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Case Report

Osteochondroma as a Rare Cause of Lower Limb Radiculopathy: A Case Report

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ABSTRACT

Background and Importance: Spinal osteochondroma is a rare benign primary spinal column tumor. Its most common site is the cervical spine, and lumbar involvement is rare.

Case Presentation: A 53-year-old male patient of Iranian ethnicity presented to our clinic with severe pain and acute radiculopathy in his right lower limb for 10 days. The patient did not respond to oral analgesics for pain management. When the patient was examined with magnetic resonance imaging (MRI) and computed tomography (CT) scan, a bone tumor in the inferior facet of L4 was found. The patient underwent surgery, and the tumor was completely removed. Histopathological examination revealed osteochondroma. The patient was followed up for five years after surgery; fortunately, no symptoms or signs of recurrence occurred.

Conclusion: Although osteochondroma usually occurs in the cervical region, in this case, the lesion was observed in the lumbar region, with clinical features of acute radiculopathy. Therefore, osteochondroma should be considered a differential diagnosis for lower limb radiculopathies.

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Highlights

- Although osteochondroma is the most prevalent benign bone tumor, it occurs most commonly in long bones, and rarely in spine.
- A rare case of osteochondroma in the lumbar region of an adult man was found.
- Osteochondroma should be considered as a differential diagnosis for lower limb radiculopathies.

Plain Language Summary

Spinal osteochondromas are not common, and lumbar region is an uncommon site of spinal osteochondroma. In this case report, we presented an adult Iranian man who was referred due to having acute radiculopathy in lower limb. After magnetic resonance imaging (MRI) and computed tomography (CT) scan, a solitary osteochondroma was found in lumbar spine. The patient improved following surgery.

1. Background and Importance

Osteochondroma is a benign tumor caused by cartilage cells from the growth plate that remain on the bone surface [1, 2]. While osteochondromas of the long bones are frequent, intraspinal osteochondromas are relatively rare, accounting for only 1%–4% of all osteochondromas. The most common location of spinal osteochondroma is the cervical region (50%–58%) followed by thoracic spine [3-5]. It is more prevalent in men than women [4, 5].

The clinical manifestations of spinal osteochondroma vary from asymptomatic features and incidental tumor findings to radiculopathy, spinal cord compression, or physical deformity. The lesions may be solitary or multiple as part of hereditary multiple exostoses (HME) [5].

Asymptomatic solitary osteochondromas usually require no surgical intervention. In some patients with larger lesions, surgical management is recommended to provide marginal excision of the lesion from the base [2].

Here, we report a solitary intraspinal vertebral osteochondroma in the lumbar region presenting with right limb radiculopathy.

2. Case Presentation

A 53-year-old male of Iranian ethnicity presented to our clinic with acute radiculopathy in the right lower limb for 10 days. The patient's pain worsened daily; therefore, he was unable to walk when referred to our clinic. No previous history of physical or mental disorders has been reported. At the initial physical examination, the only clinical finding in the patient was a positive straight leg raise test. No further positive signs were found on physical examination. The patient's pain did not respond to oral analgesics; therefore, we decided to hospitalize the patient for further evaluation. Following imaging, an extradural tumor was found on magnetic resonance imaging (MRI) that was medial to the right L4-L5 facet joint, involved the inferior articular process of L4, and had a compressive effect on the spinal canal and the right L5 root. This mass had high intensity in T2 views on MRI (Figures 1 and 2). Computed tomography (CT) revealed a solitary well-circumscribed bone tumor arising from the right inferior articular process of L4 with hypodensity in the central portion (Figure 3).

Because the patient experienced severe pain and gait disturbance, we recommended surgical treatment. After obtaining informed consent from the patient, he underwent hemilaminectomy and medial facetectomy, and the mass was removed (Figure 4). The tumor had a mushroom-like shape and was completely attached to the underlying bone. Histopathological assessment of the removed bone mass confirmed a diagnosis of spinal osteochondroma.

Following surgery, the patient had no pain, and his complaints improved. The patient was followed up five years after surgery; fortunately, no symptoms or signs of recurrence were observed.

