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Unusual cause of non-discogenic sciatica: Foraminal lumbar root schwannoma

C. Karekezi, K. Egu, B. O. Djoubairou, M. Boutarbouch, A. El Ouahabi

Department of Neurosurgery, Mohamed V[th] University, School of Medicine, Hôpital des Spécialités ONO, CHU Ibn Sina, Rabat 10100, Morocco

E-mail: *C. Karekezi - clairekarekezi@gmail.com; K. Egu - egukomi@gmail.com; B. O. Djoubairou - bendjoubairou@yahoo.fr; M. Boutarbouch - mahjouba.boutarbouch@gmail.com; A. El Ouahabi - elouahabi.a@hotmail.com,
*Corresponding author

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Abstract

Background: Schwannomas are tumors of peripheral nerves that develop from the nerve sheath. Foraminal schwannomas are rare and account for 1-5% of all spinal schwannomas. The lumbosacral root schwannoma is a rare cause of sciatica and may raise confusion in diagnosis with late discovery of the tumor.

Case Description: We report the case of a patient 30 years of age with chronic left sciatica in whom lumbosacral magnetic resonance imaging (MRI) revealed a tumor involving the S1 nerve root. The excision of the tumor was simple. Histological examination revealed a benign schwannoma. The evolution was favorable postoperative with no neurological deficit, which confirms the good prognosis of this tumor.

Conclusion: Nerve root schwannomas should be considered in the differential diagnosis of sciatica, especially when signs and symptoms of sciatica cannot be simply explained by prolapsed disc syndrome, which can often delay the diagnosis. Through this case presentation, the authors try to discuss the clinical and radiological features of this condition.

Key Words: Disc herniation, nerve root, neurilemmomas, schwannoma, sciatica

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INTRODUCTION

Schwannomas are benign peripheral nerve sheath tumors arising from Schwann's cells. They are the most common tumors of the peripheral nerves. Spinal schwannomas are rare and uncommon, comprising approximately 3% of all spinal tumors; the root involvement is rare.[2-4]

Lumbosacral schwannomas might be wrongly misdiagnosed and taken for discogenic pathologies as they can clinically present as a prolapsed intervertebral disc. The authors report a case, emphasizing on the clinical and radiological features of this condition.

CASE REPORT

A 30-year-old male with no previous medical history presented with complaints of radicular pain along the buttock, on the posterior aspect of the thigh lateral to the left foot, along the course of the left sciatic nerve of 4 months duration. Except for a restricted left-sided straight leg raise test, the neurological examination showed no abnormality. Radiographs of the lumbosacral spine did not reveal any significant changes. A provisional clinical diagnosis of lumbar disc syndrome was made. Patient was started on symptomatic treatment, but reported no relief of his symptoms over a period of

6 weeks, with persistence of tension signs, and was out of his job during this period.

Computed tomography (CT) scan carried out revealed a hypodense, enhancing lesion in the left L5–S1 neural foramen with the widening of the foramen and "scalloping" of the posterior vertebral surface [Figure 1]. Magnetic resonance imaging (MRI) showed the same lesion that was hypointense on T1 and hyperintense on T2, with a peripheral ring enhancement after gadolinium injection. These features suggested a schwannoma. The rest of the disco-vertebral structures were intact [Figure 2].

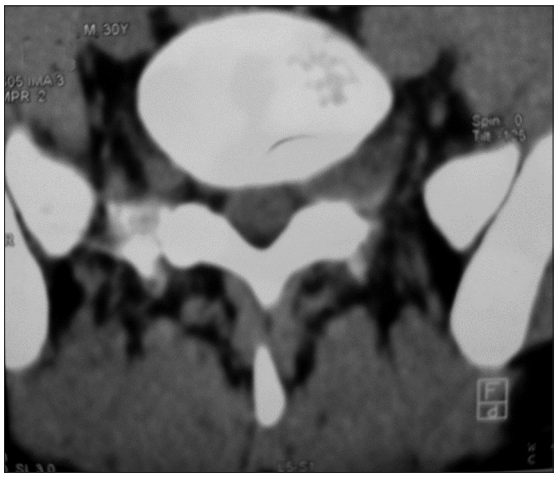

Figure 1: Contrast-enhanced axial computed tomography scan showing hypodense, enhancing lesion in the left L5–S1 neural foramen

