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CASE REPORT

Solitary osteochondroma of the cervical spine causing spinal cord compression

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Osteochondromas are common benign tumours of bone that often occur in the metaphysodiaphyseal parts of long bones. They rarely occur in the spine. We present a case of solitary osteochondroma arising from the C-1 vertebral lamina, causing neurological symptoms.

A 46-year-old man presented to our institution, complaining of pain and numbness originating from his neck and extending down to his left arm. Radiographs, CT and MRI showed a solitary benign appearing expansile bone tumour arising from the left vertebral lamina of C-1, spreading to C-2, exerting an eccentric posterolateral compression on the spinal cord in the left part of the spinal canal and causing stenosis of the left neural foramen between C-1 and C-2.

The lesion was surgically explored through a posterior longitudinal incision. Leaving the left lateral mass of C-1 intact, a left hemilaminectomy was performed. The lesion and the part spreading to C-2 were excised, completely clearing the spinal cord compression. For posterior stabilisation, lateral mass screws were inserted bilaterally in C-1 and pedicle screws and a rod system were used in C-2. The interlaminar region between C-1 and C-2 was fused using cancellous allograft chips. Follow-up controls with radiological examination revealed that the decompression had been adequate and fusion was achieved.

Excision of the lesions is necessary to relieve neurological compression in such cases. In order to avoid complications associated with instability following extensive laminectomy, posterior stabilisation and fusion should also be performed.

Keywords : osteochondroma ; cervical spine ; neurological involvement.

INTRODUCTION

Osteochondromas are common benign tumours of bone that often occur in the metaphysodiaphyseal parts of long bones. Besides the more common solitary form, some are multiple when associated with hereditary multiple exostosis, an autosomal dominant trait (*4, 6*). Osteochondromas rarely occur in the spine (*1, 2, 5, 8*). They may cause neurological symptoms as a result of compression of the spinal cord or nerve roots (*7, 9, 12*). Complete surgical excision of the tumour results in definitive cure (*3, 10, 11*). We present a case of solitary osteochondroma arising from the C1 vertebral lamina, causing neurological symptoms.

CASE REPORT

A 46-year-old man presented to our clinic with complaints of pain and numbness originating in the neck and radiating to his left arm. His complaints

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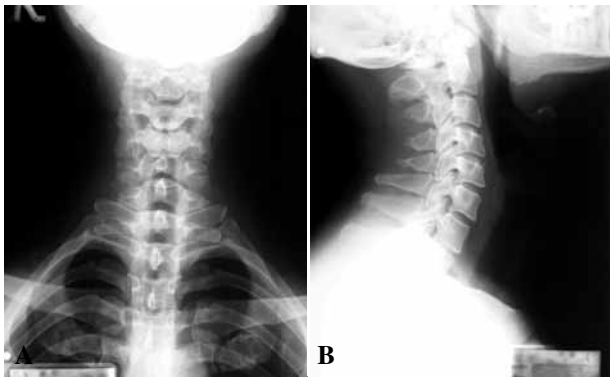

Fig. 1. — Preoperative anteroposterior (A) and lateral (B) radiographs of the patient.

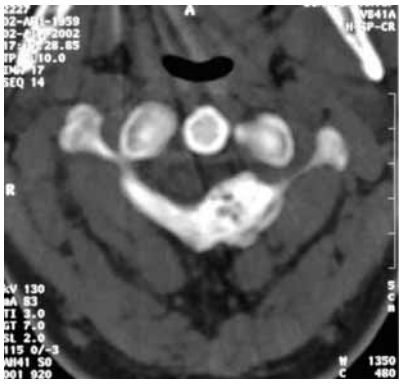

Fig. 3. — CT image showing spinal canal involvement

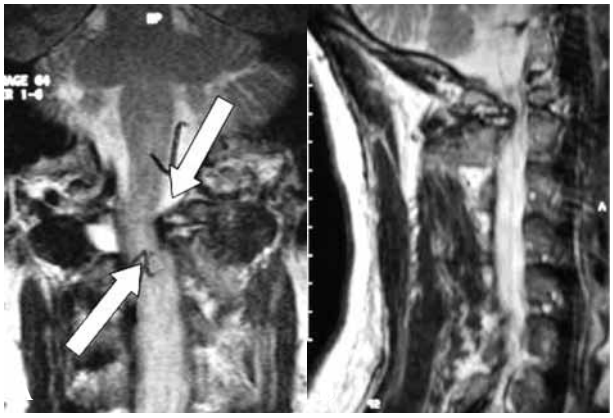

Fig. 2. — Coronal (A) and sagittal (B) MRI images showing a solitary benign appearing expansile bone tumour arising from the left vertebral lamina of C1, spreading to C2, exerting an eccentric posterolateral compression on the spinal cord in the left part of the spinal canal and causing stenosis of the left neural foramen between C1 and C2. There was no myelomalacic differentiation or soft tissue spreading into the spinal cord.

had been lasting for a month. Physical examination revealed local sensitivity and contracture of the paraspinal muscles in the upper cervical region. There was hypoaesthesia in the left C2 dermatome. There were no signs of spinal cord compression on questioning and on physical examination. Radiographs, CT and MRI were obtained (figs 1, 2, 3). These showed a solitary benign appearing expansile bone tumour arising from the left vertebral lamina of C1, spreading to C2, causing eccentric posterolateral compression of the spinal cord in the left part of the spinal canal and causing stenosis of the left foramen between C1 and C2. There was no myelomalacic differentiation or soft tissue spreading into the spinal cord. Laboratory analyses did not reveal any pathologic signs. These evaluations suggested the lesion to be an osteocartilaginous benign bone tumour (osteochondroma).

