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〔Case Report〕

Schwannoma in the spinal lumbar canal located at the same level of degenerative spondylolisthesis: a case report

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SUMMARY

A search of the English-language medical literature found no cases of schwannoma in the lumbar spinal canal combined with degenerative spondylolisthesis that caused sciatica. We report a case of bilateral L5 spinal nerve root compression by a solitary lumbar spinal canal schwannoma at the level of L4 and left L5 spinal nerve root compression by L4 lumbar degenerative spondylolisthesis in a 55-year-old woman. The tumor behind the L4 vertebra compressing the cauda equina was revealed by myelography and magnetic resonance imaging. Computed tomography after myelography showed that the inferior articular processes of L4 were compressing the left L5 spinal nerve root due to degenerative spondylolisthesis. The symptoms originating from the bilateral L5 spinal nerve roots disappeared immediately after surgical removal of the tumor and decompression of the stenosis caused by L4 spondylolisthesis. Histopathologic examination confirmed the diagnosis of benign schwannoma. Schwannoma and degenerative spondylolisthesis compressed the L5 spinal nerve root, and caused sciatica.

Key words: schwannoma, lumbar spinal canal, degenerative spondylolisthesis computed tomography (CT), magnetic resonance imaging (MRI)

I. Introduction

Schwannoma is a type of common benign spinal cord tumor which occasionally occurs in the subarachnoid space.[1-6]Spinal schwannoma involving the spinal nerve root can be an origin of pain.[1-6]Furthermore, spinal schwannoma can sometimes compress the spinal cord or the spinal nerve roots, causing spinal dysfunction or nerve-induced pain.[1-6]However, there has never been a report of nerve root compression by schwannoma and by articular processes due to adjacent lumbar degenerative spondylolisthesis. We report a case of a solitary schwannoma in the spinal canal behind the L4 vertebra and L4 degenerative spondylolisthesis. Both lesions

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compressed the L5 nerve root at different levels and caused severe sciatica.

Ⅱ. Case report

A 55-year-old woman presented with a 2-year history of severe sciatica involving the bilateral lower extremities. MRI was performed at another hospital. MRI image revealed iso intensity tumor on T1, however, did not show tumor on T2. So the tumor was not pointed out at the hospital (Fig. 1). As the result of diagnosis, she was treated conservatively.

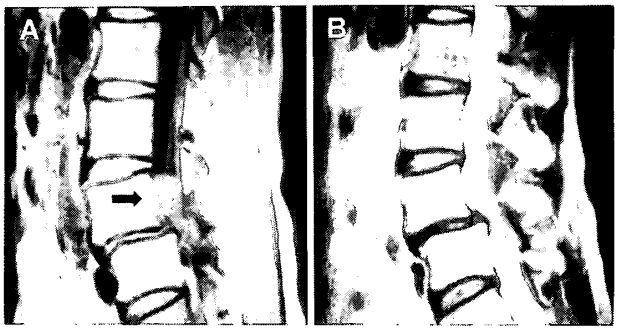

Fig. 1 Sagittal spin-echo T1-weighted magnetic resonance images show the iso intensity tumor (A), however, did not revealed the tumor on T2-weighted (B) performed at another hospital 2 years ago.

Leg pain was severe on the left side, and the pain became worse at night. Physical examination revealed limited straight leg-raising on both sides. There was apparent motor weakness in the toes and ankles. In particular, the left extensor hallucis longus showed significant weakness (Manual muscle testing (MMT, right side/left side): Quadriceps femoris, 5/4; Tibialis anterior, 4/3; Extensor hallucis lougus, 4/2; Peroneus longus 4/4). Sensory examination showed hypalgesia on the bilateral lower legs corresponding to L4 and S1 levels, and severe hypalgesia on the lateral aspect of the bilateral lower legs corresponding to L5 level. X-ray examination showed L4 degenerative spondylolisthesis (Fig. 2). Three-dimensional reconstruction of the computed tomography (CT) after myelography provided clear images of the tumor in the spinal canal and degenerative spondylolisthesis (Fig. 3A). CT after myelography showed a bony mass arising from the left inferior articular process of the L4 vertebra, which compressed the left L5 spinal nerve root (Fig. 3 B, C). Magnetic resonance imaging (MRI) revealed a tumor of iso intensity on T1-weighted images (WI) and high intensity on T2-WI of MRI (Fig. 4A, B). The tumor was enhanced with gadolinium-

