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

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Case Report

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...
images, hyperintense on T2-weighted images, and homogeneously enhanced with contrast (size: 9 × 12 × 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).

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.
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.[3] 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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