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CASE REPORT

Persistent L5 lumbosacral radiculopathy caused by lumbosacral trunk schwannoma

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ABSTRACT

Schwannomais, usually, benign tumor of nerve sheath that occurs evenly along the spinal cord. Intra-pelvic schwannoma is very rare entity that may arise from lumbosacral nerve roots or from sciatic nerve. Radicular pain of the lower limb as a presenting symptom of pelvic schwannoma is extremely rare. In the current report, the patient is presented with a right sided L5 radicular pain typical of lumbar discopathy. Interestingly, a herniated lumbar disc was noted on lumbosacral magnetic resonance imaging (MRI). In pre-operative studies a large pelvic mass was detected in the right pre-sacral area with solid and cystic components consistent with schwannoma. The patient underwent a low midline laparotomy to evacuate the retroperitoneal mass. Uniquely, we found the tumor to be arisen from lumbosacral trunk not from a root or peripheral nerve. Most cases with intra-pelvic schwannoma present so late with vague abdominal and pelvic discomfort or pain, low back pain, urinary and bowel symptoms because of compressive effect of the tumor, or incidentally following gynecologic work-ups; So, these patients are mostly referred to gynecologists and urologists. A neurosurgeon should have a high degree of suspicion to diagnose such an entity among his or her patients presented with pains typical for discopathy.

Key words: Discopathy, lumbosacral trunk, pelvic schwannoma, sciatica

Introduction

Schwannoma and neurofibroma are slow growing benign tumors originating from Schwann cells in the nerve sheath of nerves. They are different in morphology and pathology. Neurofibroma forms a swelling in the nerve and is composed of largely Antony B areas whereas schwannomais a well circumscribed, encapsulated tumor and is attached to the nerve root and is composed of Antony A areas. Neurofibromas may undergo malignant changes. Incidence of malignant transformation is higher in the setting of von Recklinghausen's disease. Incidence of spinal schwannoma varies between 0.3 and 0.5/100,000 persons per year. Occurrence in lumbosacral region in one series is reported to be 48.6%.[1,2] Only 3% of schwannomas occur in retroperitoneum. On the other hand, schwannomas comprise 0.5-3% of the retroperitoneal tumors.[2,3] Malignant transformation is rare and mostly occurs in the setting of neurofibromatosis.[4]

Intra-pelvic schwannoma is a very rare entity that is mostly presented late with vague and misleading symptoms, when the tumor usually is very large in size. Main symptoms are vague abdominal and pelvic pain and urinary complaints.[2] Therefore in the majority of cases a gynecologist or an urologist is the physician who visits the patient at the first line. Presence of radicular pain of the lower limb as presenting symptom is quite rare.[5]

In the current report, the patient is presented with a right sided L5 radicular pain typical of lumbar discopathy. Interestingly, a herniated lumbar disc was noted on lumbosacral magnetic resonance imaging (MRI).In pre-operative studies a large pelvic mass was detected and the patient was successfully treated by tumor resection. Uniquely, we found the tumor to be arisen from lumbosacral trunk not from a root or peripheral nerve, entities that have not been reported previously.[1,3,6-9]

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Case Report

The patient is a 55-year-old man presented with right-sided L5 radiculopathic pain. He, also, complained of buttock pain on the right side. There was no family history or features of neurofibromatosis. Other than a right-sided lasegue's sign in 30 degrees, physical examination showed no positive finding. On MRI, disc protrusion was observed in L5-S1 region with signs of disc dehydration and degenerative disc disease [Figure 1]. Since the protruded discseen on MRI, was not compatible with the patient's symptoms, we considered a nonsurgical protocol and followed him for a period of three weeks. Nevertheless, after this period, symptoms were persistent with no change in the severity or nature of the pain. We repeated imaging study and there was no difference with the previous MRI. Electromyography and nerve conduction velocity studies showed no L5 or other root lesion.

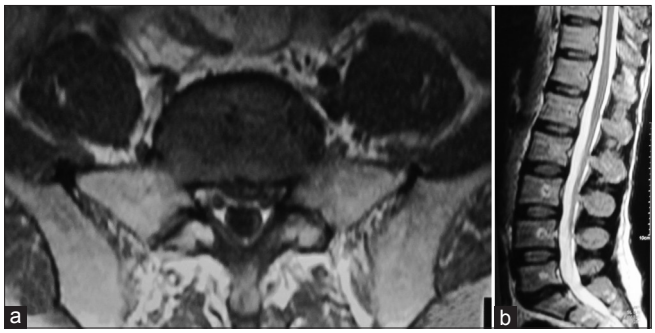

Figure 1: Axial (a) and parasagittal (b) magnetic resonance imaging of lumbosacral spine showing a left paracentral protrusion at L5-S1 space. Severe disc dehydration suggests presence of a degenerative disc disease

The patientwas re-evaluated and when asked insistently, he mentioned an occasional mild and vague pain of the lower abdomen. So, an ultrasonographic study was performed and surprisingly a very large, intra-pelvic, pre-sacral mass with smooth echogenic borders with solid and cystic components was reported.