The lesion was explored through a posterior longitudinal incision. Leaving the C1 lateral mass intact, left hemilaminectomy was performed. The lesion and the part spreading to C2 were removed with a gross excision, completely clearing the spinal cord compression. For posterior stabilisation, lateral mass screws were inserted bilaterally in C1 and pedicle screws and a rod system were used in C2. The interlaminar region between C1 and C2 was fused with cancellous allograft chips (fig 4).

Diagnosis of osteochondroma was verified histopathologically. The patient was mobilised on the first postoperative day. Suction drains were removed on the second day. No postoperative wound complications were observed. The patient used a cervical collar for 3 months in the postoperative period. Clinical follow-up with clinical and radiological examinations were carried out routinely 6 weeks, 3 months and 6 months following surgery. The neck pain resolved in the course of the first postoperative week, and hypoesthesia in the first month. Follow-up controls with radiological examination revealed that decompression was adequate and fusion was achieved.

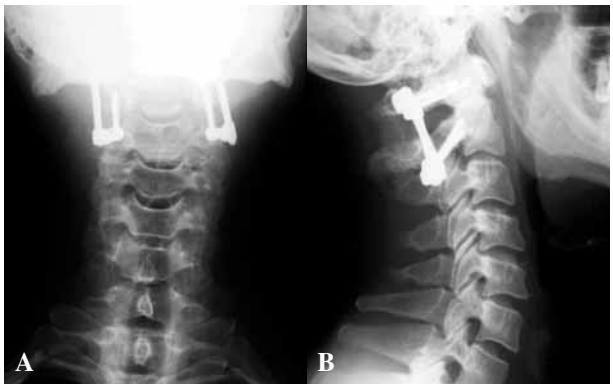

Fig. 4. — Postoperative anteroposterior (A) and lateral (B) radiographs after 3 years of follow-up.

DISCUSSION

Osteochondromas, also called exostoses are the most common benign tumours of bone. Malignant transformation to chondrosarcoma in hereditary multiple osteochondromatosis is unknown, but may be 10-15% compared to approximately 1% for a solitary osteochondroma (*5*). Osteochondromas affect mostly the long bones, particularly the distal femur and proximal tibia. While the rate of solitary osteochondromas arising from the spine is 1.3-4.1% in the literature, involvement of the spine in hereditary multiple exostosis is 7-9% (*1, 2, 5, 6*). In the study of Albrecht *et al* (*1*) on spinal osteochondroma, 50% of the subjects showed cervical involvement, with C2 being the most affected vertebra. In a study of Gille *et al* (*5*) on spinal solitary osteochondromas, of 65 subjects, 12 had C2 and 8 had C1 involvement. Spinal osteochondromas more commonly arise from the posterior arc but they may arise from the vertebral body, pedicle or rarely from facet joints as well (*5, 6*).

Patients consulting for pain or presence of a local mass may often show early signs of neurological deficits (*9, 11*). Khosla *et al* (*9*) reviewed the literature and reported that of 72 cases of spinal solitary osteochondroma, 37 had spinal cord compression. An increased incidence of spinal cord compression has been reported in hereditary multiple exostosis cases when compared with solitary osteochondromas (*11*). Magnetic resonance imaging is useful in localising the lesion, while computed tomography provides more specificity (*5, 9*).

Radiological evaluation of this type of tumour should include plain films and a CT scan, MRI and bone scintigraphy. The plain X-ray film can outline the typical sessile bone-like projection of the tumour. Demonstration of continuity between the bony cortex of the exostosis and the host bone is considered distinctive. Computed tomography precisely delineates the tumour matrix and its relationships with the surrounding structures such as the spinal cord or the nerve root which it is compressing. It can be extremely helpful in planning surgical treatment. MRI has not been proved to have any significant advantage in solitary exostosis. It can be helpful if malignant transformation of the tumour is suspected. A technetium phosphate bone scintigram can be helpful in screening for similar lesions in other locations, as approximately 50% of patients with osteochondroma of the cervical spine will have more than one tumour. Scintigraphy will not help in the differential diagnosis.

No treatment is necessary for an asymptomatic spinal osteochondroma. If the lesion is causing pain or neurological symptoms due to compression it should be excised at its base. As long as the entire cartilage cap is removed, there should be no recurrence (*4-6*).

Laminectomy with decompression of neural elements is the treatment of choice for intracanal osteochondromas (*2, 3, 7-12*). A postlaminectomy kyphosis can occur after laminectomy procedures (*10*). Bhojraj and Panjwani (*3*) recommend a laminectomy with posterolateral fusion and posterior instrumentation to prevent postlaminectomy kyphosis. Several types of spinal canal enlargement techniques have been developed to preserve the posterior spinal elements and avoid the complications that can accompany laminectomy. We suggest that stabilisation with pedicle screws and posterolateral fusion from the intact side are necessary to prevent the instability that may occur after laminectomy, depending on the site of the lesion.

In conclusion, osteochondromas, the most common tumoral lesions of the skeletal system, may rarely involve the vertebra. These lesions particularly occur in the cervical region and should be

considered in the differential diagnosis, when confronted with an expansile mass. Excision of the lesions is necessary for the treatment of neurological compression. In order to avoid the complications associated with instability following extensive laminectomies, the treatment should include posterior stabilisation and fusion.

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