



Case Reports & Case Series

Schwannoma of median nerve: Case report and review of literature

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ABSTRACT

Schwannoma of the median nerve is uncommon. It can be mistaken for other benign swellings. A 59-year-old lady presented with a slowly increasing swelling on the thenar aspect of left hand. She had pain and numbness. Tinel's sign was positive. MRI showed an intensely enhancing, ovoid swelling eccentrically to the median nerve. There was heterogeneity on T2-weighted image and on contrast enhanced sequence. Contrasting central and peripheral intensities is known as the target sign. Surgery was done with local anaesthesia under operating microscope. Dissection was done between the fascicles and the tumour wall. The tumour was excised. Histopathological examination showed spindle cells, with Antoni A and Antoni B areas, Verocay bodies and ectatic blood vessels. Immunohistochemistry showed positivity for S-100. Ki-67 index was 1–2%. The diagnosis was schwannoma. Postoperatively she was relieved of numbness.

1. Introduction

Benign peripheral nerve sheath tumours of upper extremity are uncommon. Schwannoma is the common tumour [1]. It can be mistaken for other swellings such as ganglion and other diseases such as carpal tunnel syndrome [2–4]. If detected early, microsurgical excision with functional preservation of nerve can be done. A case of schwannoma of the median nerve is discussed here with review of literature from Pubmed.

2. Case report

2.1. Clinical features

A 59-year-old lady presented with a swelling in left hand for 3 years. She had numbness of lateral three fingers. It was slowly increasing in size associated with pain. The size of the swelling was 2 × 3 cm. It was on the thenar aspect of hand. Its consistency was firm and mobility was restricted. There was pain on attempt to move and hyperesthesia over the swelling. Tinel's sign was positive. But sensations were preserved. She was hypertensive and diabetic on treatment.

2.2. Imaging

Contrast enhanced MRI scan showed a well-defined ovoid lesion of size 2.6 × 2.3 × 2.1 cm, eccentrically to the median nerve. It was

isointense on T1-weighted sequence (Fig. 1) and hyperintense on T2-weighted sequence. There was heterogeneity in T2-weighted image (Fig. 2). The nerve fibers were seen compressed towards ulnar aspect. There was mass effect on the adjacent tendons. Intense and heterogeneous enhancement was seen on administration of contrast (Fig. 3). The palmar arch was seen splayed around the tumour (Fig. 4).

2.3. Surgery

Surgery was done with local anaesthesia. Thenar skin crease incision was made. The tumour was seen after dissection of the subcutaneous layer (Fig. 5). Capsule was opened. It was dissected around and was separated from fascicles, under operating microscope. Monitoring was done for movements and sensation of the fingers. The tumour was completely excised in pieces. Postoperatively she was relieved of numbness.

2.4. Histopathological report

Histopathological examination showed a benign tumour composed of spindle cells with wavy, buckled nucleus in interlacing fascicles and bundles (Fig. 6). Cellular (Antoni A) areas showed Verocay bodies (Fig. 7). Hypocellular Antoni B areas also were seen (Fig. 8). Ectatic blood vessels were seen (Fig. 9). Stroma showed foci of myxoid change. There were no mitotic figures or nuclear atypia. Immunohistochemistry showed positivity for S-100 (Fig. 10). Ki-67 index was 1–2% (Fig. 11).

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Fig. 1. T1 weighted image showing isointense tumour.

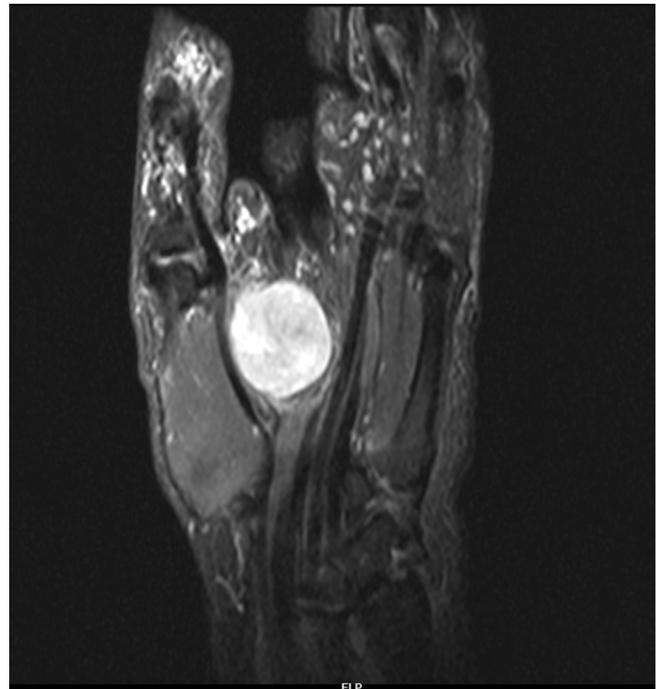


Fig. 3. Heterogeneous enhancement with gadolinium.

