

Case Report

Entrapment of the sciatic nerve at the linea aspera: A case report and literature review

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Abstract

Background: Nontraumatic, non-neoplastic sciatic nerve entrapment at the level of the thigh is extremely rare. In its course, in proximity of the linea aspera, the nerve is exposed to unexpected neuropathic syndromes associated with bone disorders.

Case Description: A 67-year-old woman presented with a painful, neuropathic syndrome of the sciatic nerve, not resulting from any trauma and persisting for approximately 2 years. Imaging studies of the thigh showed a delimited zone of hyperostosis in the proximal third of the femoral diaphysis. The symptoms dramatically resolved after the patient underwent neurolysis of the tract of the nerve adjoining to the linea aspera. At the clinical checkup 2 years later, the patient remained free of pain.

Conclusion: The diagnosis of sciatic nerve entrapment at the linea aspera may present considerable difficulties. The clinical history and physical examination sometimes motivate the exploration and neurolysis of the nerve at this site.

Key Words: Linea aspera, sciatic nerve compression, sciatic nerve entrapment, sciatic neuropathy

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INTRODUCTION

Of all sciatic neuropathies described in literature, those not dependent on the nerve roots injury have been calculated to be less than 1%.^[5]

In addition to the cases following trauma, expansive processes, and iatrogenic damage to the lower limb,^[7,8,11] there are some entrapment syndromes, which are sometimes difficult to place in a diagnostic framework and can cause painful symptoms mimicking the common lumbar radiculopathy.^[9,13,16]

The course of the sciatic nerve in the back of the thigh, in closeness to the femur, has been indicated as a critical site of susceptibility of the nervous trunk where uncommon entrapments syndromes may occur.^[3] This report presents the case of sciatic nerve entrapment at this site, which was associated with a limited hyperostosis of the femur.

CASE DESCRIPTION

A 67-year-old housewife had been treated for 2 years with cycles of strong doses of cortisones and nonsteroidal anti-inflammatory drugs (i.e., Diclorem) to ease the pain in the back of her left inferior limb.

The medical history, negative for trauma, presented a diagnosis of fibroangiomas of the left leg, which had

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been treated with electrocoagulation and phlebectomy 50 years ago. At the physical examination, both limbs showed diffused varicosis. The Lasègue maneuver of the left limb was positive whereas the Wasserman maneuver was negative. The patellar reflexes, Achilles reflexes, and the plantar reflexes reacted normally and symmetrically. Digital pressure in the posterior region of the left thigh, at the limit between the proximal third and the middle third, provoked slight pain. At this site, the Tinel's sign was positive with paresthesia radiating to the popliteal space and to the calf. The ultrasound scan of the left thigh was negative for lesions of the superficial and deep soft tissues.

A color Doppler ultrasound exam of the lower limbs highlighted ectasic collateral veins of the posterior left thigh and leg and incompetence of the external saphenous vein in the same limb.

An X-ray exam of the femur showed a delimited zone of hyperostosis in the proximal third of the femoral diaphysis. A magnetic resonance imaging (MRI) scan of the thigh was negative for lesions of periskeletal soft tissue or changes of the bone signal [Figure 1]. A computed axial tomography (CAT) scan of the left femur highlighted a small area of thickening of the solid cortical bone in the proximal third of the diaphysis, on the medial side, with no images about focal lesions of that same bone.

Electromyography revealed chronic neurogenic damage without denervation in progress, with a bilateral L5-S1 radicular distribution and slight predominance on the left.

Other radiographic exams of the hips, knee and spine showed diffused moderate or severe arthrosis. The common hematochemical examinations (sedimentation rate, C-reactive protein, and the hemochromocytometric examinations) presented values within the normal range.