Pelvic CT scan showed a 45 mm × 48 mm × 55 mm mass iso-dense to surrounding muscles with a medial cystic component that have replaced bowel loop laterally and anteriorly. There was no bone invasion and destruction [Figure 2]. Pelvic MRI showed a mass that was not captured in the previous MR images with vertebral column protocol. The mass was a well-defined round soft tissue with solid and cystic components, deeply situated in the right pelvic cavity positioned medial to right sacroiliac joint and iliac bone, anterior to sacrum and anterolateral to rectum. Comparing the surrounding muscles, the lesion was iso-intense on T1-weighted and hyper-intense on T2-weighted images [Figure 3].

After 2 days of bowel preparation, we performed a low midline laparotomy. In the junction of the true and false pelvis at right pelvic rim, a mass was observed behind peritoneum medial to the pulse of right common iliac artery. After exposing the common iliac vein and artery and internal iliac artery, the tumor was found to be located just anterior to them. With careful dissection, internal iliac artery and its branches were mobilized. Some branches of internal iliac vein were ligated to have a better access to the tumor. After tumor exposure, we opened the endopelvic fascia and reached to the capsule of tumor and opened it to debulk the tumor. It was soft yellow and, in parts, cystic consistent with classic

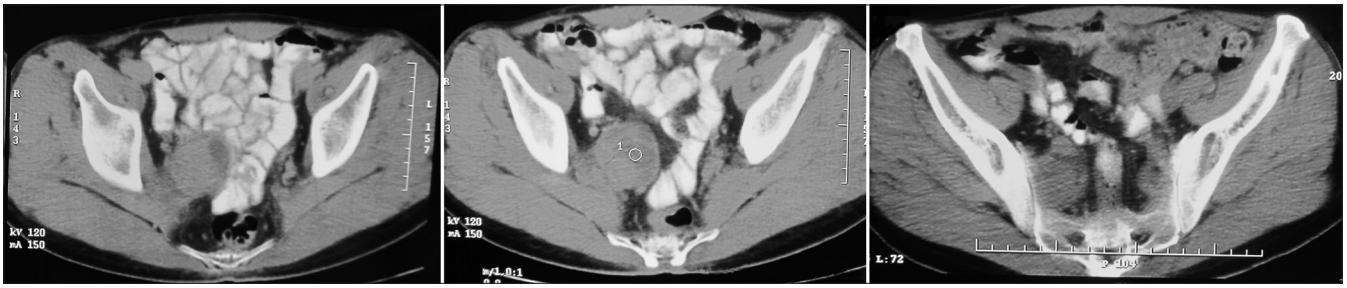

Figure 2: A pelvic computerized tomographic scan at three different levels showing an isodense tumor of the left pelvic cavity anterior to sacrum with cystic components

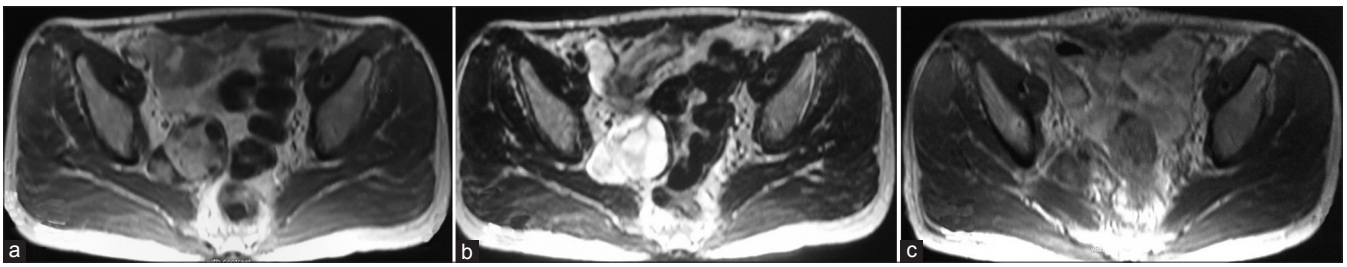

Figure 3: T1-(a) and T2 (b)-weighted axial magnetic resonance imaging showing an iso-intense tumoral mass in the right pre-sacral area. Cystic components are evident in T2-weighted images. An early post-operative image (c), almost at the same level, is also presented

