CASE REPORT

Enchondroma of the cervical spine

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Enchondroma, a common benign cartilaginous tumour involving the acral skeleton, is extremely rare in the vertebral column and even more rare in a vertebral body of the cervical spine. A spinal enchondroma can arise either from hyperplasia of immature spinal cartilage with migration outside the vertebral axis, or from metaplasia of connective tissue in contact with the spine or annulus fibrosus. Surgery consisting of piecemeal excision of the tumour, with placement of hydroxyapatite bony grafts, is helpful in relieving symptoms and stabilizing the joint. Enchondroma of the spine was first described as a unique entity by May and Meyerding in 1927. We report a case of enchondroma of the C4 vertebral body and its imaging and histopathological features.

Case report

A 20-year-old man presented with a 5-year history of dysphagia and a 2-year history of change in the quality of his voice. The symptoms had become worse during the preceding 6 months. Physical examination revealed a hard, non-tender, ill-defined swelling on the left side of the neck corresponding with the thyroid notch; a provisional diagnosis of a retropharyngeal mass was made.

A plain radiograph of the cervical spine showed a large, lytic, expansile lesion in the anterior part of the body of the C4 vertebra, bulging into the prevertebral space and narrowing the pharyngeal air column. CT defined an expansile, lytic lesion containing matrix calcification surrounded by an eggshell-like, blown-out cortex involving the anterior portion of the C4 vertebral body. Posterior elements were intact. The contents of the lesion enhanced from 41 to 66 HU.

The matrix of the tumour appeared hypointense on T1-weighted and hyperintense on T2-weighted MRI, with areas of hypointensity suggesting calcification. There was also a mild compression of the right foramen transversarium and anterior epidural space, with focal altered signal intensity involving the lower and the upper endplates of the bodies of the C3 and C5 vertebrae, respectively. The C4-C5 disc space was reduced.

At surgery, the tumour was found to be hard in consistency. It was scooped and curetted, and the deficit in the vertebral body was filled with hydroxyapatite bone grafts. Postoperative plain radiography demonstrated complete excision of the tumour. Plain radiography 2 months later showed no recurrence of the tumour.

The histopathological report demonstrated fragments of cartilage with lacunae containing single nucleated cells. Foci of endochondral ossification were noted. Findings suggestive of malignancy, such as anaplasia, giant cells, histiocytes and eosinophils, were not evident.

The man recovered well and, at the time of discharge, his symptoms were considerably alleviated.

Discussion

Enchondroma is a benign cartilaginous tumour developing insidiously, accounting for 5% of all bone tumours, and affecting the short tubular bones of hands and feet in over 50% of cases. Spinal involvement is seen in only 2% of cases, and
Figure 1  (a) Lateral cervical spine radiograph shows an expansile, lytic lesion containing matrix calcification involving the C4 vertebral body anteriorly. (b) Axial CT shows an expansile lytic lesion with intact cortex. Note that the pharyngeal air column is compressed. (c) Sagittal T1-weighted MRI (TR/TE, 500/15) shows hypointense matrix with reduction of C4-C5 disc space. (d) Sagittal T2-weighted MRI (TR/TE, 4000/108) shows hyperintense matrix with areas of hypointensity suggesting calcification. Note focal altered signal intensity in endplates of C3 and C5 vertebrae.
endochondroma is almost unknown in the skull. Enchondromas have been described as occurring in the second to the eighth decades of life, with most presenting during the second to fourth decades.

There is no gender difference in incidence. Multiple enchondromas are found in Ollier’s disease and Maffucci’s syndrome (enchondromas with haemangiommas). Spontaneous remissions have been reported, particularly in elderly patients. Sarcomatous degeneration is possible but rare. After surgery, an enchondroma typically heals. Recurrences are rare, and malignancy should be excluded if they do occur.

Conventional radiographs show well circumscribed, round to oval, lytic lesions that may widen the cortex without breaking it. Although essentially lytic, flecks of calcification may be identified within the chondroid tissue. Absence of periosteal reaction suggests a benign lesion.

CT facilitates the assessment of cortical detail and matrix mineralization, and the detection of cystic lesions and their relationship to neurovascular structures. CT shows a homogenous, slightly enhancing lesion with or without calcification. In this case, CT demonstrated intact cortices and absence of soft-tissue changes.

MRI is superior to CT in defining the relationship of the tumour to critical neurovascular structures and in planning surgical treatment. The excellent soft-tissue resolution provided by MRI can also help to delineate the involvement of soft tissues around the tumour. On spin-echo T1-weighted MRI, enchondromas demonstrate intermediate-to-low signal intensity, whereas on T2-weighted images they exhibit high-signal intensity. Calcifications within the tumour appear as low-signal intensities. It must be stressed, however, that usually CT and MRI are unable to distinguish benign from malignant cartilaginous lesions. Aneurysmal bone cyst, which was considered in the differential diagnosis, would have shown cystic cavities with fluid-fluid levels, multiple internal septations and an intact rim of low-intensity signal surrounding the lesion.

The diagnoses entertained before the patient was taken into the operation theatre were aneurysmal bone cyst and giant-cell tumour, because of the age of the patient, the absence of soft-tissue involvement and the radiological appearances. Postoperative histopathological findings, however, were typical of enchondroma. To our knowledge, very few such cases have been previously reported in the literature and in none have the comparative CT and MRI findings been described.

Although enchondroma of the cervical spine is an uncommon diagnosis in the spectrum of benign tumours of the spine, it should be considered in the list of differential diagnoses when an expansile lytic lesion involving the spine is encountered.
References