souza[5] and Regina Nery Bernardino de Souza[5]*

[1]Department of Neurosurgery, Hospital da Restauração, Recife, Brazil

[2]Department of Neurophysiology, Hospital Getúlio Vargas, Recife, Brazil

[3]Department of Neurosurgery, Universidade de São Paulo, São Paulo, Brazil

[4]Department of Pathology, IMIP, Recife, Brazil

[5]Universidade de Pernambuco, Recife, Brazil

Abstract

Background: Cervical schwannoma is a rare and benign tumor exclusively developed from the cell of Schwann that rarely involves the vagus nerve.

Methods: We reported two illustrative cases and a brief literature review. Both patients presented with a history of painless palpable mass in the cervical region.

Results: In both cases the lesions were diagnosed by means of imaging studies and were totally resected. Surgical findings and histopathology confirmed the diagnosis of vagus nerve schwannoma. There was no recurrence at five years of follow-up. In one case there was dysphonia that solved within six months after the surgery.

Conclusion: Vagus nerve schwannomas are rare benign tumors. The enucleation technique is used to obtain the most functional preservation and complete excision without permanent deficit is possible even with the occurrence of large lesions.

Keywords: Vagus nerve; Schwannoma; Peripheral nerve tumor; Head and neck; Cervical vagus nerve

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Correspondence:
Fernando Henrique Morais de Souza, Department of Neurosurgery, Hospital da Restauração, Rua Amaro Coutinho, 531/3402, CEP: 52041305, Recife, PE, Brazil, Tel: 558132234891; E-mail: fhneuro@gmail.com

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Introduction

Schwannoma is a benign tumor exclusively developed from the cells of Schwann surrounding nerve fibers in the peripheral nervous system. These lesions may occur in the cervical region by up to 25% of cases and should be suspected in the presence of an isolated lateral cervical mass. Surgical treatment is the best choice, especially with a growing mass. The preservation of nerve function with complete resection is often possible since tumor develops extrinsically and displaces the remaining fascicles. The purpose of this report is present a systematic review associated with a description of two illustrative cases of this uncommon disease.

Methods

This paper presents description of two illustrative cases of this disease and a brief literature review about clinical symptoms, imaging and histopathological diagnosis and treatment.

Illustrative cases

Case 1: L.C.M.S., 34-year-old male, perceived the tumor in the right cervical region two years ago. There has been rapid growth of the lesion.

The physical exam revealed a painless nodule upon palpation in right cervical region, firm, insensitive and mobile. There was no associated dysphagia, dysphonia or neurologic deficit.

Biopsy by fine-needle aspiration cytology was performed and the histological findings were compatible with schwannoma.

Nuclear Magnetic Resonance Imaging (MRI) of the cervical region was solicited and revealed expansive tumor measuring 7.7 × 3.4 × 3.0 solid with foci of heterogeneity in the inner compatible

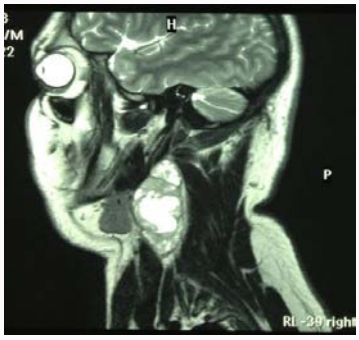

Figure 1: MRI of the cervical region was solicited and revealed expansive solid tumor with foci of heterogeneity in the inner compatible with cystic degeneration.

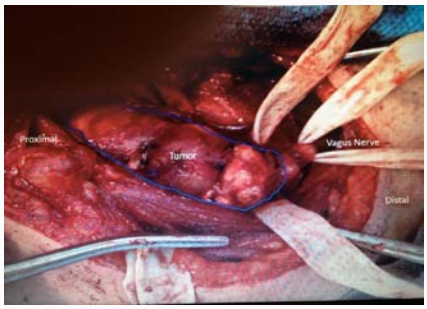

Figure 2: Surgical view.

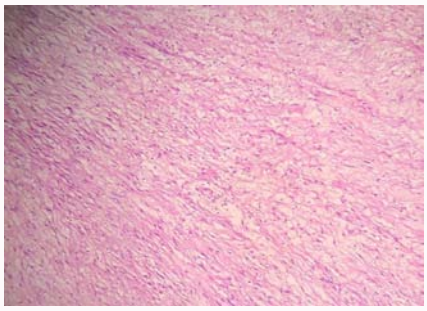

Figure 3: Antoni B - pattern of growth, the tumor was less densely cellular stroma.

with cystic degeneration.

In June 2013, L.C.M.S. underwent microsurgery in which the lesion was totally resected by intracapsular enucleation and the nerve was preserved. Surgical exploration found a heterogeneous 8.0 cm × 4.0 cm mass causing anterior displacement of the internal jugular vein and vagus nerve and medial displacement of the carotid vessels, diagnosis pointed to benign schwannoma (Figures 1 to 3).

The immediate postoperative coursed with dysphonia.

Case 2: R.M.N.C., 35-year-old female, perceived the tumor in the right cervical region. The physical exam revealed a painless nodule upon palpation in right cervical region, firm, mobile in the horizontal but not in vertical direction. There was no neurologic deficit.

This case was not underwent to biopsy fine-needle aspiration cytology.

