CASE REPORT

Case Report: Sciatic nerve schwannoma - a rare cause of sciatica [version 1; referees: 2 approved]

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Abstract

Herein we report a rare case of a sciatic nerve schwannoma causing sciatica in a 69-year-old female. Sciatic nerve schwannoma is a rare entity. It should always be considered as a possible cause of sciatica in patients that present with symptoms of sciatica with no prolapsed disc in the lumbar spine and a negative crossed straight leg raise test. Timely diagnosis and complete excision of the lesion leads to complete resolution of the symptoms of such patients.

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Referee Status: ✓ ✓

	Invited Referees 1	2
version 1 published 14 Mar 2017	✓ report	✓ report

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Introduction

Sciatic nerve schwannoma is a rare cause of sciatica[1–3]. However, it remains a probable diagnosis in patients that present with symptoms of sciatica with no prolapsed disc in the lumbar spine and a negative crossed straight leg raise test, suggesting the presence of a far lateral disc. Magnetic resonance imaging (MRI) along the course of the sciatic nerve is the cornerstone for coming to a correct diagnosis and thereafter implementing a right therapeutic decision[1]. This case report highlights the need to consider sciatic nerve schwannoma as a possible cause of a sciatica in patients that have a negative lumbar spine MRI, so that the correct therapeutic decision can be made.

Case report

A 69-year-old female from eastern Nepal presented to our outpatient clinic with a history suggestive of right sided sciatica for the last 2 years. She had been evaluated before for the same, but without any positive diagnosis. The patient denied any history of trauma or any alteration in her bladder and bowel habits, or of any symptoms which is suggestive of intermittent claudication. Upon neurological examination, the power in all the muscle groups in her lower limbs was normal - 5/5 as per the MRC Muscle scale (used with the permission of the Medical Research Council). Her ankle and the knee reflexes were normal and she had no sensory indifference in any of the dermatomes in the affected limb, as compared to the normal limb. There was no wasting of the extensor digitorum brevis muscle. Straight leg raise test and a crossed straight leg raise test were both negative. Her stance was also normal. While sitting in a squatting position, the patient complained of an exaggeration of her symptoms. We thereafter made a differential diagnosis of either a sciatic nerve tumor or a Pyriformis syndrome. Radio imaging with help of an MRI scan revealed the presence of a sciatic tumor alongside the sciatic nerve, near the ischial tuberosity on the right side (Figure 1). The unusual location of the lesion was in favor of a schwannoma rather than a neurofibroma (Figure 2).

The patient was counseled for the operative intervention that would remedy her persistent symptoms. A subgluteal approach was taken for the surgical corridor. Intra-operatively, a 3×3 cm^2 well circumscribed lesion was seen lying within the sciatic nerve. It was carefully dissected off the nerve fascicles and fully removed (Figure 3). The sciatic nerve was confirmed to be intact intra-operatively with the aid of an intra-operative nerve monitor.

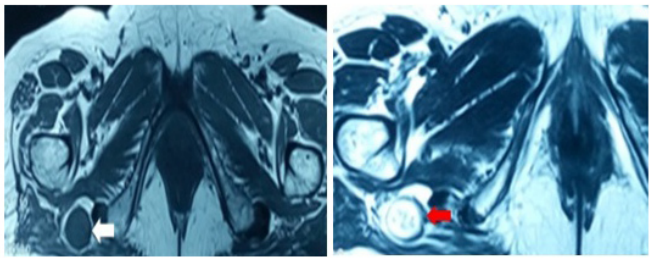

Figure 1. MRI scan showing an oval, well circumscribed and homogenous lesion lying near the ischial tuberosity.

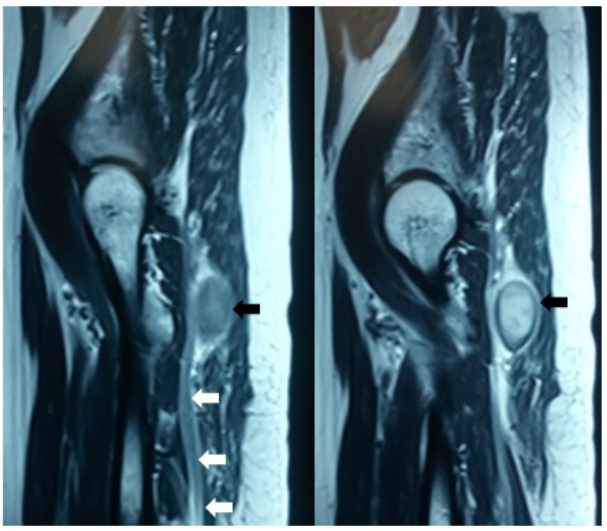

Figure 2. MRI scan revealing the unusual location of the tumor with a hypo-intense rim along the course of the sciatic nerve.

