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A rare case of axillary Schwannoma

Schwannoma, neurilemmoma, is well capsulated, slowly growing tumor originating from benign neoplastic Schwann cells of the peripheral nerve sheath. Due to its rarity and complex anatomical location they can pose the misdiagnosis at clinical evaluation. A total surgical excision with a safety margin was performed for 63 year-old male with the complaints of painless lump at the axillary region for 4 months and the diagnosis of axillary Schwannoma confirmed by the histopathological examination and immunohistochemistry. Although its rarity, Schwannoma should be kept in mind for the differential diagnosis of axillary masses. Its complete resection represents the cure for indicated cases.

KEY WORDS: Axilla, Immunohistochemistry, Peripheral Nerve Sheath, Schwannoma

Introduction

Schwannomas (also called neurilemmomas) are encapsulated tumors, arising from the embryonic neural crest cells, are made entirely of benign neoplastic Schwann cells of the peripheral nerve sheath and are frequently observed in third and fourth decades. While Schwannomas are seen mostly in the head and neck region, comprising about 25% of all the tumor; brachial plexus Schwannomas account for only about 5% of all the mentioned tumor [1,2]. They transform into the malignancy as an extremely rare entity [3].

We report here, the case of axillary Schwannoma diagnosed by the histopathological examination and confirmed with the immunohistochemistry (IHC).

Case Report

A 63 year-old Turkish male presented to the outpatient Department of General Surgery in January 2015 with the complaints of painless lump at his left axillary region for 4 months. The physical examination revealed a 1.5×1 cm, oval, firm, mobile, non-tender mass in the left axilla deeper to pectoralis major muscle.
The patient scheduled for the excisional biopsy upon the patient's request due to the axillary mass was evaluated a day before surgery. He had Type II diabetes mellitus, and was taking oral antidiabetic drug (Metformin HCL, 1000 mg tablet). The patient's ASA (American Society of Anesthesiologists) physical status was class II. The oral antidiabetic drug was not given on the morning of the surgery. The fasting (no food for eight hours) blood glucose level was 137 mg. dL^{-1}. A 0.9 % normal saline infusion was started at a rate of 6 $ml.kg^{-1}h^{-1}$. Midazolam (15 mg/3 mL ampoule) 2 mg was given intravenously

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ABBREVIATIONS

IHC: Immunohistochemistry
ASA: American Society of Anesthesiologists
OAA/S: Observer's Assessment of Alertness/Sedation
H&E: Haematoxylin and Eosin

as a premedication. The patient was monitored for the standard electrocardiography, blood pressure non-invasively, peripheral oxygen saturation (SpO2), and CO_2 monitoring in the operating room. The patient was received oxygen 5 L.min-1 via a facial mask. The hemodynamic parameters were recorded every 5 minutes. Fentanyl citrate (100 µg/2 mL ampoule) 1 $\mu g.kg^{-1}$ was administered, and Propofol (1 %) infusion was started at a rate of 50 $\mu g.kg^{-1}$ min^{-1}. The local anesthesia was performed using Aritmal ampoule 5 ml (2 % 100 mg/5 ml) as a peripheral application of the lesion. The Propofol infusion was adjusted based on the anesthetist's assessment of the desired level of sedation (Observer's Assessment of Alertness/Sedation [OAA/S] scale level 3 to 4, during the operation) and Fentanyl was given as 25 µg bolus doses if supplemental analgesia was necessary. At the skin closure, the Propofol infusion was discontinued and Dexketoprofen 50 mg (50 mg/2 mL ampoule) was infused for the postoperative analgesia. The operation lasted approximately 45 minutes. The lesion was totaly excised with a safety margin from the axillary tissue under the local anesthesia and sedoanalgesia. Then the patient was transferred to the ward when Modified Aldrete Score was 9 in the post anesthetic care unit.

The gross examination revealed a yellowish, nodular, thin capsulated, elastic mass measuring 2×1.5×1 cm in size. The external surface was smooth and grey white and the cut section revealed a well-demarcated pseudo-capsulated structure. The samples, maximum 3 mm in size, put into neutral tamponade 10 % formalin solution and the tissue folow-up had been performed for 12 hours by using a neutral tamponade 10 % formalin; 70 %, 80 %, 96 % alcohol; 96%, 99% ethyl alcohol; Xylene; and Paraffin. Afterwards, the tissues were embedded in the parafin and located onto the slides as the cross-sections of 4 µm in size after a freezing. After the slides kept down in a drying oven having 70 ºC for 75 min, they kept down this time in the three different Xylene and 96 % alcohol for 15 min for each and washed up with the tap water. The surface of the samples were closed with the lamelles via dropping the entellan after removing from the Xylene. After a drying procedure they were examined under the light microscope.

