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Case Report

A rare case of a median nerve schwannoma: Case report ☆

Najwa Amsiguine[a,*], *Salma El Houss*[a], *Mohamed Mouhssani*[b], *Nabil Moatassim Billah*[a], *Nassar Ittimad*[a]

[a] *Department of Radiology, Hospital Ibn Sina, Mohammed V University, Rabat, Morocco*
[b] *Department of neurosurgery, Hospital Ibn Sina, Mohammed V University, Rabat, Morocco*

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ABSTRACT

A median nerve schwannoma is an uncommon type of tumor that develops from Schwann cells in the peripheral nerves. We present a case report of a young prisoner with a rare median nerve schwannoma presenting as a swelling on the anterior aspect of the right wrist along the radial edge, with associated paresthesia and a positive Tinel's sign. The case was diagnosed using MRI which showed the target sign of biphasic contrast enhancement in both the mass's center and periphery as well as distinct encapsulation. The mass was managed with surgical excision which confirmed the mass to be a neurilemmoma. The radiological finding for neurinomas are not specific and the diagnosis cannot be established unless an excision is made, as neurinomas share common radiological signs with other peripheral nerve tumors and vascular tumors. This case highlights the importance of considering nerve sheath tumors, however rare, in the differential diagnosis of wrist masses, even in young patients with no history of trauma.

Introduction

Median nerve schwannomas are rare tumors that arise from the Schwann cells surrounding the median nerve [1]. They make up around 5% of primary soft tissue tumors in the upper extremities. While they can occur at any age, they are commonly found in middle-aged adults from 20 to 50 years old [2]. Clinically, features include a palpable mass with discomfort or pain and sensory and motor deficits depending on its location and size [3]. In this case report, we describe a rare case of a median nerve schwannoma in a young patient.

Case presentation

A 23-year-old male presented with a 1-year history of a gradually enlarging mass on the anterior aspect of his right wrist, along the radial edge. Further evaluation of the patient revealed a positive Phalen's maneuver and a positive Durkan's test, indicating median nerve compression. Based on the patient's clinical presentation, the diagnosis boiled down to a carpal tunnel syndrome or a compressing mass of the median nerve. Imaging studies helped further evaluate the mass, and a magnetic resonance imaging (MRI) scan of the wrist showed a well-defined mass on the radial side of the wrist. The MRI showed the target sign of biphasic contrast enhancement in both the mass's center and periphery surrounded with a well distinct encapsulation (Figs. 1 and 2). The patient under-

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* Corresponding author.
E-mail address: malaklina.zark@gmail.com (N. Amsiguine).

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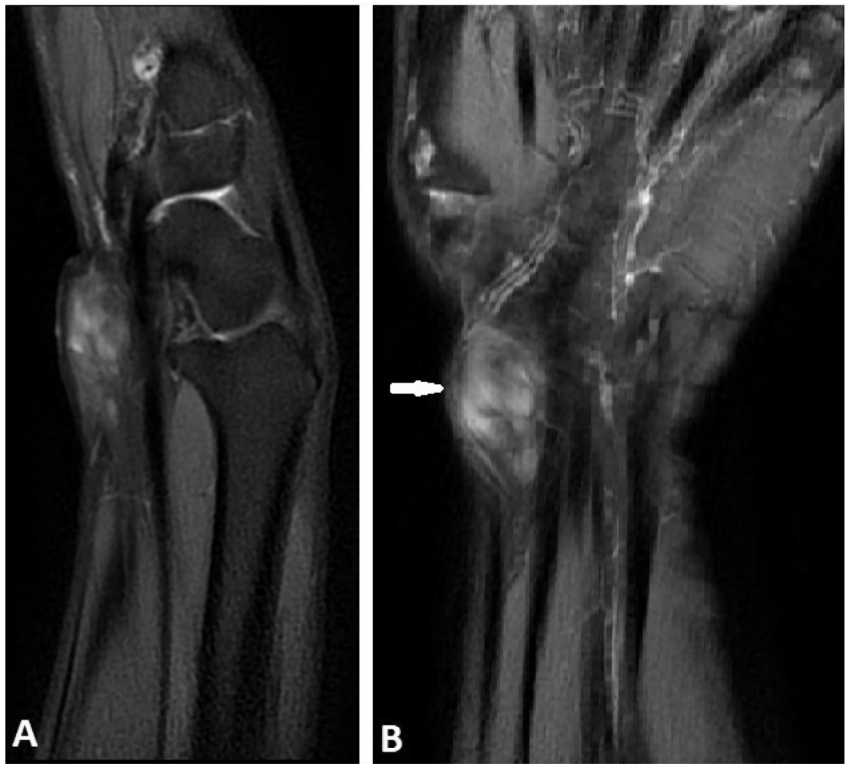

