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Case report

Unusual presentation of lateral sural cutaneous nerve schwannoma: An exceptional case report

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ABSTRACT

Introduction: Schwannoma is the most common benign nerve sheath tumor. Peripheral nerves of the lower extremity are rarely involved and usually asymptomatic.
Case presentation: We report the case of a misleading clinical presentation of lateral sural cutaneous nerve schwannoma.
Discussion: To the best of our knowledge, no case has been reported about the location of schwannoma in the lateral sural cutaneous nerve. MRI and anatomopathologic assessment, after microscopic enucleation, are required to confirm diagnosis.
Conclusion: Care must be taken to not miss a schwannoma of lateral sural cutaneous nerve by meticulous clinical examination and appropriate imaging using MRI in unexplained L5 sciatica.

1. Introduction

Schwannoma is the most common benign nerve sheath tumor that arises from the Schwann cells of the peripheral nerves [1,2]. It accounts for 1–3% in peripheral nerves and often occurs in the head, the neck and upper extremity [3,4]. Schwannomas are usually solitary, slow-growing and rarely symptomatic which often delays diagnosis [1,5]. It represents 9% of peripheral nerve sheath tumors in the lower extremity [2], and most frequently occur in spinal nerves and plexus [2,6]. To the best of our knowledge, schwannomas of the sciatic and the tibial nerve are the most commonly involved in the lower extremity [2,7], and no cases in lateral sural cutaneous nerve have been reported in the literature. We report the case of a 28 years-old patient with a misleading symptomatology of lateral sural cutaneous schwannoma.

2. Case presentation

A 28-year-old man, followed for 18 months for sciatic L5 not improved by medical treatment which motivated his physician to refer him to our department for specialized management. The patient describes paresthesia in the posterior and lateral aspect of the knee, felt during the threading of pants without low back pain.

We found a small, infra-centimetric oval nodule with firm consistency, located next to the proximal part of the lateral head of the gastrocnemius muscle. The palpation of this nodule reproduces the same pain described by the patient at the clinical examination (Tinel sign), otherwise we did not find any motor deficiency, skin spots or abnormalities in spine, knee and the ankle.

X-rays of the knee was performed in order to eliminate any bone process or calcification in the soft tissue. MRI found a lesion of 5 mm of large, encapsulated appearing in isosignal in T1 images and hypersignal in T2, located behind the proximal part of the muscular body of the lateral head of the gastrocnemius (Fig. 1).

The patient underwent surgical enucleation of his schwannoma under spinal anesthesia in ventral decubitus and pneumatic tourniquet. During the operation, we were able to individualize the nodule and lateral sural cutaneous nerve by small direct approach (Fig. 2A). After meticulous dissection, enucleation was carried out without any particular difficulties (Fig. 2B) and the closure was made after the tourniquet was released and the hemostasis checked.

Anatomopathologic assessment showed proliferation of spindle shaped cells arranged in interlacing fascicles in Antoni A areas and oedematous, hypocellular areas known as Antoni B (Fig. 3). After 4 years follow-up, the patient did not complain of any pain or reoccurrence of

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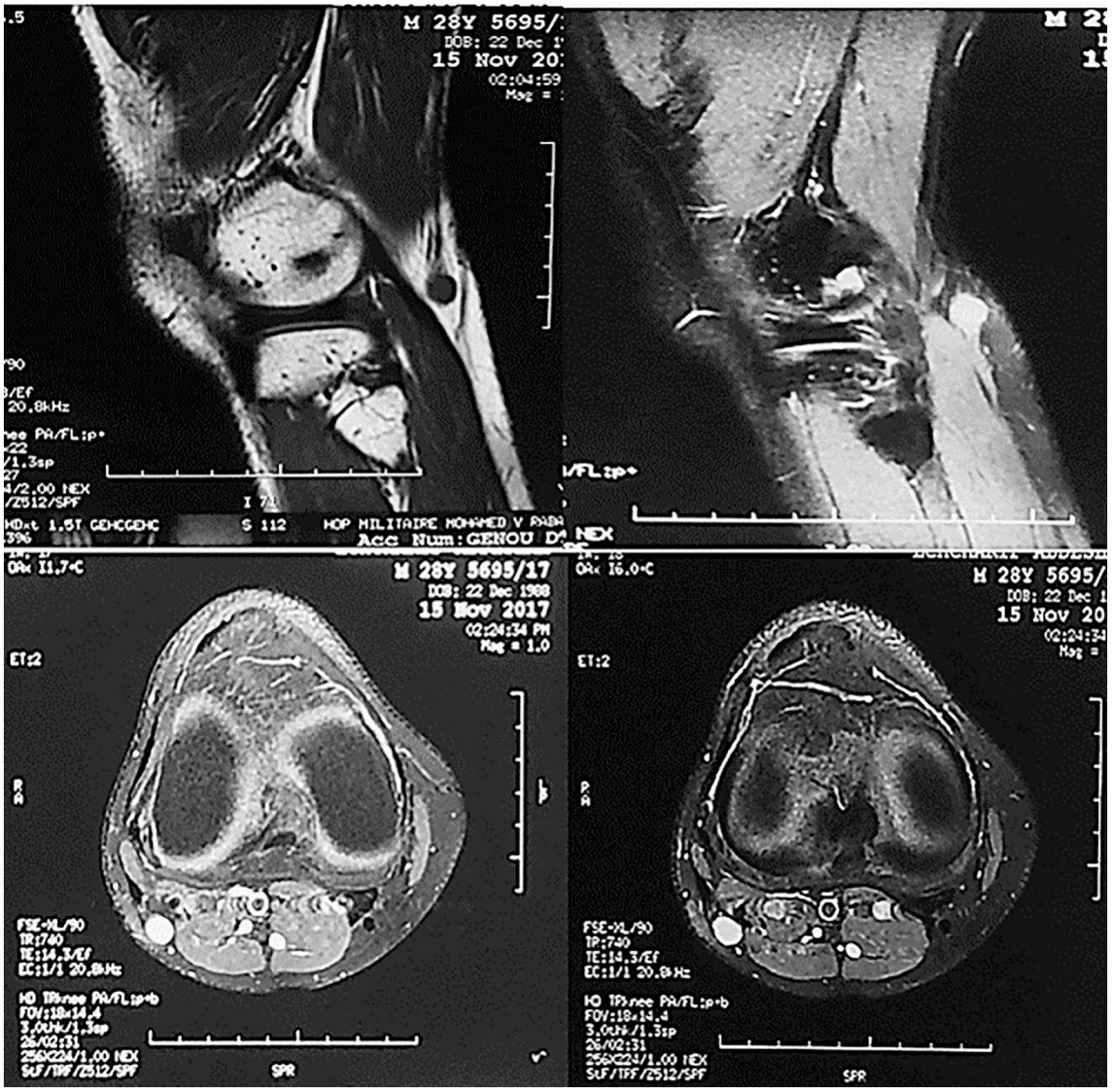