A left L5 laminectomy and left-sided foraminotomy were done to expose the tumor mass. A round mass involving the S1 nerve root in the foraminal region was isolated and extirpated. The tumor was adequately separated from the remaining neural tissue by careful dissection along the capsule; no instrumentation was needed. Histological examination of the excised tissue suggested a benign schwannoma [Figure 3]. Postoperatively, the patient had immediate relief of radicular symptoms and had a pain-free straight leg raise test. He was discharged home without any motor deficit. One-month postoperative MRI showed total resection of the schwannoma [Figure 4].

DISCUSSION

This case highlights one of the rare spinal causes of sciatica due to a foraminal lumbar root schwannoma, mimicking a lumbar disc prolapse syndrome. Schwannomas, also known as neurilemmomas, are the most common the peripheral nerve sheath tumors arising from the Schwann's cells, representing 1-5% of all spinal schwannomas, and are usually seen between 30 and 60 years of age. The isolated form is the most common; however, there can be multiple forms called schwannomatosis which are rare and not necessary correlated with neurofibromatosis type II (NF-2), which demonstrates very precise chromosome alterations. Malignant transformation of benign schwannoma is unusual.[1,3,4,6]

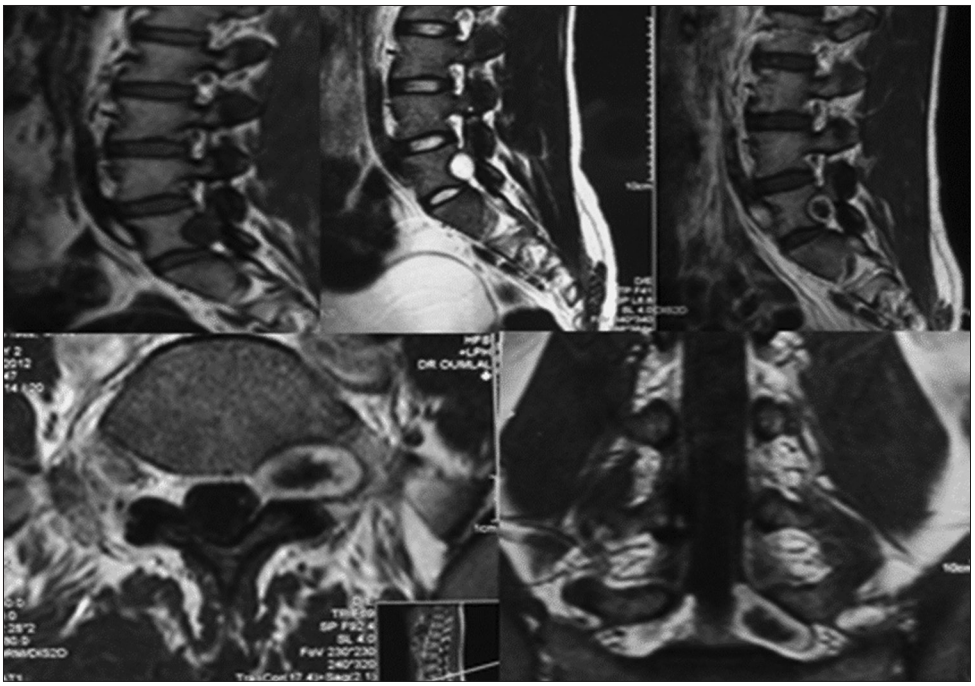

Figure 2: MRI showing a round lesion in the L5–S1 neural foramen arising from the left S1 nerve root, hypointense on T1, and hyperintense on T2, with a peripheral ring enhancement after gadolinium injection suggesting a schwannoma