Fig. 1 – T2-weighted image with fat saturation in sagittal (A) and the coronal (B) plane showing a hyperintense heterogeneous mass surrounding the median nerve (white arrow).

went surgical excision of the mass under general anesthesia, and intraoperatively, the mass rose from the median nerve. Histopathologic examination of the mass revealed a benign schwannoma. Following the surgery, the patient underwent rehabilitation and after 3 months, he reported complete resolution of his symptoms, including the numbness and tingling in his thumb and index finger. In conclusion, this case highlights the importance of considering peripheral nerve sheath tumors in the differential diagnosis of a mass causing median nerve compression. Early diagnosis and prompt surgical intervention can lead to favorable outcomes in these cases.

Discussion

Schwannomas are benign tumors originating from Schwann cells that constitute the most common type of peripheral nerve tumors, accounting for approximately 5% of all soft tissue tumors. There is no sex predilection for schwannomas [4]. Schwannomas can develop at any age, however they are often diagnosed in people between the ages of 20 and 50 [3]. The digital and radial nerves are particularly susceptible to schwannomas and the median nerve occurrence is rare [3]. Despite being benign, schwannomas can still cause serious morbidity by compressing nearby tissues, hence surgical removal is the recommended course of action [4]. Moreover, rare malignant variables have been identified in the literature [5].

Clinically, schwannomas can present in a variety of ways, depending on the location and size of the tumor. Peripheral nerve schwannomas frequently exhibit slow-growing, painless masses, sensory or motor impairments associated to the afflicted nerve(s), as well weakness in grip strength [6], as was the case with our patient. Patients may also present with paresthesia. Blood tests are usually within normal limits and there are no specific biomarkers for schwannomas [7]. Nevertheless, an accurate diagnosis typically requires electromyography and biopsy results [8]. The identification and characterization of the tumor are the main motif of medical imaging including MRI and CT scans.

Ultrasound (US), computed tomography (CT), and magnetic resonance imaging (MRI) are all crucial in the diagnostic of schwannomas. High-resolution pictures may be obtained from a US, which is helpful for determining the tumor's position and size. It might not be as successful, though, in locating deeper or larger tumors [9]. CT can show the extent of calcification and tumor invasion into neighboring tissues, while MRI can offer highly accurate images of soft tissues and is the most reliable imaging modality for schwannomas. On MRI, schwannomas often exhibit the target sign of biphasic contrast of peripheral and central areas along with clear encapsulation, which helps distinguish them from neurofibroma [10,11]. Other imaging modalities, such as positron emission tomography (PET) and single-photon emission computed tomography (SPECT), may guide the diagnosis in certain cases [9].

