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(CASE REPORT)

Sciatic Nerve Schwannoma: A Case Report

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Abstract

Sciatic nerve schwannomas are rare benign peripheral nerve sheath tumors. Their clinical presentation is most commonly characterized by neuropathic pain or sciatica, whereas sensory and motor deficits are uncommon. We report the case of a 38-year-old man who presented with a long-standing history of paresthesia involving the posterior aspect of the right thigh. Clinical examination revealed a positive Tinel's sign along the course of the sciatic nerve. Magnetic resonance imaging (MRI) demonstrated a well-defined rounded mass measuring 92 × 90 mm with a craniocaudal extent of 150 mm, closely related to the sciatic nerve. An open biopsy was performed, and histopathological examination was consistent with a schwannoma. The patient subsequently underwent complete surgical excision of the tumor with preservation of the sciatic nerve. The postoperative course was uneventful, with complete resolution of pain, and the final histopathological examination confirmed the diagnosis of sciatic nerve schwannoma.

Keywords: Sciatic nerve schwannoma; Peripheral nerve sheath tumor; Sciatica; Magnetic resonance imaging; Surgical excision; Case report.

1. Introduction

Peripheral nerve tumors are uncommonlesions, with an estimated incidence of approximately 1 case per 100,000 individuals**[1]**. Schwannomas, alsoknown as neurilemmomas, are the mostcommonbenignperipheral nerve sheathtumors. They arise from Schwann cells and are typicallycharacterized by slow growth, encapsulation, and an indolent clinical course **[1,2]**.

Schwannomasmay arise in variousanatomical locations, including the cranial nerves, upperextremities, and, lesscommonly, the lowerextremities. Sciatic nerve involvementisexceptionally rare, accounting for lessthan 1% of all reportedschwannomas**[2–4]**. Owing to theirrarity and nonspecificclinicalpresentation, thesetumors are frequentlymisdiagnosed as lumbardegenerativedisorders. Patients typicallypresentwithchronicneuropathic pain or sciatica, whereassensory and motordeficits are uncommon and usuallyoccurlate in the disease course **[1–4]**.

Magnetic resonanceimaging (MRI) plays a pivotal role in the diagnostic workup by accuratelydelineating the lesion, itsanatomicalrelationships, and its tissue characteristics**[5,6]**. However, the definitivediagnosis relies on histopathologicalexamination. Surgical excision remains the treatment of choice, providingbothhistological confirmation and symptomatic relief whilepreserving nerve functionwheneverfeasible**[3,5,7]**.

We report the case of a 38-year-old patient with a giantsciatic nerve schwannoma and highlight the diagnostic challenges and surgical management of this rare clinicalentity.

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2. Case Presentation

A 38-year-old man with no significant past medical history presented with symptoms that had been evolving since the age of 18 years. The initial presentation consisted of gradually progressive paresthesia involving the posterior aspect of the right thigh, without associated motor deficit or initial functional impairment.

Approximately three years before presentation, the patient noticed the gradual development of a swelling over the posterior aspect of the right thigh. The mass progressively increased in size and became painful, eventually interfering with his daily activities.

On physical examination, the patient's general condition was preserved. Inspection revealed no obvious deformity at rest, except for a slight prominence over the posterior aspect of the right thigh (Figure 1). Palpation identified a deep, soft-tissue mass of soft consistency located along the expected course of the sciatic nerve. The lesion exhibited limited mobility in the deep plane and was not associated with local inflammatory signs.

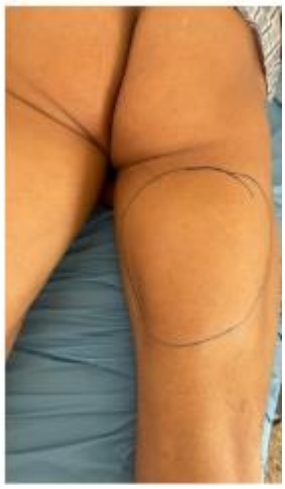

Figure 1 Clinical appearance of the posterior thigh **mass.**

Percussion of the mass elicited a positive Tinel's sign, reproducing paresthesia radiating along the distribution of the right sciatic nerve, suggesting a neurogenic origin. Comparative neurological examination of both lower limbs demonstrated no objective sensory or motor deficits, muscle atrophy, or abnormalities of deep tendon reflexes.

