Posterior Cervical Intramuscular Schwannoma Within the Trapezius Muscle: A Case Report

Case Report

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Abstract

Schwannomas are benign soft tissue tumors derived from the Schwann cells of the peripheral nerves. An intramuscular schwannoma arising within the trapezius muscle in the posterior neck is rare. We report a case of a 31-year-old woman with an intramuscular schwannoma in the trapezius muscle. A painless and smooth-surfaced mass from 10 years ago was evident on palpation in the right posterior neck. Ultrasonography revealed an oval mass with clear borders and slight internal blood flow. No continuous hypoechoic lesions were noted at the tip of the mass. Magnetic resonance imaging of the neck revealed a mass in the right posterior cervical trapezius muscle with isointensity on T1-weighted imaging and heterointensity on T2-weighted imaging. Based on these findings, a schwannoma was suspected. Ultrasonography guided fine needle aspiration cytology revealed no significant findings. During surgery, a white-colored, encapsulated-tumor mass was found in the trapezius muscle. Histopathologically, hypocellular and hypercellular areas of fusiform cells were conspicuous, and nuclear palisading was observed in a part of the hypercellular region, confirming the diagnosis of schwannoma. To our knowledge, this is an extremely rare report of an intramuscular schwannoma within the trapezius muscle; herein, we report its clinical, radiological, and pathological features.

Keywords: Neck neoplasm, benign soft tissue tumor, intramuscular, schwannoma, trapezius muscle, case report

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Introduction

Schwannomas are benign soft tissue tumors derived from the Schwann cells of the peripheral nerves, with the head and neck region being the most common site of their origin. The main clinical manifestation of schwannoma is a slow-growing, painless, soft swelling. Although it can be treated by surgical removal, postoperative neurologic deficits present a problem (1).

Intramuscular schwannomas, though rare, mostly occur in the thigh and trunk muscles (2, 3); they infrequently occur in the head and neck region. Moreover, there are scarcely any reports on intramuscular

schwannomas occurring in the upper fibers of the trapezius muscle in the posterior cervical region. Therefore, ours is a rare case of a posterior cervical intramuscular schwannoma within the trapezius muscle. In this report, we describe its clinical, radiological, and pathological features.

Case Presentation

A 31-year-old woman presented with a mass in the right posterior neck that had been growing for 10 years. On palpation, a soft, mobile mass (30×40 mm) with elastic-consistency was noted. Neurological symptoms such as pain, Tinel's sign, sensory disturbance, and motor paralysis were absent. Ultrasonography revealed an oval mass measuring 21×38×36 mm with a clear border and slight internal blood flow in the muscles of the posterior cervical region. No continuous hypoechoic lesion was noted at the tip of the mass. Ultrasonography guided fine needle aspiration cytology (FNAC) revealed no significant findings; additionally, FNAC did not elicit an electrical shock-like sensation. On magnetic resonance imaging (MRI), the mass in the right trapezius muscle was isointense on T1-weighted images and heterogeneous on T2-weighted images (Figure 1). Therefore, we considered a provisional diagnosis of schwannoma, neurofibroma, paraganglioma, or malignant peripheral nerve sheath tumor (MPNST). During surgery, a partial transverse incision into the trapezius muscle revealed a white encapsulated tumor (Figure 2). The nerve related to the origin of the tumor could not be identified. The tumor, measuring 25×30×25 mm, was excised with the capsule. On histopathological examination, the Antoni A region was characterized by dense, coarse, and long fusiform tumor cells in a swirling arrangement with wavy cell poles; a palisade arrangement was also observed in regions of hypercellularity. In the edematous area (Antoni B), floating spindle cells were observed (Figure 3). The tumor cells were positive for S-100 and vimentin, but negative for neurofilaments, desmin, and CD 34; the Ki-67 Index was <10%. Presently, i.e., 2 years after the operation, there is no evidence of recurrence.

Discussion

Schwannomas mainly occur in the fourth decade of life, with 80% of the patients aged between 30–69 years (4). The incidence rate of this lesion in the head and neck region is 25%–45% (1). In this region, schwannomas mostly occur in the lateral neck, but other sites include the parotid glands, the cheeks, the scalp, the tongue, and the pharynx. Majority of intramuscular schwannomas develop in the trunk and the extremities, and rarely occur in the head and neck region (4). Among the intramuscular schwannomas in the head and neck region, most cases have been reported in the masseter muscle (5).

Intramuscular tumors in the trapezius muscle have been rarely reported. Of these, hemangiomas were the most frequently reported; additionally, desmoid tumors and lipomas have been reported (6). Hemangiomas have different ultrasonographic and MRI features compared with schwannomas, making it possible to differentiate between the two. A search in the English-written literature revealed that only one case of intramuscular schwannoma within the trapezius muscle with false positive positron emission tomography/computed tomography finding, had been reported to date (7). Therefore, more cases are needed to obtain a comprehensive description of its clinical, radiological, and pathological features.