The microscopic evaluation of the sections, stained by Haematoxylin and Eosin (H&E), revealed the well-demarcated pseudocapsular structure, spindle shaped proliferation exhibiting hypocellular and hypercellular areas (Fig. 2). While the hypercellular areas was exhibiting spindle shaped cells possessing wavy nuclei arranged in the fascicles with focal palisading of the nuclei, the hypocellular ones showed the large number of the foamy macrophages and loose myxoid stroma

The selected cross-sections of 5 µm in size had been included in the positive charged slides. Then the slides

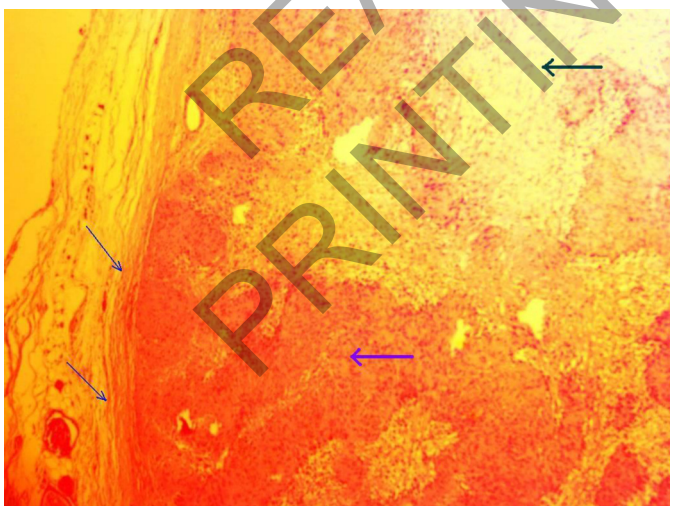

Fig. 1: The photomicrograph reveals a well-demarcated pseudocapsular structure (thin blue arrows), spindle shaped proliferation exhibiting hypocellular (thick dark gren arrow) and hypercellular areas (thick purple arrow) (Original magnification, 4x0.10; Haematoxylin and Eosin).

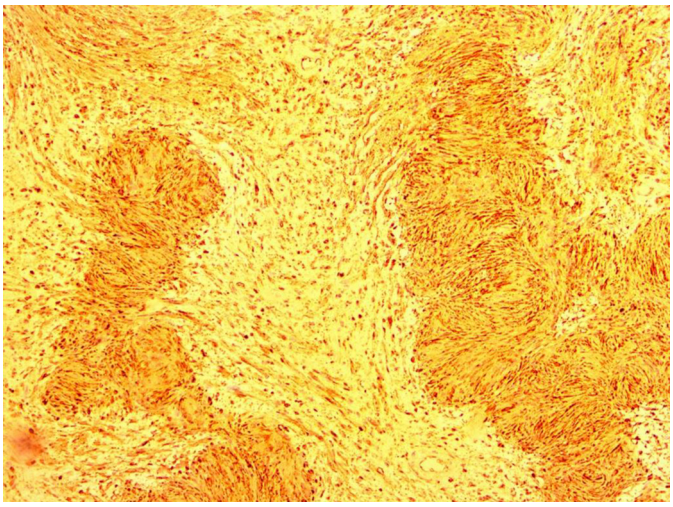

Fig. 2: The photomicrograph reveals the tumor cells, exhibiting diffuse Immunohistochemical positivity for S-100 protein (Original magnification, 10x0.25; immunohistochemical S-100 stain).

kept down in the drying oven with 70 °C for 20 min and they were stained in fully automatic immune staining device. Afterwards, the samples were stained with Ki-67, Desmin, Actin, CD34, and S-100. On the IHC, the tumor cells exhibited diffuse cytoplasmic positivity for S-100 protein (Fig. 2) and was negative for Desmin, Actin, and CD34; confirming the diagnosis of Schwannoma. The proliferation index of Ki-67 was about 1-2 %. The histopathological diagnosis of Schwannoma was confirmed by the immunohistochemical analysis.

The patient recovered uneventfully and clinical follow-up for approximately 40 months revealed no evidence of local recurrence or occurence on the other parts of the body.

Discussion

Schwannomas are slow-growing, firm, solitary, well-circumscribed and encapsulated round or ovoid tumors causing eccentric displacement of the nerve fibers [4]. Patients are mostly asymptomatic, but dysesthesia elicited by palpation, sensory loss, weakness, and radicular-type pain can occur [5].

Longstanding Schwannomas can show the degenerative changes, nuclear pleomorphism, stromal edema, fibrosis, and xanthomatous changes leading to a misdiagnosis of malignancy in the aspirates those were called as "ancient Schwannomas" initially mentioned by Ackerman and Taylor [4] and some still refer to them as such. Schwannoma may exhibit a biphasic architecture of Antoni type A (compact areas of high cellularity) and Antoni type B (loose, hypocellular myxoid areas with microcystic spaces) as well as nuclear pallisading, Verocay bodies, and a fibrous capsule [4,6]. The spindle shaped nuclei is typical for neoplastic Schwann cells. The pathologic variants of Schwannoma include: 1) Cellular Schwannomas possessing predominantly Antoni A tissue without Verocay bodies, 2) Melanotic Schwannomas demonstrating dense melanin pigmentation and can become malignant unlike other Schwannomas, 3) Plexiform Schwannomas, being rare and usually occurring along nerve plexuses as conglomerations of multiple Schwannomas. Psammomatous melanotic Schwannomas, a subtype of melanotic Schwannomas, have psammoma bodies and laminated bodies of calcium [6].