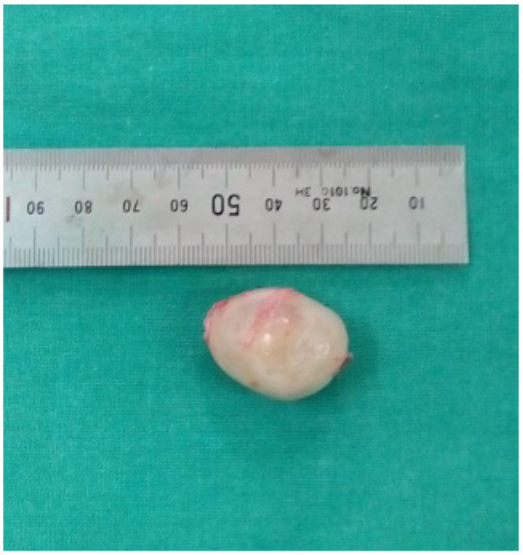

Figure 3. Gross image of the excised lesion.

Postoperatively, the patient was completely free of her previous symptoms. She made a full recovery with no adverse events and was discharged on the fifth day. The histopathological report confirmed the diagnosis of a sciatic nerve schwannoma, owing to the presence of Antoni A and B areas and Verocay bodies (Figure 4). The patient returned to her follow up visit at 1 month completely asymptomatic.

Discussion

Sciatic nerve schwannoma is a rare cause of sciatica, occurring only in 1 of every 100 cases[1]. It should be suspected in a patient who presents with a typical history of sciatica but with MRI scans that fail to reveal any inter-vertebral disc prolapse in the lumbar

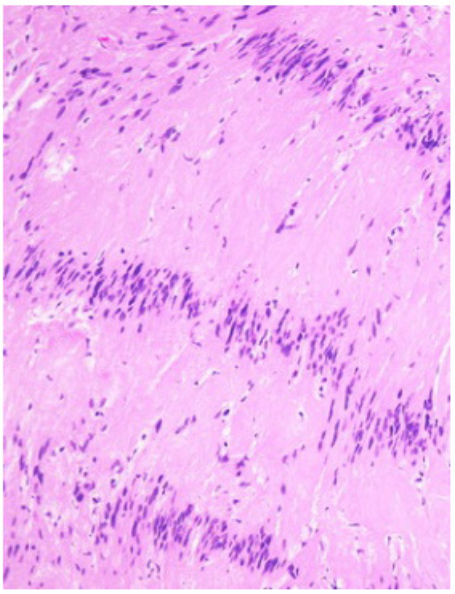

Figure 4. Photomicrograph of tissue taken from the lesion excised from the patient showing cells within Antoni A and Antoni B regions that are characteristic of schwannoma.

spine[1]. Other differential diagnoses included sciatic nerve tumors, a far lateral disc or Pyriformis syndrome. The main imaging modality for the diagnosis of sciatic nerve schwannoma was MRI imaging of the affected sciatic nerve.

Neurofibromas are intrinsic lesions that cause fusiform dilatation of the nerve, since the lesions are intermixed with the nerve[1]. On the other hand, schwannomas are placed in such a way that nerve fascicles are being pushed to the periphery, allowing their safe preservation following excision of the schwannoma[2,4–6]. Intra-operative nerve monitoring helps immensely to outline the course of the nerve and define the boundary of the tumor during its removal. Definitive diagnosis however is only possible after the histopathological studies.

For the excision of such lesions, both a transgluteal or a subgluteal approach can be taken[7,8]. In both these approaches, the patient is placed in a prone position. The sciatic nerve invariably lies midway between the ischial tuberosity, medially, and the greater trochanter, laterally. A subgluteal approach may lead to prolonged discomfort due to retraction of the soft tissues and the gluteal muscles[9]. A transgluteal approach may sometimes lead to disastrous consequences due to retraction of the muscle arteries within the pelvis. However it provides a wider surgical corridor up to the sciatic notch[9].

Histopathology is the mainstay for differentiating the type of tumor involved, with only an occasional need for immunohistochemical markers like S100[2,5,6].