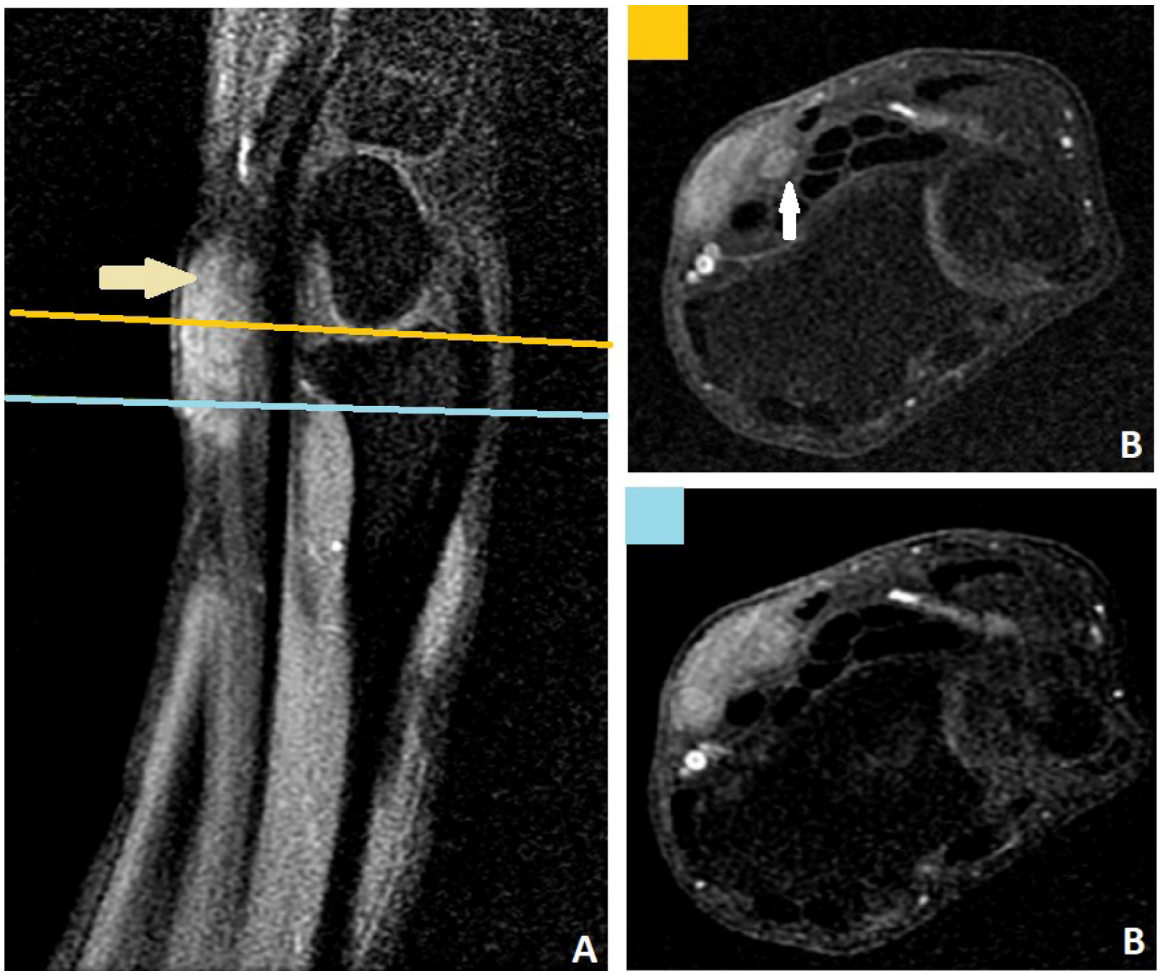

Fig. 2 – T1-weighted image fat saturated and contrast enhanced in the sagittal plane (A) and the respect axial sections (B) showing:
o Yellow section: **an enhanced median nerve (white arrows) with significant enlargement reflecting inflammation leading up to the mass.**
o Blue section: **An emerging growth from the sheaths of the median nerve with contrast enhancement in both the mass's center and its periphery surrounded with a well distinct encapsulation.**

Since a median nerve schwannoma can present with a wide range of symptoms and can mimic other medical problems, the differential diagnosis is essential. For instance, ganglion cysts and lipomas are a common differential diagnosis for schwannomas. The absence of nerve fibers and the location of the mass can help distinguish between them [12]. Other nerve sheath tumors are the most challenging to distinguish preoperatively [13]. Due to the clinical similarities, Carpal tunnel syndrome can also present with numbness and tingling in the thumb and index finger, but imaging studies can help differentiate between the 2 conditions [1]. Imaging tests and a detailed medical history can rule out malignancies including sarcomas and metastases [14].

Surgery is the standard treatment for median nerve schwannomas. A wait-and-see strategy may be the best approach when the tumor is minuscule and asymptomatic. However, surgical intervention is required if the tumor is producing symptoms or growing in size. Neurilemmoma recurrence and malignant transformation rates are minimal; hence following meticulous straightforward excision of the tumor is advised [13]. Additionally, patients with larger tumors and tumors with a longer history are at a higher risk of acquiring neurological impairments.

Schwannomas are removed using a variety of surgical procedures, such as open surgery, endoscopic resection, and minimally invasive methods. The location and size of the tumor, as well as the surgeon's preferences and expertise, all influence the surgical procedure selection [15]. Nerve-sparing procedures can be utilized when the tumor is in the extremities and has proven to be highly effective in reducing disruption of the nearby tissues and nerves [16].

Conclusion

This case study emphasizes how crucial it is to add peripheral nerve sheath tumors into the differential diagnosis when determining the cause of wrist masses, especially in young individuals without a history of trauma. These tumors are diag-

nosed via all the fundamental imaging modalities including ultrasonography, CT, and MRI. The gold standard for therapy is still surgical excision, which has been shown to provide positive results in the literature. Since these tumors are prone to recurrence, long-term follow-up is advised.

Patient consent

Written informed consent was obtained from the patient for publication of this article.

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