Case Report

Benign Schwannoma of the Thumb; a diagnostic challenge✩✩✩

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Article history:
Received 16 October 2021
Revised 10 November 2021
Accepted 10 November 2021

Keywords:
Benign Schwannoma
Peripheral Nerve Sheath Tumour

ABSTRACT

Benign Schwannomas are one of the less frequently encountered soft tissue tumours of the hand. We report an interesting case of an 80-year-old gentleman with a painful soft tissue swelling on the radial aspect of his thumb. Ultrasound revealed a well-defined lesion separate from bone and tendon, with mixed echogenicity and moderate internal vascularity. Magnetic resonance imaging demonstrated a 15 × 10 × 23mm lesion with low signal on T1 and high signal on T2. Following surgical excision, histology confirmed benign schwannoma.

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Introduction

Soft tissue tumours of the hand account for 15% of all soft tissue tumours found in the body, for which an extensive list of differentials exists [1]. Importantly, in the absence of skin involvement, 95% of soft tissue hand tumours are benign [2]. Magnetic resonance and ultrasound imaging are commonly used in conjunction with clinical examination findings to form a likely diagnosis and tailor management accordingly. However, soft tissue tumours of the hand remain diagnostically challenging, with histology often needed to confirm diagnosis.

Schwannomas are benign tumours which originate from the nerve sheaths of the peripheral nervous system [3,4]. These peripheral nerve sheath tumours are a rare cause of tumour in the hand accounting for approximately 2%-5% of all upper extremity tumours [5,6]. We focus this case report on the radiological findings appreciated prior to surgical management and subsequent histological confirmation.

Case report

An 80-year-old gentleman presented with a 12 to 18-month history of swelling over the radial aspect of the thumb, located along the proximal aspect of the interphalangeal joint (IP) crease. This soft tissue swelling, which was initially painless, had started to cause pain over the site of the swelling, especially when performing tasks involving leaning the hand...
against a hard surface. On examination, a firm nodular mass was visible and palpable at the location described. The thumb retained a good range of movement with no movement of the described mass on movement of the thumb.

Ultrasound demonstrated a 20mm × 9mm × 13mm non-compressible lesion with mixed echogenicity and moderate internal vascularity (Fig. 1). The IP and MCP of the thumb appeared unremarkable as did the tendons. MRI of the the thumb was performed for surgical planning purposes revealing a well-defined lesion with a low signal capsule and heterogeneous contents isoechoic with muscle on T1 (Fig. 2A) and slightly hyperintense on T2 (Fig. 2B). The underlying bone and tendons appear separate to the lesion (Fig. 3). The long axis of the lesion runs along the connective tissue of the thumb.

The patient underwent a surgical excision of the lesion, preserving the underlying neurovascular structures. The excised lesion was sent for histology and follow up arranged one month post operation. At time of follow up, the patient reported resolution of presenting symptoms and had retained good range of motion of the thumb with no pain or sensory deficit noted. Histology revealed a well-circumscribed tumour with appearances consistent with a benign schwannoma.

**Discussion**

Given the superficial location of soft tissue tumours of the hand, ultrasound is a useful imaging modality for the initial assessment of the lesion identified on clinical examination. Ultrasound allows assessment of the: size; relationship to surrounding anatomy; density characteristics and vascularity. Characteristic findings of Schwannoma on ultrasound include, a well-defined mass which orientates its long axis
Further imaging features on MRI are sometimes appreciated which may suggest, however, are not specific to, benign schwannoma. These features are not seen on images presented in this case report and may represent differentials such as neurofibromas or malignant FNSTs. Examples of these additional features include: the target sign which occurs when peripheral high signal (myxoid tissue) and internal low signal (fibrous tissue) is observed on T2 weighted imaging; the split fat sign seen were a peripheral rim of fat can be visualised on non-fat supressed sequences and the fasicular sign, were multiple ring like structures are evident, a similar appearance to viewing normal peripheral nerves in cross section [8].

Ultimately, despite radiological features suggestive of a benign schwannoma, distinguishing from other benign or malignant soft tissue tumours poses a diagnostic challenge. Our case outlines common imaging modalities used and relevant radiographic features of benign schwannoma. Despite the recognition of these common radiographic findings in the images presented, diagnosis remains difficult on appearance alone. Surgical excision is often performed, and tissue sent for histology. Benign schwannomas, given their well-defined nature and eccentric location can be surgically excised with adequate margins, often preserving the function of the nerve [9]. Once excised recurrence is rare [9].

**Conclusion**

In summary, we describe the clinical presentation and investigation of a benign schwannoma of the thumb with a focus on the imaging modalities used and radiographic features observed. It is often necessary to excise the lesion for histology to confirm the diagnosis.

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