Cervical Lymph Node Schwannoma —An Unexpected Diagnosis

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ABSTRACT

INTRODUCTION: Schwannomas—Schwann cells–originating tumors—may develop in many locations. However, primary schwannomas arising within lymph nodes are extremely rare, with only a few cases described to this date in the English literature. For the intranodal location, most of the cases are described in the abdominal cavity. In these cases, clinicians may consider and check for familial disorders, such as neurofibromatosis type 2 (NF2) and schwannomatosis also called neurofibromatosis type 3. Schwannomas are benign neoplasms. Histologically, differential diagnosis for spindle-cell lesions in lymph nodes is important and must be done carefully, mainly because they may be attributable to metastatic disease. We report a case of a primary schwannoma arising in a cervical lymph node.

BACKGROUND: Primary schwannomas arising within lymph nodes are extremely rare, with only a few cases reported. Since they are benign neoplasms, the differential diagnosis with other intranodal spindle cell lesions, mostly malignant, is important.

METHODS: An asymptomatic 69-year-old woman, previously submitted to left hemithyroidectomy for a benign folicular nodule, underwent thyroidectomy totalization following the identification of a large thyroid nodule in routine evaluation.

RESULTS: Gross and microscopic examination and ancillary studies were consistent with the diagnosis of intranodal schwannoma. The patient had acquired bilateral hypoacusia. Therefore, type 2 neurofibromatosis was considered and vestibular schwannomas ruled out.

CONCLUSION: Herein, we present the second case of a primary schwannoma in a cervical lymph node reported so far. The relevance of the differential diagnosis is highlighted.

KEYWORDS: Schwannoma, neurilemmoma, intranodal, spindle cells, lymph node

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Case Report

An asymptomatic 69-year-old woman, submitted to left hemithyroidectomy in the past due to benign nodular disease, underwent routine ultrasound (US) examination requested by her general practitioner. In the United States, a hypoechoic nodule was described toward the superior mediastinum, with 55 mm of longitudinal and 42 mm of anteroposterior axis. A cervical computed tomography scan was performed, and a $57 \times 54 \times 48$ mm nodule with mild contrast enhancement, inferior to the right thyroid lobe and in the tracheal lateroposterior right-side position, leading to esophageal left deviation, was documented. The patient also had medical history of bilateral sensorineural hypoacusia, type 2 diabetes mellitus, hypertension, dyslipidemia, and long-term venous insufficiency.

The patient underwent thyroidectomy totalization with detection of a mass, posterior to the left lobe, that macroscopically was very distinct from the thyroid tissue. Apparently, it had risen from the recurrent nerve, growing as a nodule toward the thyroid gland. There was a post-operative complication of right vocal cord paralysis with incomplete glottis closure. The patient is euthyroid under thyroid hormone replacement therapy with levothyroxine.

Gross examination of the specimen revealed the presence of a well-circumscribed, capsulated nodule with $6.6 \times 5.7 \times 3.8$ cm, unrelated to the thyroid gland, with a yellow-whitish cut surface with a rim of light brown tissue (Figure 1). Although the nodule was unrelated to the thyroid in imaging studies, due to its proximity to the gland, it was assumed to be a nodular hyperplasia nodule.

Microscopic evaluation led to the identification of residual peripheral lymph node tissue (Figure 2A and B), compressed by a moderately cellular spindle-cell neoplasm, arranged in crossing bundles with focal nuclear palisades forming Verocay bodies, set in a collagenic stroma (Figure 3); focal chronic

inflammatory infiltrate (Figure 4) and foam cells aggregates were present. No atypia, mitosis nor necrosis were documented. The immunohistochemical study showed diffuse positivity for S100 protein (Figure 5), SOX10, and nestin and negativity for smooth muscle actin, desmin, CD34, HMB-45, and Melan (Figure 6A). Ki-67 was <1% (Figure 6B). These pathologic findings were compatible with the diagnosis of intranodal schwannoma. Lymphocytic thyroiditis was observed in thyroid tissue, with no other lesions detected.