Recurrence is uncommon following complete excision[6]. Malignant transformation of such lesion is rare[1,2]. Good outcome is expected following its complete excision because of its benign nature[2].

Conclusion

Though rare, sciatic nerve schwannoma should be taken into account for the differential diagnosis in a patient presenting with long standing sciatica without positive findings of a disc in the lumbar spine. MRI imaging of the nerve is prudent for the diagnosis of the lesion. It is imperative to outline the course of the nerve and to define the boundary of the lesion to preserve the nerve fascicles. This can be facilitated with the aid of an intraoperative nerve monitor.

Consent

Both written and verbal informed consent for publication of images and clinical data related to this case was sought and obtained from the patient.

Author contributions

Both authors contributed equally in reviewing the literature, formatting the paper, revising and editing the final format.

Competing interests

No competing interests were disclosed.

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Microsurgical excision of sciatic nerve schwannoma with good outcome

The authors reported an interesting case of sciatic nerve schwannoma in a 69-year old female, who was symptomatic for two-years, magnetic resonance imaging revealed presence of a mass lesion causing expansion of right sciatic nerve. A provisional diagnosis of peripheral nerve sheath tumor was made. She underwent micro-surgical excision using a sub-gluteal approach, intraoperative expansion of the sciatic nerve was observed, and nerve fascicles were carefully separated from mass lesion and well circumscribed lesion was excised, with physiological nerve monitoring. Histopathology was suggestive schwannoma with amelioration of symptoms[1].

Schwannoma is a benign peripheral nerve tumor of Schwann cells origin, that usually presents as a slow growing, solitary, well circumscribed mass. The sciatic nerve involvement represents less than 1% of all schwannoma[2].
Peripheral nerve sheath schwannoma symptom relates to alteration in the function of nerve and surrounding muscle and neurovascular bundles, and mostly commonly present with paraesthesia or pain of insidious onset and progresses slowly[2-4]. Pain is a much more common symptom than motor deficits. Pain due to sciatic nerve schwannoma may simulate chronic sciatica pain produced due to a prolapse of lumbar herniated disc. Physical examination may reveal the presence of a lump along the course of the sciatic nerve, which is tender, have mobility along the transverse axis but limited along the course of the nerve, and with a typical positive Tinel sign. However, pre-operative diagnosis cannot reliably in most cases (even with magnetic resonance imaging) distinguish among schwannoma, neurofibroma, or plexiform neurofibroma, but aids in delineating shape, size, location, extent and relation with parent nerve and adjacent neurovascular structures and muscle. Imaging plays a limited role in distinguishing among peripheral nerve sheath tumors. Magnetic resonance imaging may show presence of fusiform mass with characteristic tapering cephalad and distal ends, fasciculation sign and split fat signs[3-4]. The mass is located eccentrically, well-circumscribed, and shows isointense signal on T1-weighted images and hyperintense signal and peripheral rim demonstrate hypo-intensity signal representing capsule T2 weighted images[3-4].
The diagnoses of sciatic nerve schwannoma depends on MRI of sciatic nerve carried out in the event of normal MRI findings of lumbar spine, but the patient still complains of the persistence of sciatica-like pain. Treatment of epineurium encapsulated tumour is microsurgical excision with careful preservation of the sciatic nerve fascicles. Histopathological examination of resected specimen confirms the definitive

diagnosis[1-5].

Kim et al. analysed 397 cases of peripheral nerve sheath tumor, out of which 91% were benign and the rest were malignant. A total of 251 were located in the brachial plexus region or upper limb. 141 benign lesions were related to brachial plexus tumors, and the rest (110) belonged to upper-extremity benign peripheral nerve sheath tumors. In contrast to upper limb, the peripheral nerve sheath tumor involving lower-limbs included 32 cases of schwannomas and 53 cases of neurofibroma[5].

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I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Competing Interests: No competing interests were disclosed.

Referee Report 15 March 2017

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I congratulate the authors on an interesting case report.

It is a well written report but I would like to suggest a few additional points.

Since several such case reports have been published earlier, it would be interesting if the authors could add a 'review of literature'. A single tabulated format with some interesting characteristic, such as the exact location of the tumor along the course of the sciatic nerve.

It would also be interesting to see a small table with other 'sciatica mimicks'. Personally I have seen lumbosacral plexus tumors presenting with sciatica.

The article may be accepted for indexing with these minor additions.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Competing Interests: No competing interests were disclosed.