CASE REPORT

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Lumbar solitary osteochondroma presenting with cauda equina syndrome: a case report

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Although spinal osteochondromas can cause various clinical signs, the spinal cord or nerve root compression by solitary lumbar osteochondromas are rare clinical entities. We present a 62-year-old female patient with lower-back pain, progressive left leg paresis, numbness on the both lower extremities and urinary incontinence. The patient's clinical picture made us suspect the possibility of cauda equina syndrome. Radiological examination revealed a lesion originating from the left inferior articular facet of the second lumbar vertebrae. Urgent surgical decompression was performed and the lesion was removed totally. Histopathological examination confirmed the diagnosis of benign osteochondroma.

Key words: Cauda equina syndrome; lumbar spine; osteochondroma; solitary.

Spinal osteochondromas (OC) are generally asymptomatic, solitary lesions. Until now, several hundred cases have been reported in the medical literature.

Solitary osteochondromas (SOC) of the spine can cause neurological signs and symptoms when they spread into the spinal canal. Approximately 30 to 40% of SOCs involve spinal cord compression. They usually arise from the cervical region and lumbar spine is an uncommon localization.[1-4]

We report a case of SOC arising from the left L2 inferior articular facet, presenting with cauda equina syndrome (CES). As far as we know, lumbar SOC presented with CES has not yet been reported in the literature.

Case report

A 62-year-old female patient admitted to our outpatient clinic with lower-back pain, left leg paresis and numbness on the both lower extremity aggravating gradually for six months, as well as urinary incontinence for two days. Her lower-back pain had continued for five years and had been relieved by the use of non-steroid anti-inflammatory drugs until six months before presentation.

On physical examination, the patient was conscious, cooperative and had stable vital signs. On neurological examination, anal reflex was decreased although anal sphincter tone was normal. Straight leg raising test was positive at 30 degrees and left patellar reflex was absent. There was bilateral hypoesthesia between the L2 to S4 dermatomes. Motor strength of the left lower extremity was 3 out of 5 in the hamstrings, iliopsoas and quadriceps muscles.

Emergency radiological investigation of the patient was performed to rule out caudal compression. Plain

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Fig. 1. Axial CT of L2 through L3 showed a bony lesion arising from the left inferior articular processes of L2 vertebra. At the same level, the left lateral recess and neighboring spinal canal were significantly narrowed by the lesion. The cortex and the spongiosa of the lesion were contiguous with the underlying bone.

roentgenogram was normal. Computed tomography (CT) of the lumbar spine revealed a bone-like projection arising from the left inferior articular facet of the second lumbar vertebra (Fig. 1). The cortex and spongiosa of the lesion were in continuity with the underlying parent bone. The neighboring spinal canal and lateral recess were significantly narrowed with the lesion. T1- and T2-weighted magnetic resonance images (MRI) revealed that the cauda and left L3 nerve root were compressed posterolaterally by a lesion with central high-intensity core surrounded by a ring-like, low-intensity area (Fig. 2).

At this point, an osteochondroma, extradural teratoma or a dermoid tumor were considered in the differential diagnosis because of the relative abundance of fatty deposition.

Urgent surgical decompression was performed and the lesion was removed totally through a right-sided L2-L3 interlaminar approach.

Histopathological examination with H&E stain revealed lipomatous marrow spaces and subchondral bony trabeculae capped by hyaline cartilage, characteristic of an osteochondroma (Fig. 3).

Afterwards, whole plain radiographs of the body revealed no other such lesions on other parts of the skeleton. Her postoperative course was uneventful and the patient recovered full motor, sensory and urological functions three months after surgery.

Discussion

Osteochondromas, comprising approximately 36% of benign bone tumors, usually arise from the metaphysis