Fig. 1. Sagittal and axial images of MRI of the right knee showing hypointense signal on T1 images and hyperintense signal on T2 images of the mass.

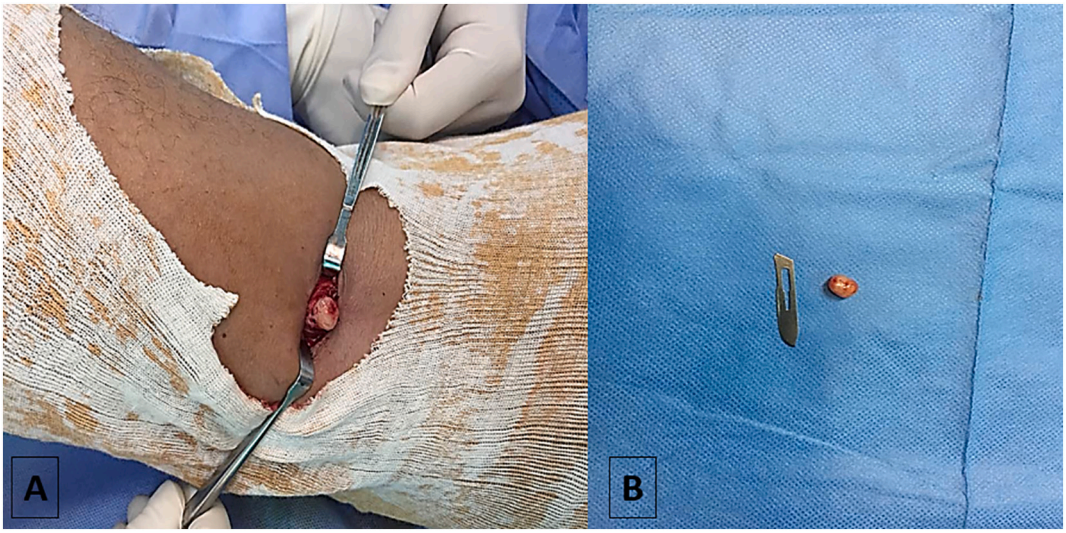

Fig. 2. A: operative view of the tumor after meticulous dissection of nodule which depends on the lateral sural cutaneous nerve, B: aspect of the tumor after enucleation.