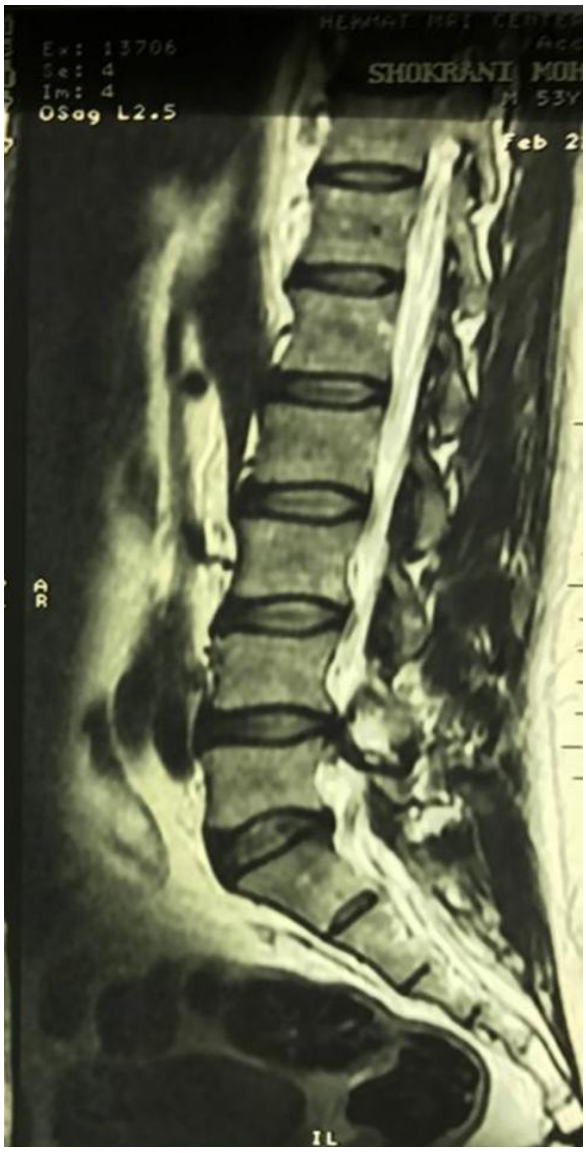

Figure 1. Sagittal T2 view of the lumbar spine

Notes: This figure revealed a mass in right side of L4-L5 space.

3. Discussion

Although osteochondroma is the most prevalent benign bone tumor, it occurs most commonly in long bones and rarely in spine. Osteochondroma can be associated with an inherited condition known as hereditary multiple exostosis or a solitary lesion, although the latter is more common than the former [2].

This patient was a 53-year-old man. Osteochondromas have male preponderance. These tumors are often asymptomatic and undiagnosed; therefore, their actual incidence remains unknown. Osteochondromas are most commonly present during the first four decades of life. Three of the four neoplasms were found before the age of 20 years [2].

This patient had a solitary lesion. Solitary osteochondromas are six times more common than hereditary multiple exostosis and account for 85% of all the presenting osteochondromas [1, 2].

In the present case, the lesion in the lumbar region (L4-L5) of the spinal column involved the facet joint with a compressive effect on the spinal canal and the right L5 root. The most common site of benign tumors in the spinal column is the cervical region. The most frequently involved parts of the spine are the spinous process, transverse process, vertebral body, pedicle, and rarely the facet joints [5]. Spinal involvement is more frequent in HME than in solitary osteochondroma. However, sacral involvement is rare. Cord compression rarely occurs in patients with osteochondroma, usually those with HME [1].

Our patient experienced severe pain due to L5 root compression. Spinal osteochondromas usually grow outside the spinal canal; therefore, cord compression is uncommon in these patients. If cord compression is present, different neurological manifestations can develop, such as radiating pain in the limbs, decreased muscle motor strength, numbness, paresthesia, and muscle atrophy [1]. Symptoms related to lumbar osteochondromas may be due to the involvement of the cauda equina, cauda equina syndrome, or compression of the root and the associated symptoms of radiculopathy.

