



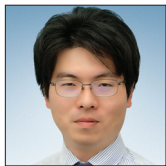
Case Report

Small L4 ventral root schwannoma with acute onset of radicular pain: A case report

Hiroya Shimauchi-Ohtaki^{1,3}, Junya Hanakita¹, Toshiyuki Takahashi¹, Manabu Minami¹, Ryo Kanematsu¹, Naochika Sakaguchi², Fumiaki Honda³

¹Spinal Disorders Center, ²Department of Rehabilitation, Fujieda Heisei Memorial Hospital, Fujieda, Shizuoka, Japan, ³Department of Neurosurgery, Gunma University Graduate School of Medicine, Maebashi, Gunma, Japan.

E-mail: *Hiroya Shimauchi-Ohtaki - h.ohtaki1216@gmail.com, Junya Hanakita - heisei.spine-jh@ny.tokai.or.jp, Toshiyuki Takahashi - heisei.t-taka@ny.tokai.or.jp, Manabu Minami - minami@mac.com, Ryo Kanematsu - dragon14_k@yahoo.co.jp, Naochika Sakaguchi - sakaguchi-1103@cy.tnc.ne.jp, Fumiaki Honda - fhonda@gunma-u.ac.jp



***Corresponding author:**

Hiroya Shimauchi-Ohtaki,
Department of Neurosurgery,
Gunma University, Maebashi,
Gunma, Japan.

h.ohtaki1216@gmail.com

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ABSTRACT

Background: Patients with cauda equina schwannomas usually present with slowly progressive radiculopathy. Herein, we describe a 34-year-old male who presented with acute radiculopathy attributed to a small L4 ventral root schwannoma.

Case Description: A 34-year-old male suddenly developed left leg pain. Magnetic resonance imaging (with/without contrast) revealed a small intradural mass lesion involving the L4 nerve root that was enhanced with contrast (size: 9 × 12 × 12 mm). The computed tomography myelogram revealed that the tumor had originated from the L4 ventral root and compressed the dorsal root in the lateral recess. Following a decompressive laminectomy for tumor removal, the patient's radicular pain improved. The histological diagnosis was consistent with a schwannoma.

Conclusion: Small cauda equina schwannomas involving ventral nerve roots can cause acute radiculopathy readily relieved with decompressive laminectomies for tumor excision.

Keywords: Acute radiculopathy, Cauda equine, Spinal schwannoma, Ventral root

INTRODUCTION

Spinal schwannomas are benign tumors that constitute 40–45% of all cauda equina tumors.^[1] These patients frequently present with low back pain and a slowly progressive radiculopathy/sciatica.^[1] On rare occasions, acute intratumoral hemorrhages, subarachnoid hemorrhages, or torsion of the cauda equina nerve roots may result in acute pain and/or neurological deficits in these patients.^[4,5] Here, we describe a 34-year-old male with an magnetic resonance imaging (MRI) and computed tomography (CT) myelogram that documented a small L4 ventral root schwannoma responsible for an acute unilateral L4 radiculopathy.

CASE DESCRIPTION

History and examination

A 34-year-old male suddenly developed left lower extremity pain. The MRI with/without contrast revealed a small intradural extramedullary mass at the L4 level; the lesion was hypointense on T1-weighted

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images, hyperintense on T2-weighted images, and homogeneously enhanced with contrast (size: $9 \times 12 \times 12$ mm, occupying 34% of the spinal canal in the axial view)^[2] [Figures 1 and 2]. In addition, the left L4 nerve root was not visualized on the axial T2-weighted MR image [Figure 1b]. The CT myelogram revealed that the tumor had originated from the left L4 ventral root, and contributed to lateral recess compromise [Figure 3].

Operative procedure

When a left L3-4 partial laminectomy was performed, the tumor was found to originate from the left L4 ventral root [Figure 4a]. As the tumor capsule was densely adherent to the L4 root, a subtotal tumor resection was accomplished utilizing an ultrasonic surgical aspirator [Figure 4b].

Histology

The postoperative histological diagnosis was consistent with a benign schwannoma (World Health Organization Grade I).