Magnetic resonance imaging (MRI) revealed a well-circumscribed fusiform mass arising along the course of the right sciatic nerve, measuring 162 × 71 × 46 mm. The lesion exhibited a prominent cystic component without evidence of locoregional invasion, findings suggestive of a benign peripheral nerve sheath tumor (Figure 2).

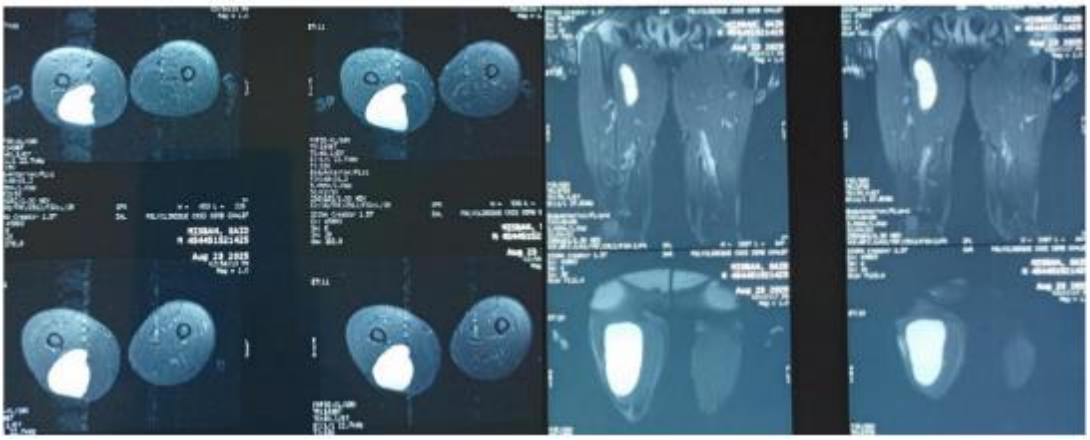

Figure 2 Magnetic resonance imaging demonstrating the sciatic nerve tumor.

The patient subsequently underwent an open biopsy (Figure 3). Histopathological examination was consistent with an ancient schwannoma, characterized by marked cystic degeneration and partial liquefaction of the lesion.

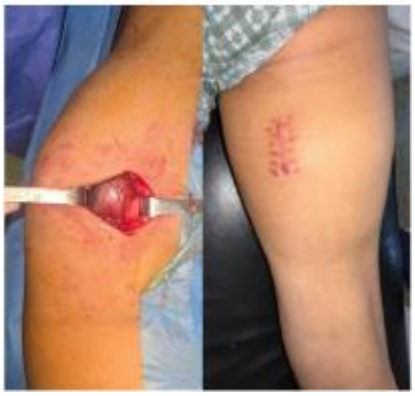

Figure 3 Intraoperative and postoperative views of the biopsy procedure.

During a second-stage procedure, complete microsurgical excision of the tumor with meticulous dissection and preservation of the sciatic nerve was performed (Figure 4). The patient was positioned prone with the knees flexed to reduce tension on the sciatic nerve. A posterior approach to the thigh provided adequate exposure of the lesion. Intraoperatively, the tumor appeared as a whitish, encapsulated mass arising eccentrically from the sciatic nerve. Careful microsurgical dissection allowed complete macroscopic excision while preserving the continuity of the nerve fascicles.

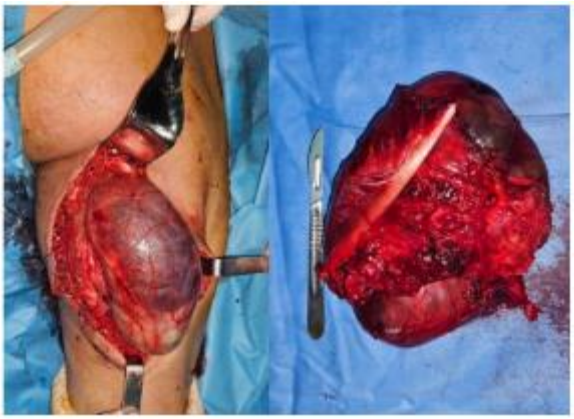

Figure 4 Intraoperative view of tumor excision and photograph of the resected specimen.

The postoperative course wasuneventful, with no neurologicaldeficits. Marked pain relief wasachievedwithin the first postoperativedays. Final histopathologicalexaminationconfirmed the diagnosis of sciatic nerve schwannoma. At the latest follow-up, no clinical or radiologicalevidence of recurrencewasobserved.