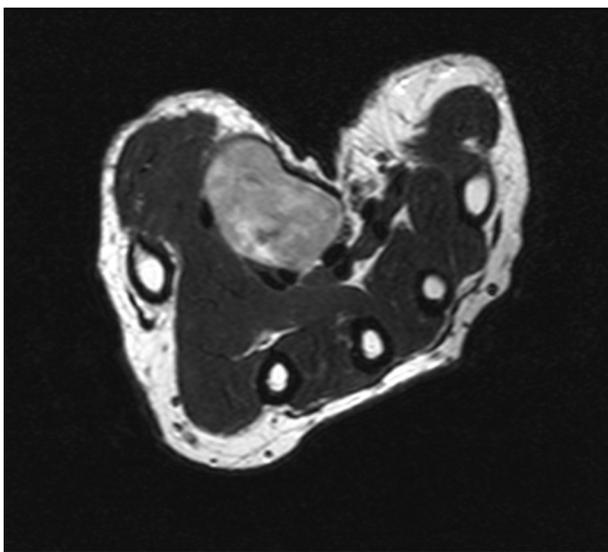


Fig. 2. Heterogeneously hyperintense on T2 weighted sequence.

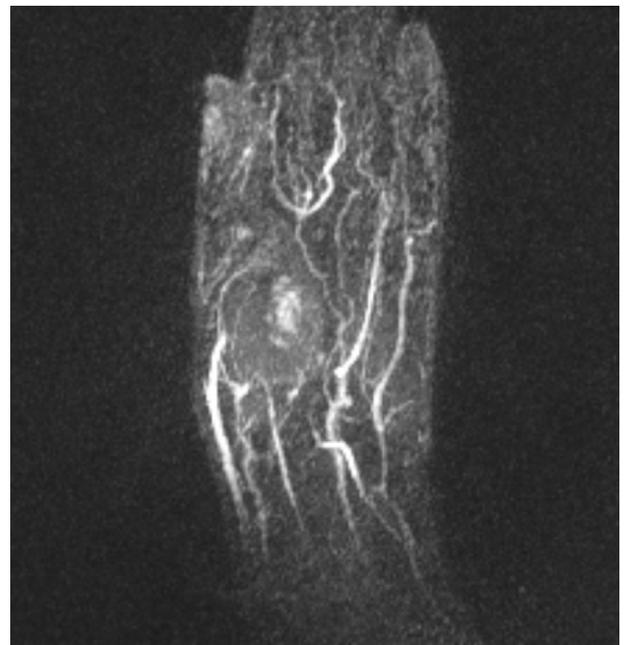


Fig. 4. The palmar arch splayed around the tumour.

The histopathological diagnosis was schwannoma.

3. Discussion

3.1. Review of literature

The most common benign tumour of the peripheral nerve is Schwannoma [1]. Benign tumours of peripheral nerves are uncommon in the upper extremity. Schwannomas comprise 0.8–2% of all tumours of hand [1]. They may be mistaken for ganglia or carpal tunnel syndrome [2]. Solitary swelling along the course of the nerve is the usual presentation. Lesions may be multiple in cases of NF type 1, familial neurofibromatosis, and sporadic schwannomatosis. The ulnar and median nerves are the mostly affected [3]. Common age of occurrence is between 20 and 50 years, without distinction of gender [1]. Early diagnosis of schwannoma is challenging because of the slow growth and

paucity of symptoms [2].

The presentation may be pain, sensory alterations and a positive Tinel's sign [2]. Mobility will be only in transverse direction. The usual differential diagnoses are neurofibroma, ganglion cyst, malignant tumour, lipoma, fibroma and xanthoma [2,3]. Neurofibroma can mimic schwannoma. Soft asymptomatic tumour may be misdiagnosed as lipoma or fibroma. The interval between onset of symptoms and surgery varies from a few months to years [3]. The nerve function can adapt to the pressure effects, due to slow growth of the tumour. Presence of motor deficits should raise suspicion of malignancy [2]. Padua et al. [4] reported schwannoma of median nerve mimicking carpal tunnel syndrome. Physicians should consider the presence of a median nerve



Fig. 5. Peroperative picture showing the tumour.