In the view of this very uncommon form of presentation, neurofibromatosis syndromes were considered. In this particular case, bilateral sensorineural hypoacusia was a keypoint to suspect type 2-neurofibromatosis. However, the patient had no pain symptoms that would indicate the existence of schwannomas in other locations and the family history was also negative.[1] Nevertheless, cranial magnetic resonance imaging was performed excluding vestibular or central lesions.

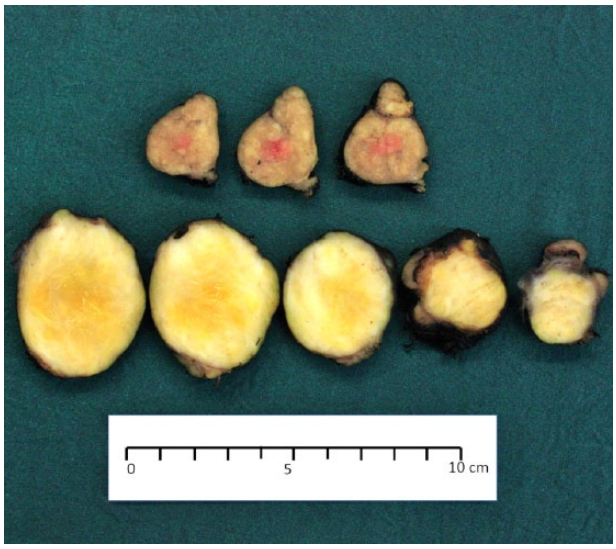

Figure 1. Thyroid sections with a tannish yellow cut surface (top row); adjacent nodule with a whitish yellow cut surface and a rim of tannish white tissue (bottom row).

Discussion

Schwannomas—also known as neurilemomas—are benign tumors originating in the peripheral nerve sheath, specifically in the Schwann cells, being closely related to neurofibromas. Malignant transformation is extremely rare in schwannomas. They can originate from any myelinated nerve (i.e. surrounded by Schwann cells), including the cranial nerves (with the exception of the olfactory and optic nerves), as well as autonomic and peripheral nerves. Head and neck, flexor aspects of extremities, posterior mediastinum, and retroperitoneum are common locations, although any site may be involved. About 25%-45% of schwannomas present in the head and neck, with the lateral neck being the most frequent site.[2] Lymphatic involvement is extremely rare and poorly characterized in the literature.[3,4]

Schwannomas affect both genders with an equal incidence and are more frequent between ages of 20 and 50 years.[2] Most schwannomas are solitary; however, in rare instances, they may be multiple or associated to neurofibromatosis and schwannomatosis. On gross examination, schwannomas appear as typically encapsulated masses, located eccentrically to the nerve. The cut surface of the tumor is usually yellow/white, solid to cystic commonly with myxoid and/or hemorrhagic areas.[2,4] Microscopically, they are composed of spindle cells with wavy nuclei, and they can present Antoni A and/or Antoni B growth patterns. In the former, there is compact arrangement of the spindle cells which are sometimes arranged in palisades around fibrillary material (Verocay bodies), in a dense fibrous stroma. Antoni B areas are less cellular with spindle cells dispersed in a loose myxoid stroma.[2,4–6] Mitosis are rare or absent. Ancilary studies can be helpful confirming this diagnosis, with tumor cells being

