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Learning Point of the Article:
Although meralgia paresthetica is usually caused by compression of the lateral femoral cutaneous nerve at the level of the inguinal ligament, in rare cases it can occur as a result of a lateral femoral cutaneous nerve tumor (e.g., a schwannoma).

Abstract
Introduction: Meralgia paresthetica (MP) is a clinical syndrome usually resulting from compression of the lateral femoral cutaneous nerve (LFCN). Tumors arising from this nerve could also be the cause of this syndrome.

Case Report: We present an unusual cause of MP in a 67-year-old Caucasian male. The cause of the syndrome appeared to be a schwannoma tumor of the LFCN. Such a cause of MP has not been reported previously in the literature.

Conclusion: Medical practitioners should also consider other causes of MP syndrome, such as peripheral nerve tumors. Although diagnosis is considered to be clinical, ultrasound or magnetic resonance imaging (MRI) could be helpful to establish the diagnosis.

Keywords: Meralgia paresthetica, lateral femoral cutaneous nerve, compression, schwannoma.

Introduction
Meralgia paresthetica (MP), also known as Bernhardt-Roth syndrome, is a condition that is caused by compression of the lateral femoral cutaneous nerve (LFCN), characterized by symptoms of numbness, paraesthesia, and burning pain, localized at the anterior and lateral parts of the thigh. This disorder may be associated with multiple conditions. Examples include obesity, pregnancy, diabetes, trauma, as well as tight clothing [1, 2].

Concerning the anatomy of the LFCN of the thigh, it is a sensory nerve that stems from nerve roots L2 and L3, passes under the inguinal ligament and divides into an anterior and a posterior branch [1, 3]. The anterior branch is the major division to be affected in MP and it supplies the anterior thigh up to the knee. However, the posterior branch supplying the lateral thigh up to the level of the greater trochanter may be affected as well [3].

Regarding the etiology of the disorder, it can be categorized either as spontaneous or iatrogenic. In the first case, MP is caused in the absence of any surgical procedure (i.e., iatrogenic) and can be further classified as idiopathic, metabolic, and/or mechanical [1]. Metabolic causes include lead poisoning, alcoholism, hypothyroidism, and diabetes. However, the most frequent spontaneous causes are of mechanical etiology. That is, conditions that lead to an increase in intra-abdominal pressure (e.g., pregnancy, obesity, and ascites) and conditions that lead to external or internal exertion of pressure upon the nerve (e.g., tight belts or pants and intra-abdominal or retroperitoneal tumors, respectively) [1, 4]. Thus, the interest of our case lies at the unusual presentation of the MP syndrome as a result of a peripheral nerve tumor.

Case Report
A 67-year-old, Caucasian man presented with a 2-year history of numbness and burning pain on the anterolateral and lateral aspects of the left femur. His symptoms deteriorated within a...
period of 2 years, at the end of which they became present even at rest. The causalgia was not bearable with tight trousers or when wearing a belt.

The patient’s medical history, apart from medication for mild hypertension, was unremarkable. His Body Mass Index was within normal limits. On examination, there was diminished sensation on the anterolateral and lateral aspects of his thigh. The straight leg raise test was found to be negative; the range of hip motion was normal and painless, while no neurovascular findings were observed in the lower extremities. Tinel’s sign (2 cm distal and 2 cm medial to the anterior superior iliac spine; [ASIS]) was highly positive even on light palpation. The patient received a local injection with betamethasone and hydrochloric Lidocaine 2% w/v on two occasions, leading to temporal relief. No further investigation was performed and a diagnosis was made on clinical grounds as “compression of the LFCN at the level of the inguinal ligament.”

The condition was explained to the patient and he consented to carry on with surgical decompression of the LFCN. The operation was performed under general anesthesia with a 5 cm horizontal skin incision, 2 cm medial, and 2 cm distal to the ASIS. The nerve was identified and explored proximally. A spherical lump of 1.1 cm in diameter was found under the fascia at the level of the inguinal ligament. It was related to and in continuation with a fascicule of the anterior branch of the LFCN. The lump was detached from the nerve and removed together with the corresponding fascicule (Fig. 1, 2). The fascia was loosely closed to avoid nerve compression. The pathology report described the tumor as a schwannoma (neurilemmoma), which was mostly composed of cellular (Antoni A) areas, while also displaying plexiform architecture and occasional nuclear palisading (Fig. 3, 4, 5).