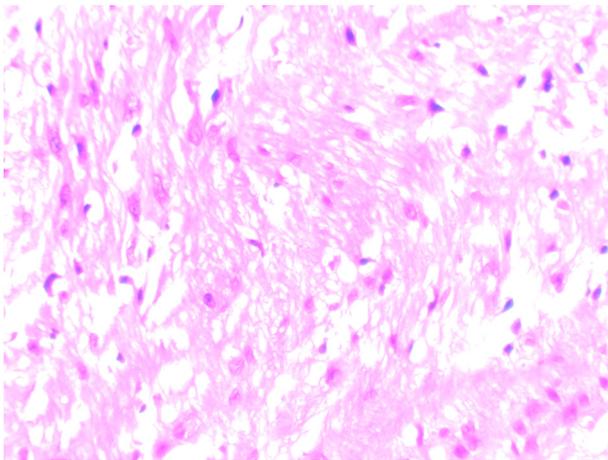


Fig. 6. Tumour composed of spindle cells in interlacing fascicles and bundles.

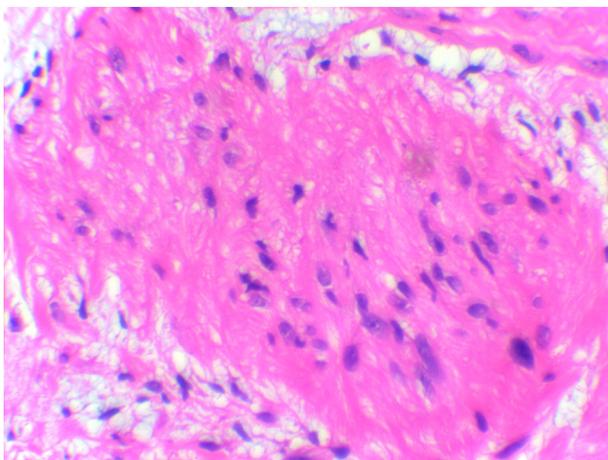


Fig. 7. Eosinophilic Verocay bodies.

tumour, if there are atypical abnormalities on clinical examination and neurophysiological evaluation.

Schwannomas show hypointensity on MRI T1-weighted images and hyperintensity on T2-weighted images [1]. The signal intensities can

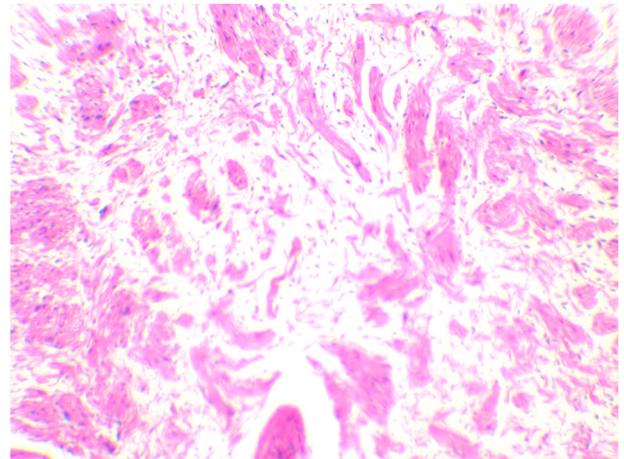


Fig. 8. Antony B area.

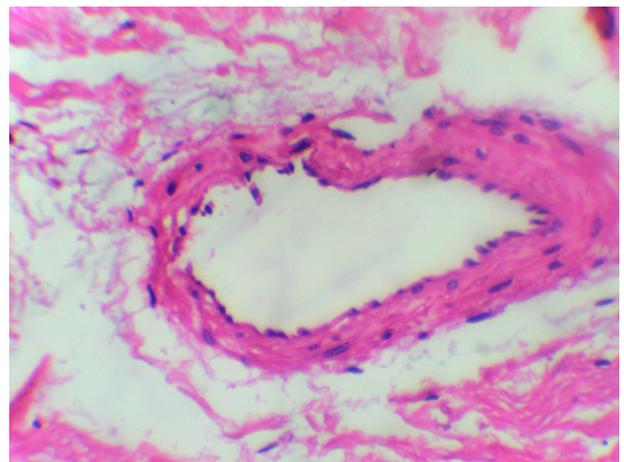


Fig. 9. Ectatic blood vessel.