The histopathological diagnosis is attained when fusiform bundles of Schwann cells are demonstrated with H&E stained slides. Schwannoma includes some subtypes such as classical, cellular, plexiform, cranial nerve, melanotic, degenerated, and granular cell [7]. They form a formidable diagnostic and therapeutic challenge to surgeons on account of their rarity and complex anatomical location. The immunohistochemical analysis is crucial to the diagnose of Schwannomas and a positive reaction to protein S100 is typical [8].

The microscopic evaluation of our case, 63 year-old male with the complaints of painless lump at his left axillary region for 4 months, was revealed the well-demarcated pseudocapsular structure, spindle shaped proliferation exhibiting hypo- and hypercellular areas in the H&E stained sections. The hypercellular areas was exhibiting spindle shaped cells possessing wavy nuclei arranged in the fascicles with focal palisading of nuclei, while the hypocellular ones showed the large number of foamy macrophages and loose myxoid stroma meaning the classical type of Schwannoma. In addition, we stained the samples with Ki-67, Desmin, Actin, CD34, and S-100 resulting the diffuse cytoplasmic positivity for S-100 protein and negativity for Desmin, Actin, and CD34, confirming the diagnosis of Schwannoma.

Although determining of the resection margins of these kinds of tumors is not an easy process, surgical resection is the first-choice of the treatment. Therefore, the trapped associated nerve sometimes necessitates to be sacrified [9]. In the present case, a total surgical excision with a safety margin was performed and our case has exhibited no any neurological disorder, postoperatively.

Conclusion

In conclusion, axillary Schwannoma is uncommon, but should be considered in the differential diagnosis of an axillary mass, particularly in the presence of a nerve deterioration or disability, and if malignancy can be eliminated. Surgery is indicated for the tumors leading pain, neurological dysfunction or for any rapidly growing ones, suspicious for malignancy, and the complete resection represents the cure [3]. Awareness of this condition for postgraduate trainees, residents, young fellows as well as medical professionals and trainers in various disciplines [10] would be helpful in the preoperative diagnosis of the mentioned cases.

Riassunto

Lo Schwannoma (o neurilemmoma) è un tumore ben capsulato, a crescita lenta che origina da cellule neoplastiche benigne della guaina dei nervi periferici di Schwann. A causa della sua rarità e della sua complessa e varia origine anatomo-topografica, può portare a diagnosi e valutazioni cliniche errate. Nella nostra osservazione è stata eseguita un'asportazione chirurgica totale con un margine di sicurezza in un uomo di 63 anni, affetto da quattro mesi di un nodulo indolore localizzato in regione ascellare, e la diagnosi di Schwannoma ascellare è stata confermata dall'esame istopatologico e dall'immunoistochimica.

Anche se molto raro, lo Schwannoma dovrebbe essere tenuto a mente per la diagnosi differenziale delle masse ascellari. La sua resezione completa rappresenta la cura per i casi indicati.

References

1. Verocay J: *Zur Kenntnis der 'neurofibrome'*. Beitr Pathol Anat, 1910; 48:1-69.

2. Huang JH, Samadani U, Zager EL: *Brachial plexus region tumors: a review of their history, classification, surgical management, and outcomes*. Neurosurg Q, 2003; 13:155-61.

3. Woodruff JM, Selig AM, Crowley K, et al.: *Schwannoma (neurilemoma) with malignant transformation. A rare, distinctive peripheral nerve tumor*. Am J Surg Pathol, 1994; 18:882-95.

4. Ackerman LV, Taylor FH: *Neurogenous tumors within the thorax; A clinicopathological evaluation of forty-eight cases*. Cancer, 1951; 4:669-91.

5. El-Sherif Y, Sarva H, Valsamis H: *Clinical reasoning: an unusual lung mass causing focal weakness*. Neurology, 2012; 78:e4.

6. Skovronsky DM, Oberholtzer JC: *Pathologic classification of peripheral nerve tumors.* Neurosurg Clin N Am, 2004; 15:157.

7. Erlandson RA: *Peripheral nerve sheath tumours*. Ultrastruct Pathol, 1985; 9:113-22.

8. Santos PP, Freitas VS, Pinto LP, et al: *Clinicopathologic analysis of 7 cases of oral schwannoma and review of the literature.* Ann Diagn Pathol, 2010; 14:235-39.

9. Chen F, Miyahara R, Matsunaga Y, et al.: *Schwannoma of the brachial plexus presenting as an enlarging cystic mass: Report of a case.* Ann Thorac Cardiovasc Surg, 2008; 14:311-13.

10. Akhtar J, Chaudhry ZU: *Postgraduate medical education in Pakistan.* J Coll Physicians Surg Pak, 2013; 23:1.