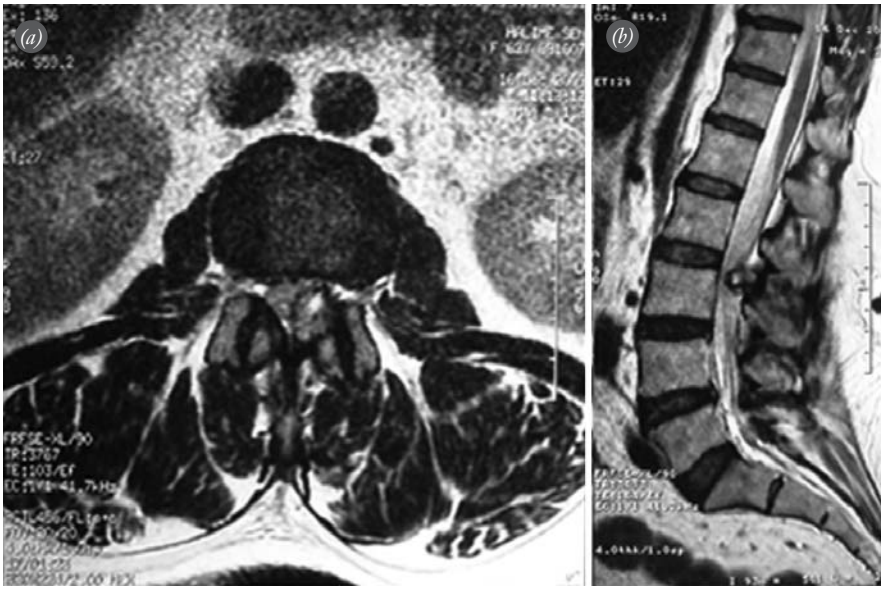

Fig. 2. **(a)** Axial and **(b)** sagittal T1-weighted MRI revealed the central high-intensity core of the tumor surrounded by a ring-like low-intensity area and the marked stenosis of the spinal canal with compression of the caudal nerve roots.

Table 1. Demographic features of twenty-two symptomatic solitary lumbar osteochondromas..

References	Age (yrs) / Sex	Location	Complaints	Duration	Treatment	Outcome / Follow-up
Twersky et al.[6] (1975)	13/?	L4 VB	LBP, bilateral sciatica	9 months	Excision	Improved
Malat et al.[7] (1986)	56/M	L1 VB	LBP, leg pain	4 months	T12-L1 laminectomy, excision	Partially improved
Spaziente et al.[8] (1988)	?/?	L4 pedicle	Unilateral sciatica	?	Excision	Improved
Van der Sluis et al.[9] (1992)	26/F	L4 IAP	LBP, unilateral sciatica	2 years	L4, L5 bilateral laminectomy, excision	Improved
Fiumara et al.[10] (1999	35/F	L5 AP	Unilateral sciatica	6 years	Facetectomy, excision	Improved
Ohtori et al.[11] (2003)	55/F	L4 IAP	Unilateral sciatica	3 months	Excision	Improved, no tumor of recurrence in 3 years follow-up
Ohtori et al.[11] (2003)	56/M	L3 IAP	Radicular pain, numbness	5 months	Hemilaminectomy, excision, fusion	Improved, no tumor recurrence in 6 years of follow-up
Gürkanlar et al.[12] (2004)	35/M	L4 IAP	Leg pain	5 years	Excision	Improved
Gille et al.[2] (2004)	28/F	L4 PA	Radicular pain	?	L4 laminectomy, excision	Improved
Bess et al.[3] (2005)	25/M	L3 SP	Painful mass	?	L3 laminectomy, excision	Improved, no tumor recurrence in 6 months of follow-up
Bess et al.[3] (2005)	42/F	L3 SP	Leg pain	?	NSAIDs	Improved, no tumor enlargement in 11 years of follow-up
Bess et al.[3] (2005)	23/M	L2 SP	Painless mass	?	T12-L2 wide laminectomy, fusion	Partially improved
Byung-June et al.[13] (2007)	23/M	L5 IAP	LBP, radicular pain	1 month	L5 hemilaminectomy, excision	Improved
Carrera et al.[14] (2007)	50/M	L4 lamina	LBP, leg paresthesia	4 years	Excision	Improved
Bermejo et al.[15] (2008)	71/M	L3 lamina	LBP	2 years	L3 hemilaminectomy, L4 laminectomy, excision	Improved
Barsa et al.[16] (2009)	75/M	L3 SP/lamina	LBP, neurogenic claudication	?	Excision, fusion	Improved, no tumor recurrence in 6 years follow-up
Xu et al.[17] (2009)	38/M	L5 lamina	LBP, weakness, paresthesia	5 months	L5 laminectomy, excision	Improved
Yagi et al.[18] (2009)	72/M	L4 IAP	LBP, numbness	?	Partial facetectomy, excision	Improved, no tumor recurrence in 2 years of follow-up
Yagi et al.[18] (2009)	69/M	L4 IAP	LBP	?	Biopsy and ablation of L4-L5 facets	Improved, no tumor recurrence in 6 months of follow-up
Lotfinia et al.[19] (2010)	58/M	L3 VB	LBP, neurogenic claudication, bilateral radiculopathy	?	L3 laminectomy, excision	Improved, no tumor recurrence in 4 years of follow-up
Gunay et al.[4] (2010)	26/M	L1 SP	LBP, swelling	2 months	Excision	Improved, no tumor recurrence in 4 years of follow-up
Present case	62/F	L2 IAP	LBP, numbness, weakness, incontinence	6 months	L2 hemilaminectomy, Excision	Improved, no tumor recurrence in 1 year of follow-up

AP: articular process; F: female; IAP: inferior articular process; LBP: lower-back pain; M: male; NSAID: non-steroidal anti-inflammatory drug; PA: posterior arch; SP: spinous process; VB: vertebral body;.

