Ulnar nerve schwannoma

Clinical History:

A 47-year-old woman presented to our outpatient clinic with a soft elastic mass in the medial aspect of the right arm that had been progressively enlarging during the last 4 years. The patient referred no trauma history and clinical examination revealed 4th and 5th finger hypoesthesia.

Imaging Findings:

An MRI examination was performed using a 1.5T scanner. The study consisted of T1-weighted fast spin-echo (FSE), T2-weighted fast spin-echo (FSE) with fat saturation and gradient echo T2 (FFE) sequences performed in the axial, coronal and sagittal planes, followed by post Gd dynamic and FSE T1 WI study.

The MRI study showed a fusiform-shaped mass in the medial aspect of the right arm close to the basilic vein in contact with the ulnar nerve. On T1-WI the mass was homogeneous and intermediate signal intensity and hyperintense and slightly heterogeneous on T2-WI fat saturation. After gadolinium injection the images showed avid and diffuse enhancement except non-enhancement central area.

Surgical resection followed with pathological examination confirmed the diagnosis of schwannoma.

Discussion:

Schwannomas are rare tumours but still the most common primary nerve sheath tumours of the upper limb, accounting for about 5% of all benign soft-tissue neoplasms. The most commonly affected peripheral nerves are the peroneal and the ulnar nerves. [1, 3]

Schwannomas are well-encapsulated benign tumours. Microscopically, schwannoma combines highly ordered cellular component and hypocellular loose myxoid component, Antoni A and Antoni B areas respectively. Tumour cells are highly immunopositive for S-100 protein.

MRI is the best imaging modality for diagnosing nerve sheath tumours, however, sometimes the differential diagnosis from other soft tissue tumours is difficult if they do not have specific signs. [1, 2]

The most reliable sign for schwannoma is its localization in continuity (eccentrically) with a normal nerve. MR characteristic features show iso to slightly increased signal intensity relative to muscle on T1WI, a thin peripheral rim of fat (split-fat sign) is very characteristic and may have subtle muscle atrophy distal to lesion. On fluid-sensitive sequences schwannomas are hyperintense to muscle and may show a typical central low signal region (target sign) and multiple small ring-like structures (fascicular sign). Diffuse intense enhancement is typical. [1, 2]

Differentiating on imaging between schwannomas and neurofibromas may be impossible. However, schwannomas are more likely to contain cysts, haemorrhage, fibrosis or calcification. Neurofibromas might have target sign and central enhancement on MRI. The differential diagnosis with malignant peripheral nerve tumours (MPNT) is difficult.
MPNT is usually a larger (>5 cm) ill-defined mass located more frequently at the sciatic nerve, brachial and sacral plexus. Heterogeneous on T1-WI, T2-WI and intense and especially peripheral enhancement. MPNT are more likely to produce pain and sensory deficit. [2]

Since the malignancy rate and recurrence are very low, resection of the tumour is recommended.

**Differential Diagnosis List:** Ulnar nerve schwannoma, Neurofibroma, Malignant peripheral nerve sheath tumour, Synovial sarcoma, Haematoma, Melanotic schwannoma

**Final Diagnosis:** Ulnar nerve schwannoma

**References:**


Description: Axial TSE T1-WI shows a homogeneous and isointense well-defined mass in contact with the ulnar nerve. Origin: Department of Radiology, Hospital La Ribera, Alzira-Valencia, Spain.
Figure 2

Description: Coronal TSE T1-WI show a homogeneous and isointense fusiform well-defined mass.
Origin: Department of Radiology, Hospital La Ribera, Alzira-Valencia, Spain.
Figure 3

Description: Axial TSE SPIR T2-WI shows a slightly heterogeneous hyperintense mass. Origin: Department of Radiology, Hospital La Ribera, Alzira-Valencia, Spain
Description: Axial TSE T1-WI SPIR post-Gd shows avid enhancement of the mass with hypointense central area (target sign). Origin: Department of Radiology, Hospital La Ribera, Alzira-Valencia, Spain.
Description: Coronal TSE T1-WI SPIR post-Gd shows avid enhancement of the mass with hypointense central area (target sign). Origin: Department of Radiology, Hospital La Ribera, Alzira-Valencia, Spain.
Description: Schwannoma (picture above) tends to displace the nerve root to one side. Neurofibroma (picture below) tends to grow within the nerves, which makes complete surgical resection more difficult and sometimes impossible. Origin: Department of Radiology, Hospital La Ribera, Alzira-Valencia, Spain.