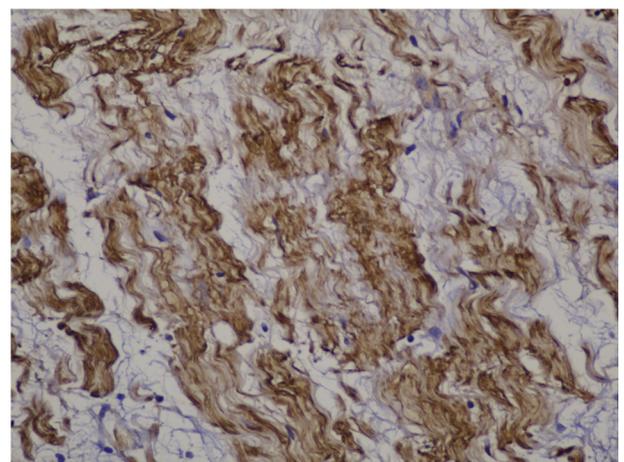


Fig. 10. IHC-positivity for S-100.

reflect histologic components [5]. The epineural capsule is seen as a rim of hypointensity surrounding the lesion. Antoni A areas are cellular containing collagen and are hypointense on T1 and T2 images. The water containing myxoid matrix in Antoni B areas produces hypointensity in T1 and hyperintensity in T2 images. The so-called target sign on T2 images is due to central location of Antoni A areas [5]. Contrasting central and peripheral intensities is known as target sign [2]. Koga et al. [6] reported that the target sign is 100% specific and

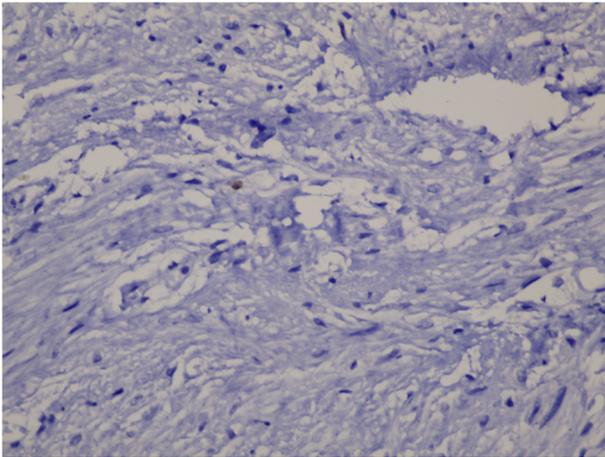


Fig. 11. Ki-67 labelling.

59% sensitive. Gadolinium-enhanced T1-weighted images often show central hyperintensity and peripheral hypointensity. MRI shows the tumours as oval, located eccentrically to the nerve [2]. Schwannoma is encapsulated whereas neurofibroma is not. Ultrasonogram gives images during static and dynamic positions such as flexion and extension [3]. It shows the relation of nerve to the musculotendinous structures.

Excision is recommended for symptomatic tumours [3]. Increase in size is also an indication. Operating microscope is essential for surgery. Dissection is done between the fascicles to reach the tumour. A plane is created between the fascicles and the tumour wall. Circumferential dissection will deliver the tumour [2]. Nerve continuity should be preserved. In the series of ‘fourteen cases of Schwannomas of the peripheral nerve in the hand and the upper limb’ by Akambi and Dubert [7], inseparable fascicles had to be resected in eight cases. Paresthesia can occur following surgery. Recurrence is rare following total excision [2,5,8].

On pathologic examination, schwannoma is well circumscribed and has collagenous capsule [9]. There is intermingling of compact Antoni A areas and hypocellular Antoni B areas [8,9]. Interlacing fascicles of spindle-shaped Schwann cells form Antoni A area with eosinophilic Verocay bodies [2]. Antoni B area has gelatinous and microcystic tissue. Irregularly spaced, hyalinized vessels (vessels with thickened eosinophilic, collagenous walls) can be seen [10]. Immunohistochemistry reveals strong expression of S-100 protein and pericellular collagen

type IV [9]. Positivity for S-100 protein helps to distinguish schwannoma from neurofibroma [8]. High Ki-67 labelling index ($\geq 20\%$) is predictive of malignant change [11].

Schwannoma of the median nerve can be asymptomatic or minimally symptomatic for long. Early diagnosis is essential for microsurgical excision with preservation of nerve function. The uniqueness of our case is that this shows all the clinical, radiological and histological features described in the literature.

Conflicts of interest

Nil.

Financial aid

Nil.

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