MRI showed a cartilage cap thickness of less than 2 cm. The pathognomonic diagnostic feature of osteochondroma is the continuity between the cortex and medulla of the lesion and underlying bone. Pathologically, there is a cartilage cap and medullary continuity with the host bone. Osteochondroma can be sessile or pedunculated. Measurement of maximal cartilage cap thickness can be useful for detecting malignant transformation, and MRI is the best modality. A cartilage cap thickness >2 cm in adults and >3 cm in children may reflect cancerous transformation of the lesion [1].

Plain radiographs make the detection of osteochondroma difficult. CT and MRI are the best methods for detecting osteochondroma and imaging the exact morphology of a tumor. A CT scan can recognize the cartilaginous and osseous components of the lesion, and the extension of the tumor to the adjacent structures. MRI shows isointense lesions with a low-signal rim produced by the cortical bone. MRI is useful for detecting neurological compressions [1].

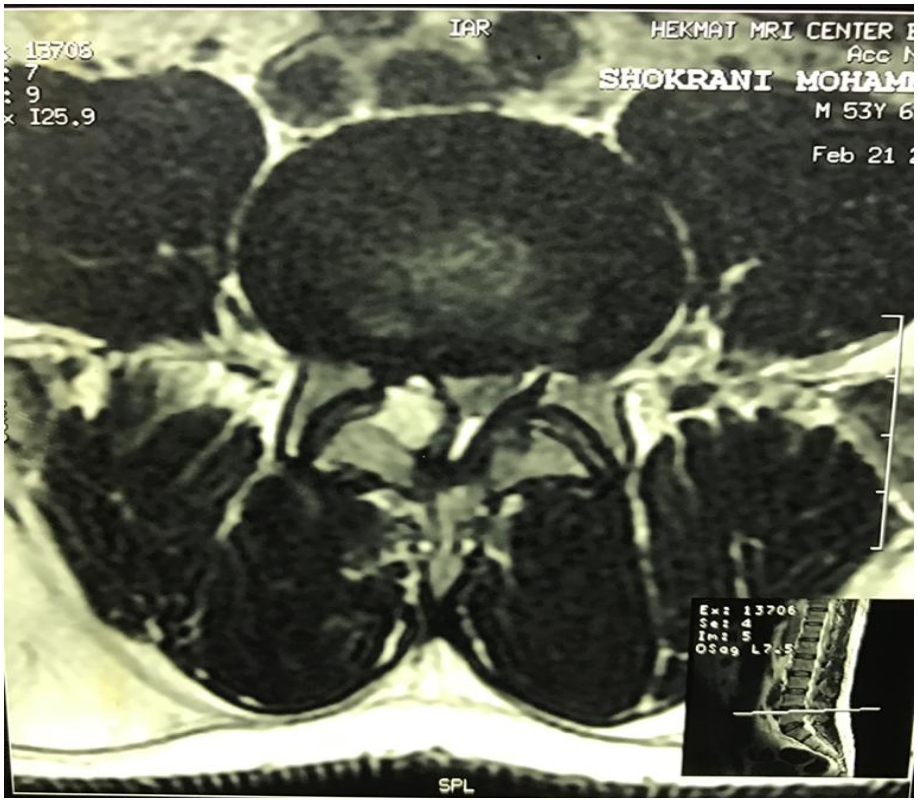

Figure 2. Axial T2 view of the lumbar spine

Notes: This figure confirmed a mass in L4 inferior articular process with pressure on thecal sac and L5 root.