The clinical, imaging, and pathological features of the intramuscular schwannoma in this case were similar to the schwannomas found in other muscles. Intramuscular schwannomas typically present as swellings, and they differ clinically from non-intramuscular schwannomas in that they are not associated with neurologic symptoms, such as pain, Tinel's sign, sensory disturbances, and motor paralysis (8). These symptoms were also absent in the presented case. Secondly, ultrasonography, MRI, and pathological findings showed that this intramuscular schwannoma was nearly identical to schwannomas arising in the other parts of the body (5).

The differential diagnosis for schwannomas based on imaging includes neurofibromas, paraganglioma, and MPNST (9). As

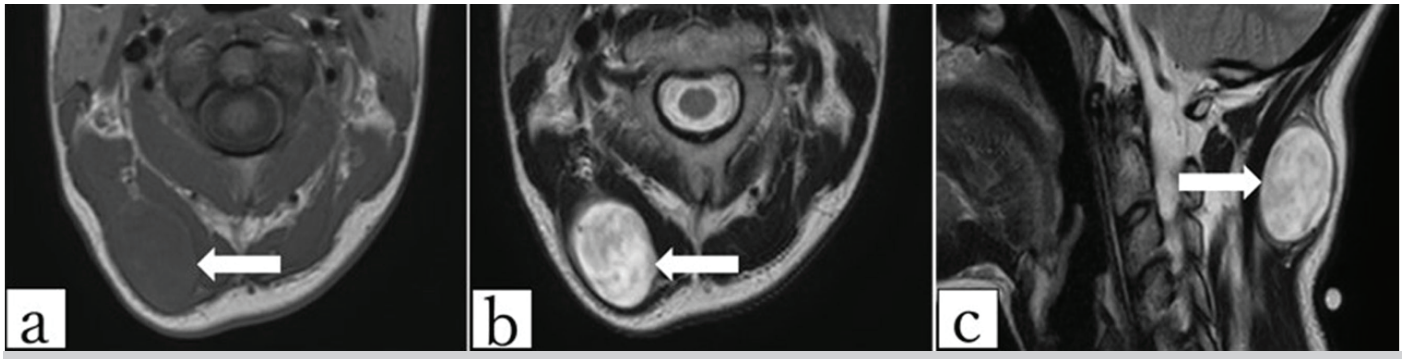

Figure 1. Magnetic resonance imaging of the neck
a) Horizontal section on T1-weighted image shows isointensity (arrow); b) and c) Horizontal section and sagittal section on T2-weighted image show heterointensity (arrow)

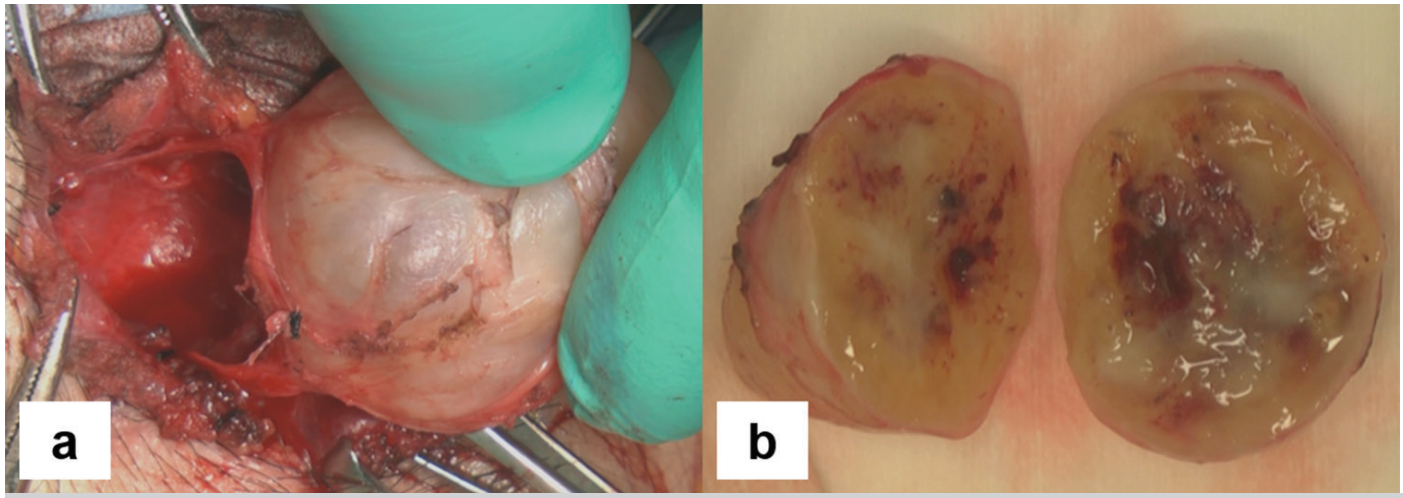

Figure 2. Surgical findings and specimens
a) Intraoperative findings. The tumor was excised; b) Specimen. The cut surface of the tumor appears yellowish white and is surrounded by a capsule