3. Discussion

Peripheral nerve tumors constitute a heterogeneous group of uncommon lesions, accounting for approximately 5% of all soft tissue tumors. They originate from the various components of the nerve sheath and mainly include schwannomas, neurofibromas, and malignant peripheral nerve sheath tumors (MPNSTs) [1]. Among these entities, schwannomas are the most common benign peripheral nerve sheath tumors, representing nearly 70% of all benign peripheral nerve tumors [1,2].

Histopathologically, schwannomas are benign encapsulated neoplasms arising from Schwann cells. They are characterized by slow growth and an eccentric relationship to the parent nerve. This anatomical feature displaces the nerve fascicles toward the periphery of the lesion, thereby allowing microsurgical dissection and preservation of nerve continuity in most cases [3,5].

Schwannomas most commonly involve the nerves of the upper extremities and the major proximal nerve trunks. In the lower limb, the posterior tibial nerve is the most frequently affected site [2]. Sciatic nerve schwannomas are exceptionally rare, accounting for less than 1% of all reported cases, and may occur anywhere along the course of the nerve, from the pelvis to the distal thigh or leg [3,4]. Their rarity largely explains the frequent delay in diagnosis.

Clinically, schwannomas usually exhibit slow progression over several years, with initially subtle and nonspecific symptoms. Neuropathic pain is the most common presenting complaint, occurring in approximately 80–85% of patients, followed by the presence of a palpable mass in 40–90% of cases depending on the reported series. A positive Tinel's sign is a characteristic clinical finding, whereas sensory disturbances are common and motor deficits remain uncommon because of the non-infiltrative nature of the tumor [1–4]. In the present case, symptoms evolved over nearly two decades, illustrating the indolent natural history of this lesion.

Imaging plays a pivotal role in the diagnostic evaluation. Ultrasonography may demonstrate a well-defined hypoechoic mass located eccentrically to the nerve, with partial preservation of the fascicular architecture and, occasionally, a characteristic "target sign" on transverse imaging [5]. However, magnetic resonance imaging (MRI) remains the imaging modality of choice because it accurately delineates the anatomical relationships and tissue characteristics of the lesion. Schwannomas typically appear isointense relative to skeletal muscle on T1-weighted images and hyperintense on T2-weighted images, with well-defined margins and eccentric growth along the course of the affected nerve [6]. Large tumors may exhibit cystic degeneration, as observed in our patient, reflecting long-standing degenerative changes.

The main differential diagnosis is neurofibroma, and distinguishing between these two entities is crucial for surgical planning. Unlike schwannomas, neurofibromas are infiltrative lesions centered within the nerve, disrupting the fascicular architecture and often precluding complete excision without sacrificing the parent nerve [5,7]. Although MRI may suggest the diagnosis, histopathological examination remains the gold standard for definitive diagnosis.

Surgical excision is the treatment of choice for schwannomas. The primary objective is complete tumor removal while preserving nerve function. Owing to their encapsulated and eccentric growth pattern, most schwannomas can be meticulously dissected from the surrounding nerve fascicles, allowing complete resection with a low risk of permanent neurological deficits [3,8]. In our case, prone positioning with the knee flexed facilitated exposure of the sciatic nerve while minimizing tension on the nerve trunk during dissection.

The prognosisfollowingcomplete excision is excellent, with a lowrecurrence rate and favorable functionaloutcomes. Neurological complications are uncommonwhenmeticulousmicrosurgical techniques are employed, underscoring the importance of management in specialized centers [1,3,8,9].

4. Conclusion

Sciatic nerve schwannoma is a rare benign peripheral nerve sheath tumor that may present with chronic sciatic pain, sometimes as the sole manifestation, resulting in considerable diagnostic delay. It should be considered in the differential diagnosis of persistent or atypical sciatica, particularly when no spinal or radicular cause can be identified.

Ultrasonography and, more importantly, magnetic resonance imaging (MRI) play a crucial role in the diagnostic workup by facilitating the identification of peripheral nerve tumors and providing valuable information for distinguishing schwannomas from neurofibromas.

Because of theirencapsulated and eccentricgrowth pattern, schwannomas can generallybeexcisedcompletelywhilepreserving the nerve fascicles, resulting in excellent functionaloutcomes and a lowrisk of postoperativeneurologicaldeficits. Early recognition and appropriatesurgical management are essential to optimize patient outcomes and minimizeneurologicalmorbidity.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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