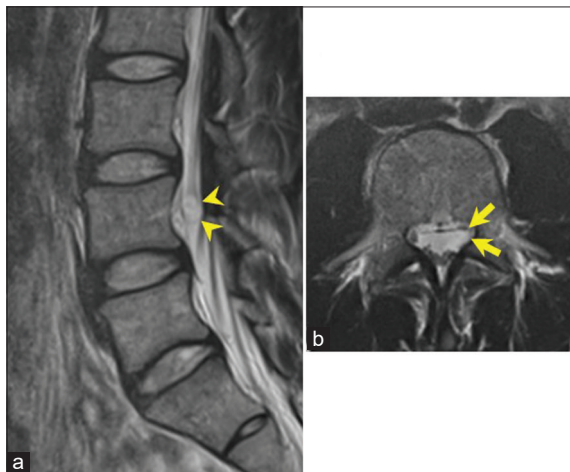


Figure 1: Preoperative magnetic resonance images. (a) T2-weighted image showing a high-intensity small tumor (arrowheads) at the L4 level. (b) Axial T2-weighted image at the L4 level showing absence of the L4 nerve root (arrows).

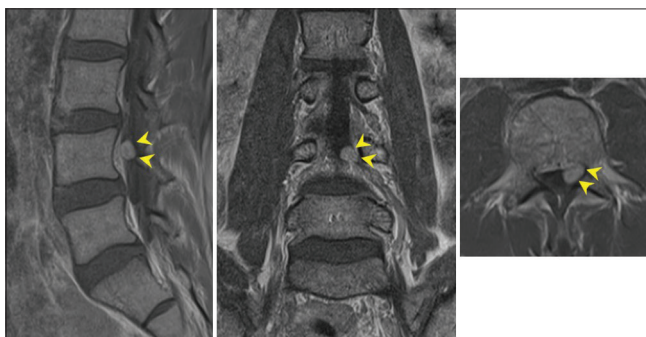


Figure 2: Preoperative contrast-enhanced magnetic resonance images showing a well-defined intradural extramedullary tumor (arrowheads) with homogeneous enhancement.

The lesion was immunopositive for the S-100 protein, and the Ki-67 labeling index was 12.7% without evidence of necrosis or intratumoral hemorrhage.

Postoperative course

Within 3 weeks postoperatively, the L4 radicular pain improved from visual analog scale 8 to 3. Postoperative MRI confirmed a small residual tumor.

DISCUSSION

Acute neurological deficits associated with spinal schwannomas are rare.^[6] They may occur due to acute intratumoral/peritumoral bleeding events (i.e. subarachnoid hemorrhages, subdural hematomas, and intratumoral hemorrhages).^[4] Torsion of nerve root schwannomas may also result in infarction or hemorrhage with acute neurological symptoms.^[5]

In the present case, the acute onset of pain and L4 radiculopathy were attributed to a small schwannoma originating from the L4 ventral nerve root. As the lesion filled the lateral recess, compressing both the L4 sensory and motor components, tumor excision was warranted.



Figure 3: Preoperative computed tomography myelogram. The tumor (arrowheads) is observed to have originated from the left L4 ventral root (yellow arrow), and the dorsal root (white arrow) was compressed by the tumor in the lateral recess.

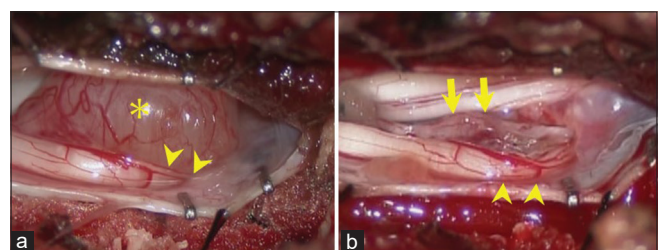


Figure 4: Intraoperative photographs. (a) The tumor was observed after opening the dura and arachnoid membrane. The tumor (asterisk) markedly compressed the left L4 dorsal root (arrowheads). (b) Tumor resection achieved subtotal resection. The L4 dorsal root was released from the tumor compression. Arrows and arrowheads indicate the L4 ventral and dorsal nerve roots, respectively.

Size correlating with onset of symptoms for cauda equina schwannomas

Cauda equina schwannomas are often larger than in the cervical or thoracic regions as there is more room within the lumbar spinal canal.^[3] Typically such tumors become symptomatic when they occupy >20% of the spinal canal on axial slices and >40% on sagittal slices.^[2] Hanakita *et al.* reported that the minimum length of symptomatic cauda equina tumor was 30 mm.^[3]

MR findings for cauda equina schwannomas

Cauda equina schwannomas, like all schwannomas, typically appear hypointense on T1 and hyperintense on T2-weighted MR images.^[7] Only very rarely are CT myelogram required to confirm the diagnosis/location of these tumors. Of interest, in the case presented, it took 8 months before the tumor was accurately diagnosed and treated.

CONCLUSION

A cauda equina schwannoma arising from a ventral lumbar L4 nerve root resulted in acute pain/lumbar radiculopathy that was readily diagnosed with contrast-enhanced MRI/myelo-CT and managed with tumor excision.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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