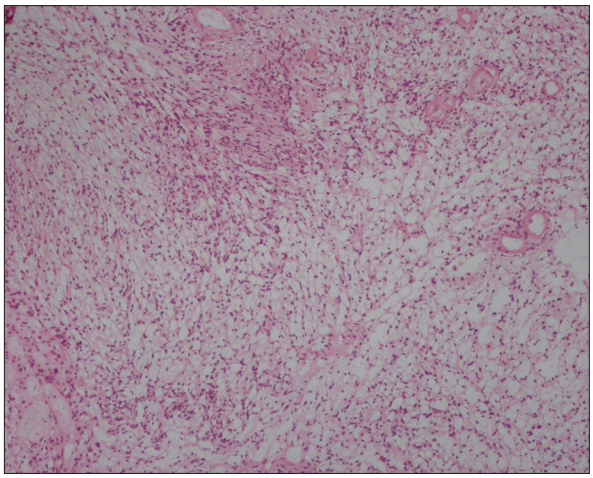

Figure 3: Pathological examination showing the tumor consists of spindle cell proliferation with compact hypercellular areas and myxoid hypocellular areas. Cells are narrow, elongate, and wavy with tapered ends interspersed with collagen fibers without evidence of mitosis. Nuclear palisading around fibrillary process is often seen in cellular areas; large irregularly spaced vessels are most prominent and gaping tortuous lumina have thickened hyalinized walls

The nerve root involvement is rare; incidence of foraminal tumors is 1%, schwannomas being the most common (60%).[3] There have been reports of schwannoma involving the sciatic nerve in the extra-foraminal course in the pelvis, thigh, and peripheral portion, presenting as sciatica.[4,12] There is paucity of literature describing foraminal neurilemmomas involving the lumbosacral root presenting as sciatica.[7] The clinical presentation is dominated by radicular pain, paresthesia, and rarely a motor deficit.

Diagnosis of this condition is often missed clinically and is treated wrongly as disc prolapse syndrome.[8] For the diagnosis, CT and, especially, MRI are very useful. On CT, schwannoma presents as a well-defined iso- or hypodense mass lesion and shows enhancement after contrast medium administration. On MR, schwannomas are hypo- or isointense on T1-weighted images, hyperintense on T2-weighted images, and gadolinium enhancement is usually homogeneous after intravenous administration.[5]

Schwannomas differ from neurofibromas. As seen in neurofibromatosis type I (NF-1), neurofibromas invade the nerve root, becoming inseparable from it, thereby making complete surgical excision impossible without damage to the nerve itself. Their complete resection usually results in neurological deficits. The schwannomas, by contrast, can be excised without creating neurological deficit as they do not invade the underlying nerve root, they repress the fascicular groups without damaging them.[7,8]

Surgery provides good results with a very low rate of recurrence and rarely a malignant transformation has been described before.[9,10] Postoperative neurological deficits are rare (less than 15%) and can last from several

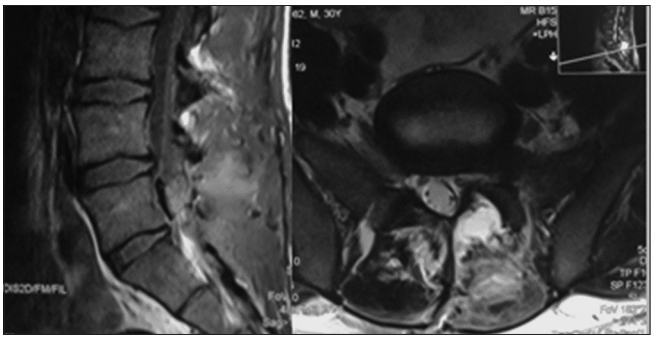

Figure 4: One-month postoperative MRI shows a left L5 laminectomy, left-sided foraminotomy, with total resection of the schwannoma

months to a few years, explained by the contusion of the remaining continuous nerve fibers.[11-13] When deficit signs are present before surgery, their regression or stabilization will depend on the size of the lesion.[14]

CONCLUSION

Schwannoma of the lumbar root is a well-defined tumor and should be sought before any trailing sciatica in a young adult. MRI can suggest the diagnosis. However, the definitive diagnosis remains histological. The prognosis is excellent after a suitable surgical treatment following the nerve fascicles.

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