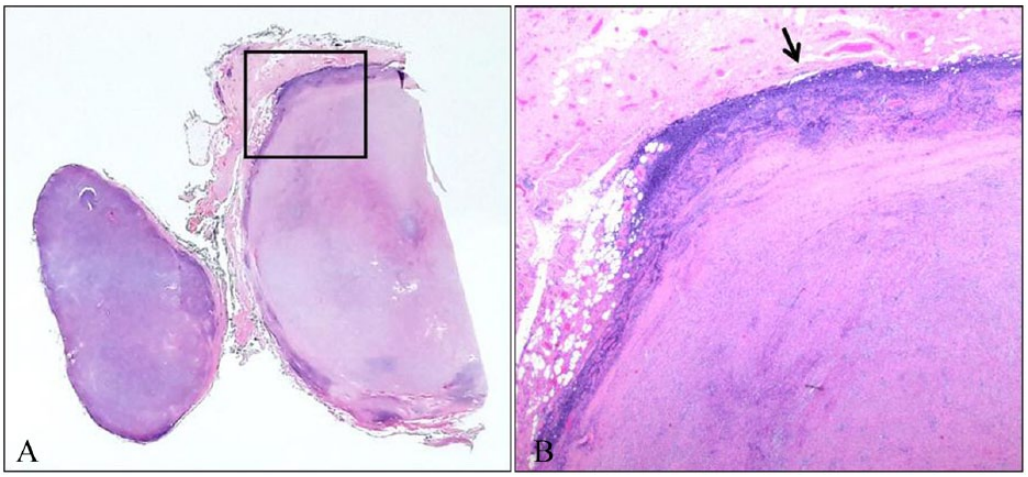

Figure 2. (A) Nodule histology(whole slide image) and (B) Nodule histology: periphery of the neoplasm surrounded by residual lymph node tissue, with recognizable lymph node capsule (→, ×40).

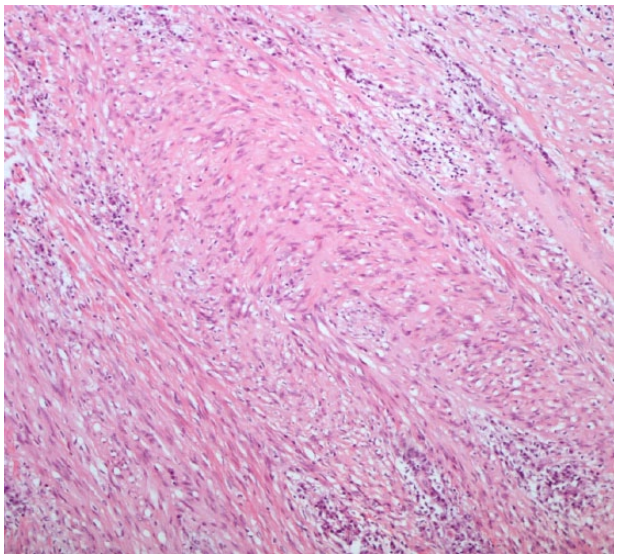

Figure 3. Nodule histology: moderately cellular spindle cell neoplasm with focal nuclear palisades arrangement, forming Verocay bodies (×100).

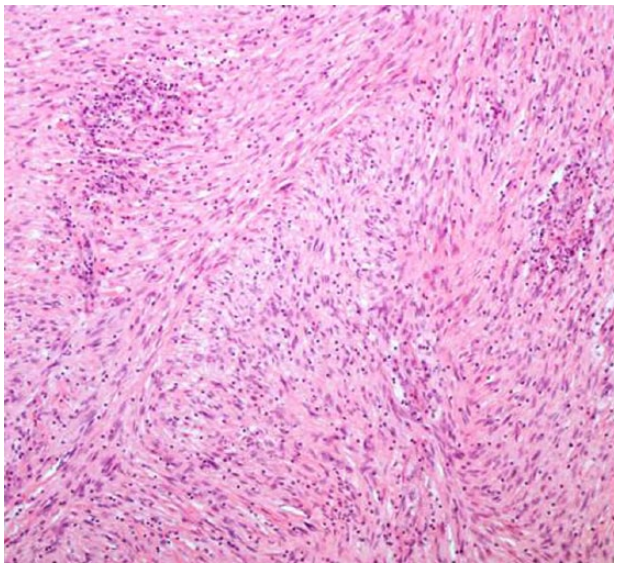

Figure 4. Nodule histology: presence of focal chronic inflammatory infiltrate (×200).

positive for S100 protein[2,4–7] (family of low-molecular weight proteins present in cells derived from the neural crest) and vimentin (protein found in the cytoskeleton of mesenchymal cells), and showing no evidence of smooth muscle or epithelial differentiation.