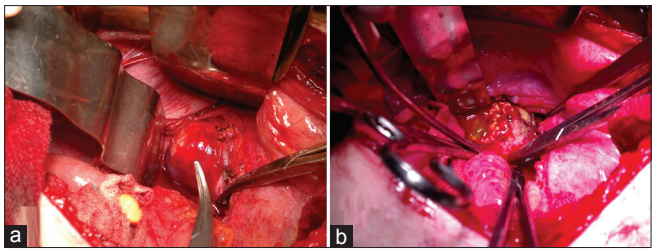

Figure 4: (a) Intra-operatively, a well-defined mass in retro-peritoneal area with a well-formed capsule is shown; (b) After opening the capsule, a yellow gelatinous material was evacuated from a cyst

schwannoma [Figure 4]. After total internal decompression, the peels of the capsule were followed. It was originated from lumbosacral trunk just above the point at which branches of L5 and S1 roots join to form the sciatic nerve. We avoided removing the posterior part of the capsule that was attached to the lumbosacral trunk to save the function of remaining lumbosacral trunk and because of the fear of making a long-term neuropathic pain. Without placement of drain, layer by layer suturing was performed up to skin. All symptoms have been relieved postoperatively and the patient discharged two days after surgery. He was advised to consider points that prevent deterioration of his current, symptomless, pathology of L5-S1 intervertebral disc. Histological studies verified the diagnosis to be schwannoma.

Discussion

Schwannomas are the most common primary tumors of the spine. Considering the location, intradural schwannoma is the most common type, followed by extradural or dumbbell-shaped tumors. Intra-medullary schwannoma is another variant which is rare. Most series reported these tumors to be evenly distributed along spinal cord and some reported a predilection toward inferior cervical and lumbosacral regions.[1]

Pelvis is a very rare site for schwannoma and accounts for less than 1% of reported cases. Among these cases, presentation with radicular pain is even rarer. Most of cases with intra-pelvic schwannoma present so late with vague abdominal and pelvic discomfort or pain, low back pain, urinary and bowel symptom because of compressive effect of the tumor, or incidentally following gynecologic work-ups.[5] So, these patients are mostly presented to gynecologists and urologists. A neurosurgeon should have a high degree of suspicion to diagnose such an entity especially when associated with obvious-though irrelevant-neurosurgical pathology.

We introduced a case of pre-sacral intra-pelvic schwannoma that is unique considering two points. First, he was presented with radiculopathic pain of the right lower limb and simultaneously a protruded inter-vertebral disc as shown in MRI; although, symptoms and signs were not congruent with level and location of pathology. Second, intra-operative observation showed that the tumor's point of origin to be the lumbosacral trunk not a nerve roots or peripheral nerve.

Many cases of failed back syndromes could be attributed to neglecting the other pathologies-may be non-neurosurgical-that have been causative or co-causative for sciatica. A full understanding about differential diagnosis of sciatica and double-checking of them for every patient will decrease misdiagnoses and mismanagements.

The most prominent differential diagnoses for non-discogenic sciatica include lumbar radicular herpes zoster, lumbar nerve root schwannoma, lumbar instability, facet hypertrophy, ankylosing spondylitis, sacroiliitis, sciatic neuritis, piriformis syndrome, intra-pelvic mass and coxarthrosis.[7]

In the current case incongruence of patients' symptoms and signs and imaging studies (first MRI obtained by lumbosacral spinal protocol) made us to consider a three-week course of conservative therapy. For true discogenic radiculopathic pain, it is expected to become alleviated or, at least, to change in pattern. A "Persistent radicular pain" is a clue to consider above-mentioned differential diagnoses in re-evaluation of patients with sciatica.

A mutual cooperation of neurosurgeon and general surgeon and adherence to surgical techniques under magnification is important to minimize neurological injuries. As stated above, a part of capsule that was attached to lumbosacral trunk, left in place to avoid any injury to the plexus; not only because of the important neurological roles they have, but also to avoid chronic neurological pain that may be created by such injuries to the nerve plexuses.

In summary, it is important to see every patient as a body of different systems and organs such a curious medical student. Physicians with higher specialties may have a kind of "tunnel vision" to the specific pathologies mostly confronted in that discipline. In the case of the presented patient if, by chance, the discovered, symptomless, protruded intervertebral disk was in the right L4-L5 disk space, he would probably undertook a discectomy procedure. The symptoms would not be relieved after surgery and he would be entered into a more and more complicated path. Even an entity as rare as schwannoma of the lumbosacral trunk should always be considered in differential diagnosis of sciatica.

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Conflicts of interest
There are no conflicts of interest.

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