Following removal of this benign tumor, the symptoms resolved progressively over a 3 month period, leaving a small area of hypesthesia anterolaterally.

Discussion

The significance of this case report lies in the fact that it presents a rare case of MP, precipitated by a peripheral nerve tumor and, specifically, by a schwannoma. To the best of our knowledge, no other similar case can be found in the literature. The schwannoma was located under the inguinal ligament, where the LFCN passes from and, since the symptoms were alleviated after local injection of betamethasone and lidocaine, the symptomatology was attributed to the compression of the nerve by the tumor itself at the pelvic exit.

Notably, a case of lumbar neurinoma mimicking MP has been described by Arabi et al. In this case, the patient presented with low back pain for 6 months and with 1-month bilateral radicular pain covering the trochanteric region (and not the lateral-anteralateral aspect of the thigh, distal to the greater trochanter, as in our case). Lumbar rigidity was present and neurologic examination was normal. In this pseudo-MP, spinal pathology was involved, while the authors do not describe any infiltration of the LFCN [5]. Moreover, it is usual to find the formation of a traumatic neuroma in resected nerves or a peripheral thickening in reaction to chronic compression of a nerve [4, 6]. These conditions are different from our case, though, which presents a benign nerve tumor as the cause of MP.

In general, peripheral nerve tumors constitute a subgroup of a wider category, the soft-tissue tumors [7]. Peripheral nerve tumors are relatively uncommon but the benign ones appear much more frequently than their malignant counterparts [7, 8]. Depending on whether benign peripheral tumors possess neural elements or not, they are subclassified into schwannomas, neurofibromas, perineuromas (which all...
As most peripheral nerve tumors, schwannomas do not usually create any sensory or motor symptoms, but rather present as enlargements that, on palpation, give a positive Tinel sign [9]. In some cases, they can present in correlation with certain conditions such as neurofibromatosis type 2, Carney’s complex, schwannomatosis, and irradiation like in the case of vestibular schwannomas [10]. In their sporadic form, they usually appear during mid-life, irrespective of sex, and the most common locations where they are observed include the head, the neck, and the flexor aspects of the extremities [4, 8]. Histopathologically, encapsulated schwannomas may present an Antoni A (Verocay) and/or Antoni B morphological pattern [7, 9]. Palisading and Verocay bodies are characteristic of Antoni A areas [7, 10].

As most peripheral nerve tumors, schwannomas do not usually create any sensory or motor symptoms, but rather present as enlargements that, on palpation, give a positive Tinel sign [9]. Additional to that, peripheral nerve tumors can be moved vertically but not horizontally on the neuronal axis [7]. When it comes to their investigation, the modality of choice is either magnetic resonance imaging (MRI) or ultrasound, although neither is diagnostic, since it can be difficult to differentiate between various types of peripheral nerve tumors or even between benign and malignant tumors [7]. The algorithm for the evaluation and treatment of idiopathic MP suggests that if the diagnostic nerve block is positive, as in our case, and other conservative measures fail to resolve the condition, then surgical exploration is needed. Nevertheless, in cases of lumbar nerve compression or intra-abdominal compression, local block would not be expected to relieve symptoms and further investigation with ultrasound or MRI would be required [11]. As a result, in our case, diagnosis was made on clinical grounds. However, it would have been helpful if an ultrasound had been previously performed as the lesion proved to be superficial. As a result, we encourage the performance of an ultrasound before surgical exploration of the LFCN for the diagnosis of similar pathology.

Regarding their treatment, in most occasions it is surgical and curative, rendering further operations redundant [5, 7]. When conservative treatment fails, surgical options include: a) Resection of a segment of the LFCN of at least 4cm and b) decompression of the nerve [11]. In our case, the tumor with its fascicule was excised and, consequently, the LFCN was decompressed.

**Conclusion**

Compression of the LFCN at the level of the inguinal ligament by mechanical causes is the usual cause of MP. In rare cases, however, MP can occur as a result of peripheral nerve tumors as in our case, where it was associated with a schwannoma. Surgical removal is curative for this condition.

**Clinical Message**

Removal of a peripheral nerve tumor causing MP without segmental resection of the LFCN is curative.

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