Schwannomas should be distinguished from other benign, malignant, or even metastatic spindle-cell tumors. The differential diagnosis for schwannomas arising in a lymph node include, for benign lesions: neurofibroma (nonencapsulated lesions-unlike schwannoma), leiomyoma, palisaded myofibroblastoma and inflammatory pseudotumor of lymph node.[1–12] As for malignant lesions, it must be considered as a malignant peripheral nerve sheath tumor or metastatic

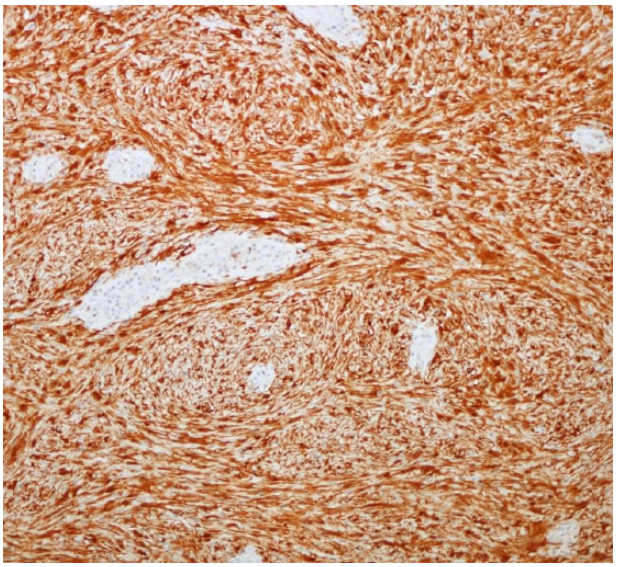

Figure 5. Ancilary studies—immunohistochemistry: tumor cells showing diffuse positivity for S100 protein (×100).

lesions such as spindle cell carcinoma, melanoma, or spindle-cell sarcoma.[1–12]

Besides morphology, Schwannomas can be distinguished from leiomyomas and palisaded myofibroblastoma by demonstration of diffuse immunoreactivity for S100 protein, together with the absence of reactivity for muscle markers (desmin and smooth muscle actin).[2,6] Our case was strongly positive for S100 and negative for smooth muscle actin, thereby ruling out palisaded myofibroblastoma or leiomyoma. In the case of metastatic spindle-cell sarcomas, spindle-cell carcinomas or melanoma, cytological malignant features, and mitotically active spindle cells help distinguishing them from schwannoma.[8]

In this case, the tumor was an incidental finding, as similarly described in other case reports. Intranodal schwannomas are rare and only a few reports have been described in the English literature (<15 cases). In most of these reports, schwannomas were located in retroperitoneal or pericolic lymph nodes[3,5,7–9], thoracic region,[10,11] and even adjacent to the adrenal gland,[6,12] with only one case report in the cervical region—Jennifer et al.[4] Therefore, our case is the second cervical intranodal schwannoma described in literature and, to the best of our knowledge, the first to be reported in our country.

Schwannomas may be present either in patients with NF2 or patients with schwannomatosis—opposed to neurofibromas, which may indicate type 1 neurofibromatosis. Particular to NF2 is the presence of vestibular schwannomas. This diagnosis was considered once the patient had bilateral hypoacusia; however, magnetic resonance imaging excluded vestibular and central lesions. Schwanommatosis is part of the spectrum of neurofibromatosis disease (similar to type 2 neurofibromatosis) and is characterized by predisposition to the development of multiple schwannomas, affecting peripheral nerves