Because of the persisting pain and the findings of the physical examination, we decided to perform a surgical exploration of the sciatic nerve, in the region where the Tinel's sign was positive. Around the nervous trunk,

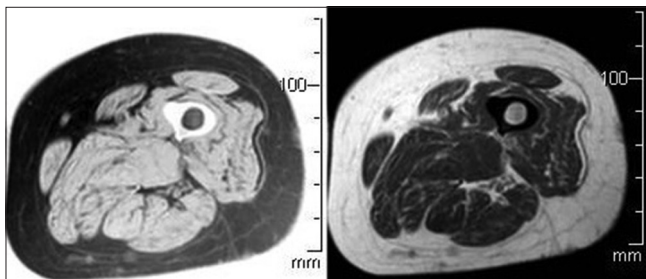


Figure 1: Magnetic resonance imaging scan showing the medial site of thickening of the cortical bone of the femoral diaphysis without any change of the bone signal

we observed a fibrous tissue which blended in with the tissue of the surrounding muscular fascia. When this was removed, we could note a nerve deformity, with a partial interruption of the vasa nervorum [Figure 2].

On the first postoperative day, the painful symptoms had disappeared and this condition remained unchanged at the last clinical checkup 2 years after surgery.

DISCUSSION

Sciatic nerve entrapment syndromes at the thigh can arise late following penetrating wounds,^[14] can occur in association with myositis ossificans of the biceps muscle,^[10] or with the habit of adopting particular postures repeatedly.^[4]

Myofascial bands remaining from hematomas reabsorption,^[17] or of an evolutive nature and extending from the biceps muscle insertion on the linea aspera to the adductor magnus muscle,^[2] can compress the nerve. Neuropathic syndrome can also be secondary to neurovascular conflicts in the thigh.^[11]

We discovered a compression laying in the part of the nervous trunk straddling between the proximal third and the middle third of the thigh. In this tract, the sciatic nerve descends vertically and is separated from the linea aspera by the insertions of the adductor magnus muscle, vastus lateralis muscle, and the short head of the biceps femoris muscle.^[6] We did not identify any myofascial bands but only tissue blending with the surrounding muscular fascia, which constricted the nerve exactly at this site.

Lignière *et al.*^[12] used the expression “syndrome of the linea aspera” to define a clinical condition associated with cicatricial fibrosis or hematomas and caused by sciatic nerve compression in nearness to this part of the femur. According to these authors, the closeness of the nervous trunk with the linea aspera represents a cause of vulnerability to the sciatic nerve.

In this case, the femur showed a limited thickening of the cortical bone in proximity to the tract of the entrapped nervous trunk. The thickening developed on the medial side of the femur without contacting the nerve. A reactive

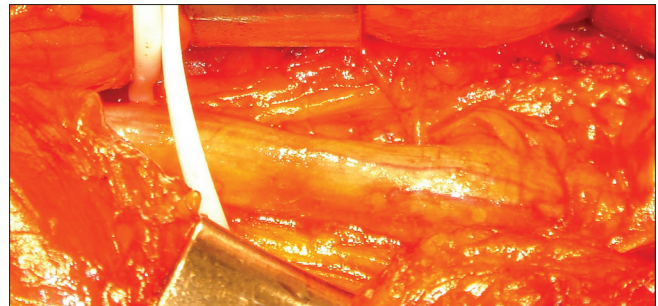


Figure 2: Intraoperative photograph that shows the deformity of the nerve after the neurolysis

process spreading from the femoral cortical bone could have changed the structure and consistency of the soft tissue near to the sciatic nerve, with retraction, and therefore, constricted nervous trunk.

The case presented notable diagnostic difficulties, that are, the unusual site of nerve entrapment, the previous surgery in the same limb, and the high degree of spondylarthrosis, and has precluded a connection between the nerve compression and electromyographic findings.

In addition, according to Petchprapa *et al.*^[15] in the thigh, before the division into common peroneal nerve and tibial nerve, the sciatic nerve flattens and may be difficult to see with an MRI scan.

A positive Tinel's sign, especially without an electromyography, is suggestive of entrapment neuropathy, and still represents an indispensable warning for the suspicion of a sciatic nerve compression in this region and to focalize on the diagnostic and therapeutic measures to be taken.

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Conflicts of interest

There are no conflicts of interest.

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