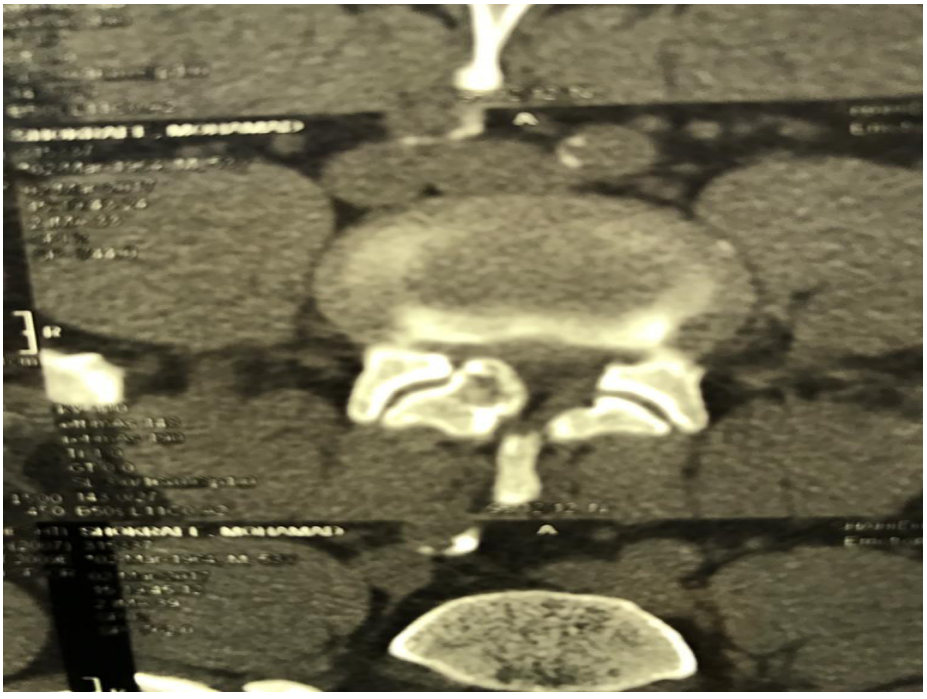

Figure 3. CT scan of the L4-L5 space

Notes: CT scan of the L4-L5 space indicated a bony mass originating from L4 inferior articular process.

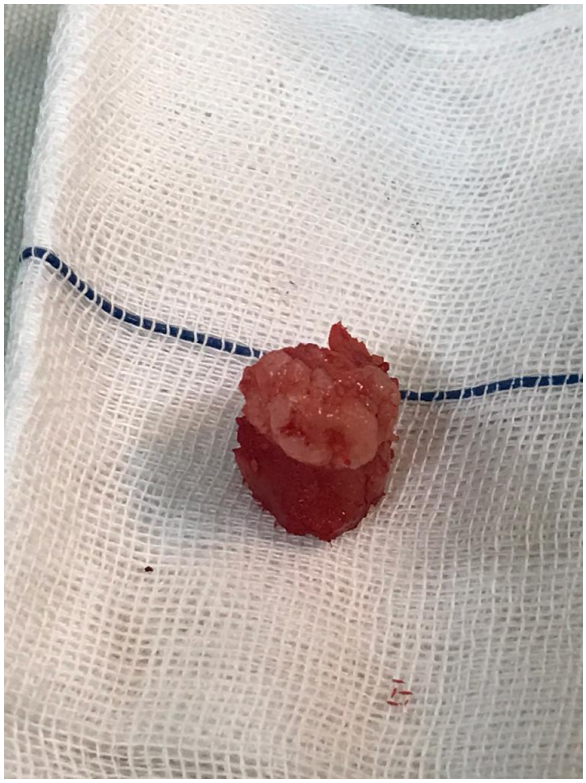

Figure 4. Gross appearance of the removed tumor

Notes: This figure represents the mushroom-like shape of the mass.

The patient then underwent surgery. Several treatment approaches have been proposed to osteochondroma. Conservative management is recommended for asymptomatic lesions, and surgical intervention should be considered in patients without a definitive diagnosis, painful lesions, or progressive neurological manifestations [1, 6].

Local recurrence following incomplete removal of osteochondroma occurs in 2%–5% of lesions, with an average recurrence time of approximately 5 years. Complete removal of the cartilaginous cap is essential to prevent recurrence [1, 5, 7, 8].

4. Conclusion

Although osteochondroma usually occurs in the cervical region, in this case, the lesion was observed in the lumbar region with clinical features of acute radiculopathy. Therefore, osteochondroma should be considered a differential diagnosis for lower-limb radiculopathies.

Ethical Considerations

Compliance with ethical guidelines

The patient gave written informed consent to the publication of this case report and any accompanying images.

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Authors' contributions

All authors contributed equally to the conception and design of the study, data collection and analysis, interception of the results, and manuscript drafting. Each author approved the submission of the final version of the manuscript.

Conflict of interest

The authors declared no conflict of interest.

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