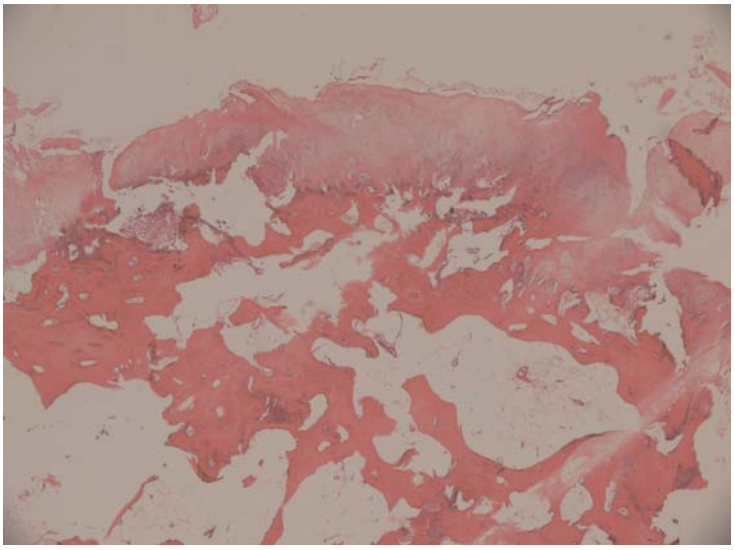

Fig. 3. Histopathological examination with H&E stain revealed a bone growth capped by cartilage. [Color figure can be viewed in the online issue, which is available at www.aott.org.tr]

of long bones. They occur as either solitary lesions or in a multiple form, generally associated with autosomal dominant inheritance. There is no sex predilection as far as SOCs of the skeleton are concerned and they usually present with painless palpable mass.[5]

The axial skeleton is an uncommon localization for SOC and only 1.3 to 4.1% of SOCs arise from the vertebral axis. Males are more frequently affected than females with a sex ratio of 2.5:1 for spinal SOC. SOCs more commonly affect the cervical spine and most arise from the posterior arch of the vertebrae. They are slowly expanding lesions and become symptomatic after the second or third decade of life, when the secondary ossification centers of the vertebral column are closed. Osteochondromas, both solitary and multiple, usually present with myeloradiculopathy due to neural structure compression. The true incidence of spinal osteochondromas is yet unclear as the majority of grow out of the spinal canal and may remain asymptomatic. The lumbar spine is the third most common localization for spinal SOC, compared with near equal incidence of thoracic spine. SOC is difficult to detect on plain roentgenogram because of the complex anatomical structures of the lumbar spine. CT and MRI are the most appropriate methods for radiographic evaluation. They provide optimal information about the nature of the lesion and are useful for differential diagnosis, surgical planning and follow-up observation.[1-4]

Only 21 symptomatic lumbar SOC cases have been reported in the literature. Most were single case reports.[2-4,6-19] The demographic features of these cases are listed in Table 1. The clinical presentation, location, duration of symptoms, treatment modalities and clinical progress of all reported cases (including this case report) are also summarized. Only four patients over the age of 60 with SOC have been reported.[15,16,18] The most interesting feature of the symptomatology in these patients is the time interval between the end of skeletal maturity and the onset of symptoms. Some authors suggested that growth of the OC after the completion of skeletal maturity and associated degenerative changes in the spine can lead to spinal cord compression in the elderly population.[18,20]

To date, lumbar SOC presented with CES has never been reported in the literature. In the case presented, early signs and symptoms were suggestive of mechanical lower-back pain. Spinal degeneration and tumor growth might have contributed to progressive neurologic deterioration. With the development of urinary retention, the clinical picture of CES became complete and the patient was operated. CES requires emergency surgery and should be diagnosed and treated as early as possible to avoid preventable life-long disability.[21]

In the light of the previous literature, surgical excision of the osteochondromas is the best method for recovery of neurological functions and avoidance of future complications. The posterior approach is a safe and suitable method although posterior stabilization and fusion are required in patients with wide posterior decompression to avoid the spinal instability. Malignization is very rare, but is still the most feared complication. Approximately 1 to 2% of all solitary

osteochondromas have displayed sarcomatous transformation. Gross total excision of the tumor should be performed. After surgery, close follow-up is suggested for possible tumor recurrence, even if there is no tumor residue.[1-4]

In conclusion, although the most common cause of CES is secondary metastasis, spinal osteochondroma should be kept in mind when making a differential diagnosis.

Conflicts of Interest: No conflicts declared.

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