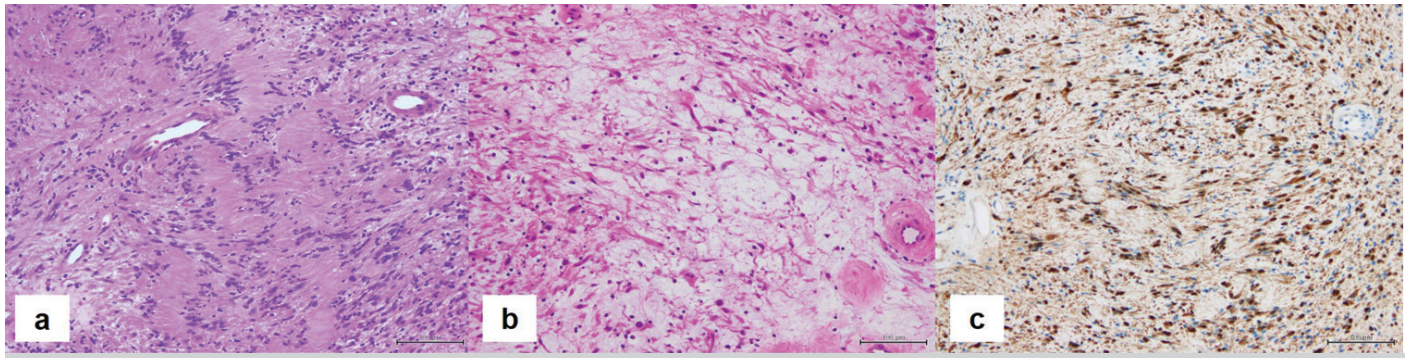

Figure 3. Pathological findings
a) and b) Coarse and spindle-shaped cells are prominent within the tumor. Hematoxylin & eosin, ×200; c) Immunostaining is positive for S-100 (arrow). S-100 immunostaining, ×400

for the echogenic findings on ultrasound of each differential disease, neurofibromas are characterized by internal chordal hyperechoic areas reflecting the inclusion of fatty tissue. Paragangliomas develop expansively and are hyperechoic. MPNSTs present as hypoechoic masses with some internal hyperechoic areas. In any case, the presence of a nerve sheath connecting the tumor to the nerve cord helps to differentiate it from other diseases. However, the presented case had no nerve sheath or continuous hypoechoic lesion making differential diagnosis for the intramuscular schwannomas challenging on ultrasonography.

In general, MRI (T2-weighted) findings of neurogenic tumors show that schwannomas show an irregular internal signal, as much as a non-solid mass. It is thought that the central part shows a high signal (10). Neurofibromas show a low signal in the center due to dense nerve fibers. Paragangliomas show an equal signal with T1-weighted image and a high signal with T2-weighted image, and when the tumors grow, a salt and pepper appearance is observed. MPNSTs show non-uniform signal intensity on T1-weighted images and have a contrast effect on the tumor margin. This case had no specific features on MRI.

Intramuscular schwannomas typically present as swellings, and they differ clinically from non-intramuscular schwannomas in that they are not associated with neurologic symptoms, such as pain, Tinel's sign, sensory disturbances, and motor paralysis (4, 8). We suggest that intramuscular schwannomas, on account of their deep location within the muscle, may not present with Tinel's sign. Altogether, it was difficult to determine a preoperative diagnosis, because an intramuscular schwannoma developing in the trapezius muscle in the posterior cervical region, as in this case, is very rare.

Conclusion

This is an extremely rare case report of a posterior cervical intramuscular schwannoma within the trapezius muscle, described with clinical, radiological, and pathological features.

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Authorship Contributions

Surgical and Medical Practices: N.K., H.H., H.M., Concept: H.H., H.M., T.O., Design: H.H., H.M., T.O., Data Collection and/or Processing: N.K., H.H., Analysis and/or Interpretation: H.M., T.O., Literature Search: N.K., H.H., Writing: N.K., H.H.

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Main Points

- Intramuscular schwannoma arising within the trapezius muscle in the posterior neck has rarely been reported.
- The clinical, radiological, and pathological features of intramuscular schwannoma in this location are similar to other intramuscular schwannomas.
- They are not associated with neurologic deficits.

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