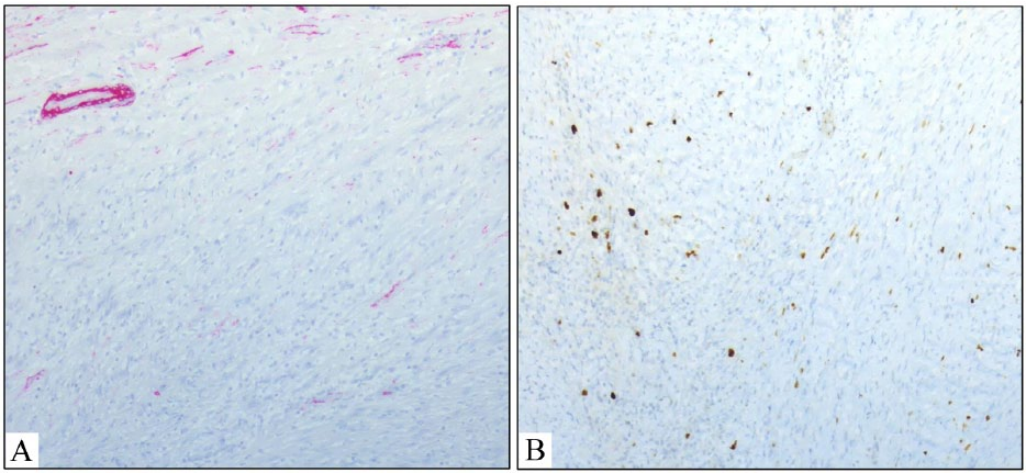

Figure 6. (A) Ancilary studies—immunohistochemistry: tumor cells showing negativity for smooth muscle actin (×100) and (B) ancilary studies—immunohistochemistry: tumor cells showing low proliferation index (Ki-67) (×100).

and spinal nerve roots, in the absence of vestibular schwannomas. It can be either inherited or sporadic and is often associated with chronic pain.[1,13] The patient presented herein had no family history and was asymptomatic. Genetic testing was not conducted.

In conclusion, despite being a rare diagnosis, a schwannoma should be considered in the differential diagnosis of spindle-cell tumors arising within a lymph node. It is crucial to correctly identify the residual lymphoid tissue.

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Author Contributions

CFS, JAT, VRDS, and JR were involved in the acquisition of data, treating the patient, and drafting the manuscript. DLP and MJB participated in critically revising the manuscript and giving the final approval of the version to be published. All authors read and approved the final manuscript.

REFERENCES

1. Ferner RE. The neurofibromatosis. *Pract Neurol*. 2010;10:82–93.
2. Barnes L. *Surgical Pathology of the Head and Neck*. 2nd ed. Vol 2. New York, NY: Marcel Dekker, Inc.; 2001.
3. Medina-Gallardo A, Curbelo-Peña Y, Molinero-Polo J, Saladich-Cubero M, De Castro Gutierrez X, Vallverdú-Cartie H. Mesenteric intranodal schwannoma: uncommon case ofneurogenic benign tumor. *J Surg Case Rep*. 2017;2:1–2.
4. Jennifer B, Qihui Z, Varona OB, Ordonez NG, Luna MA. Primary schwannoma in a cervical lymph node. *Head Neck*. 2010;32:964–969.
5. Piana S, Gelli MC, Cavazza A, Serra L, Gardini G. Ancient schwannoma arising in a lymph node. *Pathol Res Pract*. 2002;198:51–54.
6. Dominguez SH, Huguet JM, Alonso MMD, Estecha AG. Schwanoma intranodalde localizacion suprarrenal. *Cir Esp*. 2014;92:695–696.
7. Nam K, Namkung S. Intranodal schwannoma mimicking a gastrointestinal stromal tumor of the stomach: a case report. *J Korean Soc Radiol*. 2011;65:395–398.
8. Ji J, Yoo J, Kang SJ, Lee KY. Schwannoma arising in a lymph node—a brief case report. *Korean J Pathol*. 2009;43:271–273.
9. Nasrin S, Shahriar S. Schwannoma in a perigastric lymph node: a rare case report. *Iran J Pathol*. 2008;1:43–46.
10. Francisco R, Anna U, Macia I, et al. Intranodal thoracic schwannoma: an unusual type of neurogenic tumor. *Gen Thorac Cardiovascular Surg*. 2011;59:819–821.
11. Pramod N, Hemant S, Chatterjee T. A rare case of hilar lymph node schwannoma. *Indian J Surg*. 2013;75:S233–S235.
12. Reinus C, Shutin O. Intranodal schwannoma presenting as an adrenal mass. *Histopathology* 2004;45:87–99.
13. Sameer M, Rajendra B, Shetty SH, Khedeka RG. Familial schwannomatosis: a diagnostic challenge. *J Clin Diagn Res*. 2017;11:RD01–RD03.