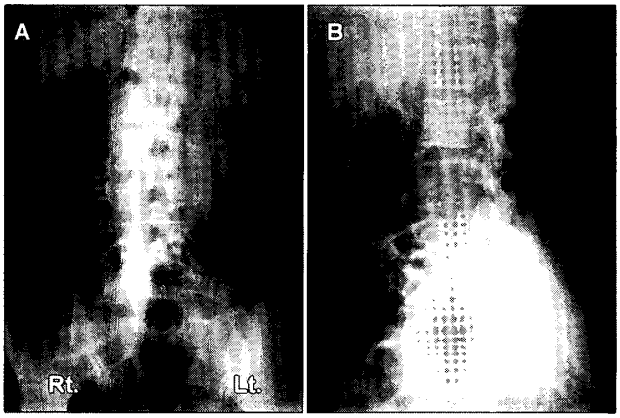

Fig. 2 Plain roentgenograms showing L4 degenerative spondylolisthesis, without scalloping of the vertebra.

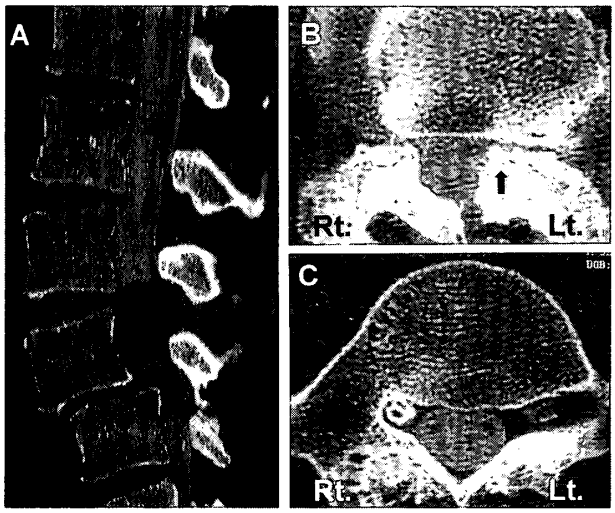

Fig. 3 A, Postmyelogram three-dimensional reconstruction computed tomogram (CT) scan demonstrating a tumor at the L4 level. B, Postmyelogram computed tomography sections showing apparent compression of the left L5 spinal nerve root by the inferior articular processes of L4 of L4 vertebra. C, Computed tomography after myelography did not show left L5 spinal nerve root clearly.

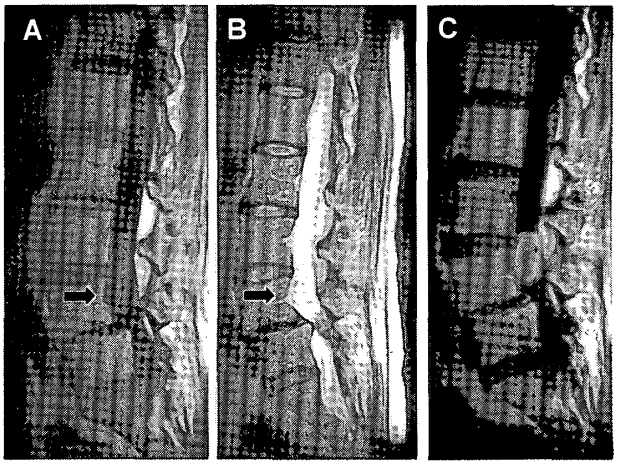

Fig. 4 Sagittal spin-echo T1-(A) and T2-weighted (B) magnetic resonance images revealing the iso intensity tumor on T1 and high intensity on T2. The tumor was enhanced by gadolinium-diethylenetriaminepenta-acetic acid (C).