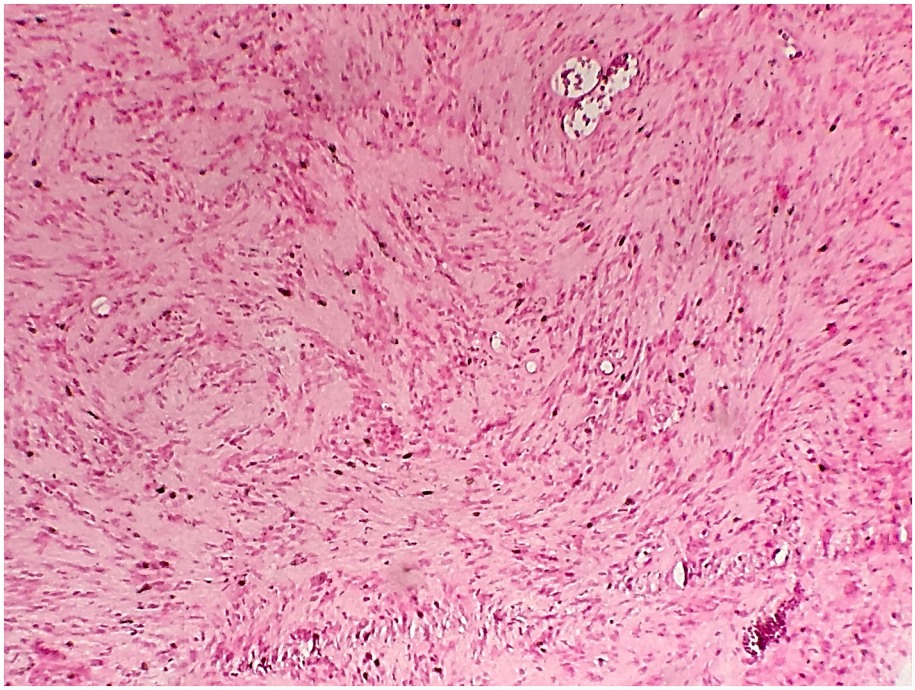

Fig. 3. Microscopic view of hypercellular Antoni A areas and loose Antoni B area.

the nodule. We indicate that this study has been reported in line with the SCARE 2020 criteria [8].

3. Discussion

Schwannoma is the most common solitary nerve tumor [2]. Often solitary, it is found mainly in the head, the neck and upper extremity [3,4]. Its specific etiology is not well understood, but some authors pointed the role of traumatic factors in the genesis of schwannoma and autosomal dominant transmission of these tumors [2,9]. This tumor can occur across any age with a peak of incidence between 30 and 60 years old without sex predilection [10–12]. In our case, he was a 28 years-old man.

The lateral sural cutaneous nerve is a cutaneous branch of the common peroneal nerve at the popliteal fossa proximal to the fibular head, responsible for the sensitivity of the postero-lateral aspect of the knee [13]. It represents the lateral component of the sural nerve which provides sensory innervation to the lateral surface of the foot and ankle [14]. Schwannoma is characterized by a slow-growth creating a capsule, which consists of the perineurium of the nerve bundle of origin, surrounded by a condensation of the deepest layers of the epineurium, around well differentiated Schwan cells [1,15]. On the other hand, schwannoma may remain asymptomatic until the mass has compressed a subjacent neurovascular bundle [2,16]. In our case, the patient had a small schwannoma with a misleading symptomatology which mimic a sciatic L5 leading to delay of diagnosis of 18 months.

Radiographic investigations include x-rays, to rule out any bony involvement or abnormalities, ultrasonography, which show solid, sharply delineated, ovoid, hypoechoic homogenous mass [17–19]. On MRI, schwannoma is visualized as isointense or decreased signal relative to the skeletal muscle on T1-weighted images and heterogeneously increased signal intensity on T2-weighted images [18,20]. Postcontrast enhancement in T1-weighted images is important in the radiologic workup of schwannomas. The borders of the mass are generally well drawn with a hyposignal which signs the presence of a capsule representing a target sign [5,21], as observed in our case. Schwannoma is usually eccentrically located and do not infiltrate fascicles, unlike neurofibromatosis which require nerve resection. Additionally, when malignancy is suspected positron emission tomography scan with fluorine-18 α-methyl tyrosine may help to distinguish between a benign and malignant tumor nerve [22].

Histologically, schwannoma is microscopically composed of higher cellular areas, Antoni type A and higher myxoid areas, Antoni type B. Degenerative changes in form of cyst, calcification, hemorrhage, hyalinization may be present. No intratumoral axons are present [1,20,23]. Immunologically, schwannomas are reactive to S100 protein [24].

Microscopic enucleation is treatment of choice [5,12,19,23]. In fact, this method has been related to good functional results in 90% of cases with no pain in 80% of cases [25]. Tumoral reoccurrence is rare if complete resection is performed. For more accurate enucleation, intraoperative nerve stimulation can be made in order to differentiate functional and nonfunctional fascicles [26]. In our case, the patient did not experience any pain after 4 years follow-up.

4. Conclusion

Schwannoma is rarely found in the lower limb and no cases have been reported in the lateral sural cutaneous nerve. It is often silent, but misleading symptoms can also delay diagnosis. A thorough clinical examination completed by an MRI is a huge help in diagnosis. So, clinicians should consider schwannoma as a possible diagnosis for a well-defined, oval, subcutaneous mass in the postero-lateral aspect of the knee.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

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Ethical approval

The study is exempt from ethnical approval.

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CRediT authorship contribution statement

Dr A. El Ghazoui and Pr O. Zaddoug operated the patient.
Pr. M. Allaoui did the pathology assessment.
Dr L. El Asraoui did the bibliographic research.
Dr A. El Ghazoui wrote the article.

Declaration of competing interest

The authors declare that there is no conflict of interest.

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