Computerized tomography showed a well-defined mass with anterior displacement of the common and internal carotid artery (4.0

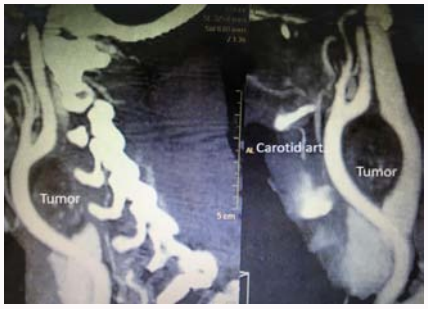

Figure 4: CT of the cervical region revealed expansive tumor solid located in the carotid space, displacing vascular structures.

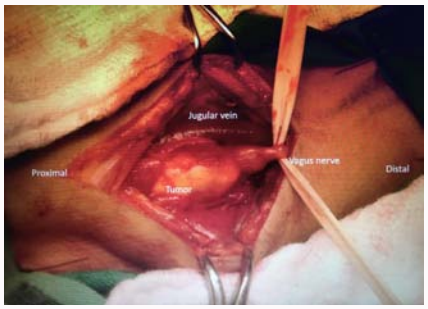

Figure 5: Surgical view.

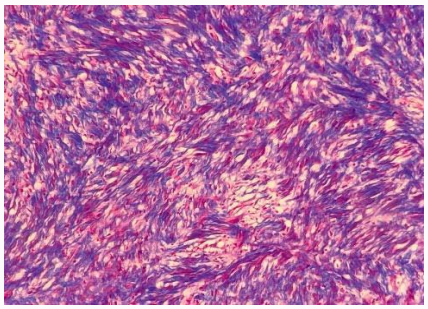

Figure 6: Antoni A pattern of growth, elongated cells were arranged in areas of moderate to high cellularity.

cm × 2.0 cm) solid, located in the carotid space, displacing previously vascular structures.

Using a skin crease incision, surgical exploration found displacement of the external jugular, a well encapsulated tumor arising from the vagus nerve was noted. Tumor was enucleated with sparing of the nerve; the lesion was totally resected and the nerve preserved.

In the immediate postoperative there was no neurological deficit (Figures 4 to 6).

Histopathology showed Antoni A palisading nucleus and verruca bodies suggestive of schwannoma.

Discussion

Cervical vagus schwannoma was first reported by Ritter in 1899 [1]. This tumor most often presents as a slow growing asymptomatic solitary neck mass [2].

Most cases of cervical schwannomas manifest between the third and sixth decades of the patient's life as a slow growing firm,

painless mass in the lateral neck. Hoarseness, pain, or cough may be the presenting complaints. The tumor usually displaces the carotid arteries anteriorly and medially, jugular vein laterally and posteriorly. Generally, these lesions are movable transversely but not vertically [2]. Those typical features were found in our two cases.

Pre-operative diagnosis of schwannoma is difficult because many vagal schwannomas do not present with neurological deficits and several differential diagnoses for tumor of the neck may be considered, including paraganglioma, branchial cleft cyst, malignant lymphoma, metastatic cervical lymphadenopathy and neurofibromas [1]. Topographic features may be helpful in distinguishing origin nerve at initial presentation: The vagal schwannomas should be displaced between the internal jugular vein laterally and the carotid artery medially, whereas schwannomas from the cervical sympathetic chain displace both the carotid artery and jugular vein without separating them [3]. In our case [2], the tumor displaced the internal jugular vein laterally and anteriorly.

Imaging is essential to management. CT and nuclear MRI determine tumor size, extension and relation to the internal and external carotids [4]. The MRI is considered typical when the mass appears as a well-circumscribed tumor lying between the internal jugular vein and the carotid artery [5]. Radiological aspects in CT can show well defined mass compressed the internal jugular vein or internal carotid or rare presentation with heterogenous enhancing mass lesion in right retro styloid parapharyngeal space extending up to carotid bifurcation deep to sternocleidomastoid causing antero medial displacement of carotid vessels with obscuration of ipsilateral cervical part of internal jugular vein [2,6]. MRI can show more details: dimensions, polycyclic contours, low signal on T1, a heterogeneous hyperintense T2 and enhanced so late and progressive after gadolinium injection among other things [6].

The use of fine-needle aspiration and cytology is still controversial; the majority of authors does not recommend open or needle biopsy for these masses [7]. In this study, only one case was biopsied.

Histopathological examination can reveal encapsulated, biphasic spindle cell neoplasia. There are more cellular areas (Antoni A) where nuclei are sometimes palisaded around collagenized bands forming structures known as Verocay bodies, as well as collagen globules, often found in sheath-derived neoplasms peripheral nerve neural disease. In other less cellular and loose stromal areas (Antoni B) cystic degeneration is often observed and hyalinized vessels. Fibrous capsule evidenced by Masson's trichrome staining [8]. The best choice of treatment for this type of tumor is complete surgical removal with preservation of the vagus nerve by means of intracapsular resection [9]. The two patients here reported underwent surgery with intracapsular resection.

Nerve palsy is a common complication of the vagal schwannoma removal, but in many cases, it recovers spontaneously when the neural integrity is preserved [9]. In our case 1, there was vocal cord palsy, which fully recovered in six months after the operation. In case 2 there was no vocal cord palsy or another complication. Horner's syndrome is also a usual postoperative complication [10] absent in our cases.

Conclusion

Vagus nerve schwannoma is a rare benign tumor to be suspected in the presence of an isolated lateral cervical mass. Imaging studies are essential to the management. Surgical treatment is the best choice, especially if the tumor is growing. The conservation of the original nerve is often possible.

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