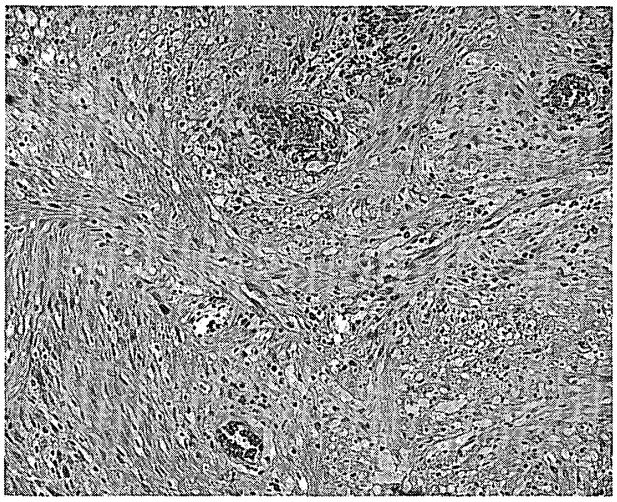

Fig. 5 Photomicrographs of the tumor. Histology strained by Hematoxylin-Eosin showed a typical schwannoma representing Antoni type A. There were no malignant cells. Bar: 100μm.

diethylenetriaminepenta-acetic acid (Gd) (Fig. 4C).

Surgery was performed on May 21st 2003, because conservative treatment was not effective. We performed a laminectomy from L3 to L5. We confirmed decompression of the bilateral L5 spinal nerve roots from the bilateral inferior articular process of the L4 vertebra. After incision of the dura matter, the tumor was removed under microscopy. The tumor originated from one of the cauda equina on the left side. We examined the spinal nerve roots above the L4 level; however, the precise level of the nerve involving the tumor was not clear. Adhesion between the tumor and nerve or dura matter was not observed. We cut the spinal nerve root at the bilateral edges of the tumor. The dura matter was sutured. For instability between the L4 and L5 vertebra, posterolateral fusion using autograft bone with a pedicle screw system was performed. Histologic study revealed a benign schwannoma (Fig. 5).

The patient became symptom-free immediately after surgery, and the postoperative course was uneventful. Bilateral leg pain disappeared and power of the toes and ankles was normalized immediate after surgery. On October 24th 2003, she remained to be symptom-free five months after surgery.

Ⅲ. Discussion

We searched the English-language medical literature and, to the best of our knowledge, no cases of schwannoma with degenerative spondylolisthesis in the lumbar spinal canal causing sciatica have been reported. Furthermore, no cases of combined factors compressing the same spinal nerve root in the spinal canal have been reported. We report a case of L5 spinal nerve root compression by a solitary lumbar spinal canal schwannoma at the level of L4 and by L4 lumbar degenerative spondylolisthesis. However, In the current case, the relationship between schwannoma and degenerative spondylolisthesis has not yet been made clear. We believe that the tumor in the current study developed from one of the cauda equina below the left S2 nerve. For this reason, we examined the spinal nerve roots above the L4 level during surgery. Furthermore, after resection of the tumor with the spinal nerve root, there was rapid recovery of

motor function corresponding from the L4 to the S1 spinal nerve, and no sensory deficit from the L4 to the S1 nerves remained. At minimum, the left sensory and motor function of the L5 spinal nerve root dramatically recovered after surgery. These findings lead us to conclude that the tumor did not develop from the L5 spinal nerve root, which showed severe deficit before surgery. If treated, symptomatic recovery is expected. In the current case of schwannoma with degenerative spondylolisthesis in the lumbar spinal canal, the patient became symptom-free after surgery and recurrence has not been reported to date. The location of the tumor was at the stenotic level. Surgeons should consider possibility of multiple lesions for diagnosis of lumbar disease. Furthermore, surgeons should take into account the possibility of two independent lesions in spine surgery.

要　旨

馬尾神経に生じた神経鞘腫と腰椎変性すべり症が同一高位の神経根症状を呈した症例の報告は我々が調べ得た限りない。我々は55歳女性のL4レベルに生じた神経鞘腫とL4腰椎すべり症が同時にL5神経根を圧迫した症例を報告する。脊髄造影検査にてL4椎体後面に馬尾神経を圧迫していた腫瘍を認めた。脊髄造影後のCTでは腰椎すべり症によってL4の下関節突起がL5神経根を圧迫していた。この症例に対しL3からL5の椎弓切除術，腫瘍摘出術及びL4/5に対してペディクルスクリューと自家骨を用いた後方固定術を行った。術後，両側L5神経根の症状はすぐに消失した。病理学的には良性のAntoni type Aのschwannomaであった。今回の症例は同一高位で神経鞘腫と腰椎変性すべり症がL5神経根を圧迫して神経症状を生じた1例であった。

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