Spinal chondromyxoid fibroma of C2

Arul Bala [a,*], Peter Robbins [b], Neville Knuckey [a], George Wong [a], Gabriel Lee [a]

[a] Department of Neurosurgery, Sir Charles Gairdner Hospital, 18 Ruth St., Nedlands, Western Australia 6000, Australia
[b] The Western Australian Centre for Pathology and Medical Research, Nedlands, Western Australia, Australia

Received 16 November 2004; accepted 8 March 2005

Abstract

Chondromyxoid fibroma of bone (CMF) is a rare benign primary bone neoplasm accounting for less than 0.5% of all primary bone neoplasms. The spine is an uncommon site for this tumour, with forty-two cases reported in the modern English literature. They have clinical features similar to CMF arising at other sites. Local recurrence is well documented.

We report an incidentally discovered lytic lesion of the C2 vertebra. The patient underwent stereotactic CT guided trans-oral curettage of the lesion with iliac bone graft and anterior fusion of C2 and C3. Microscopic examination of the surgical specimen demonstrated CMF. This is the second reported case of this rare tumour in this location.

We review the literature and the unique radiological and pathological features and management of spinal CMF. Local recurrence of spinal CMF and its management is also discussed in light of the five previously reported cases of local spinal recurrence.

Keywords: Chondromyxoid fibroma; Cervical spine; Trans-oral approach; Bone tumour

1. Introduction

We report a rare chondromyxoid fibroma of bone (CMF) of C2. The tumour was removed via trans-oral curettage with iliac bone graft and anterior fusion of C2 and C3. The literature is reviewed, particularly with regard to local recurrence, which has been previously reported.

2. Case report

A 36-year-old man fell backwards off a skateboard and presented to his general practitioner with neck pain. He had suffered chronic neck pain for the past 6 months. On examination, he had no tenderness of the cervical spine or neurological abnormality. Plain cervical spine films demonstrated a cystic lesion of the right side of the C2 vertebral body with extension into the pedicle (Fig. 1A, B).

CT scan (Fig. 2) illustrated an expansile, septated, cystic lesion of the C2 body with destruction of the lateral mass and posterior elements on the right with narrowing of the C2/3 foramen. It extended rostrally to the base of the odontoid and caudally to the vertebral endplate. The lesion was confined to the bone but had eroded the cortex, causing thinning antero-inferiorly on the right. There was MRI enhancement after gadolinium administration (Fig. 3). MRA showed the tumour was displacing the right vertebral artery at the level of the C2/3 foramen, and enhancing it. The vessel lumen was not narrowed, no enlarged feeder vessels were identified and the vertebral arteries were co-dominant. Bone scan suggested solitary low-grade neoplasm.

CT-guided fine needle aspiration biopsy of the lesion was performed. The sample was non-diagnostic, consisting of a large amount of blood and some haemosiderin-laden macrophages. A trans-oral approach utilizing frameless stereotactic CT guidance was performed. The posterior pharyngeal wall was incised in the midline and the neck of C2 drilled to expose the cystic lesion. The bone tumour was curetted and the cavity packed with bone harvested from the right iliac crest. Tumour surrounding the vertebral artery was not removed. The pharyngeal wall was closed in layers and a nasogastric tube placed under direct vision. There were no post-operative complications. Nasogastric feeding was used in the early postoperative period and regular fibreoptic review of the transoral wound was performed by an otolaryngologist. The patient was discharged home on day 10.

Microscopic examination of the curettage specimen (Fig. 4A, B) revealed a benign neoplasm with a lobulated growth pattern. Hypocellular areas containing stellate and spindle cells amongst a prominent myxoid stroma were bounded by cellular septae. Focal multi-nucleate giant cells were seen at the periphery of the lobules. These features are characteristic of CMF.

On follow-up at 18 months postoperative, the patient remained pain-free. Repeat imaging (Fig. 5A, B) showed consolidating bone graft and a stable volume of residual tumour surrounding the right vertebral artery.

* Corresponding author. Tel.: +61 8 9346 3333; fax: +61 8 9346 3824.
E-mail address: arulbala@mail.com (A. Bala).

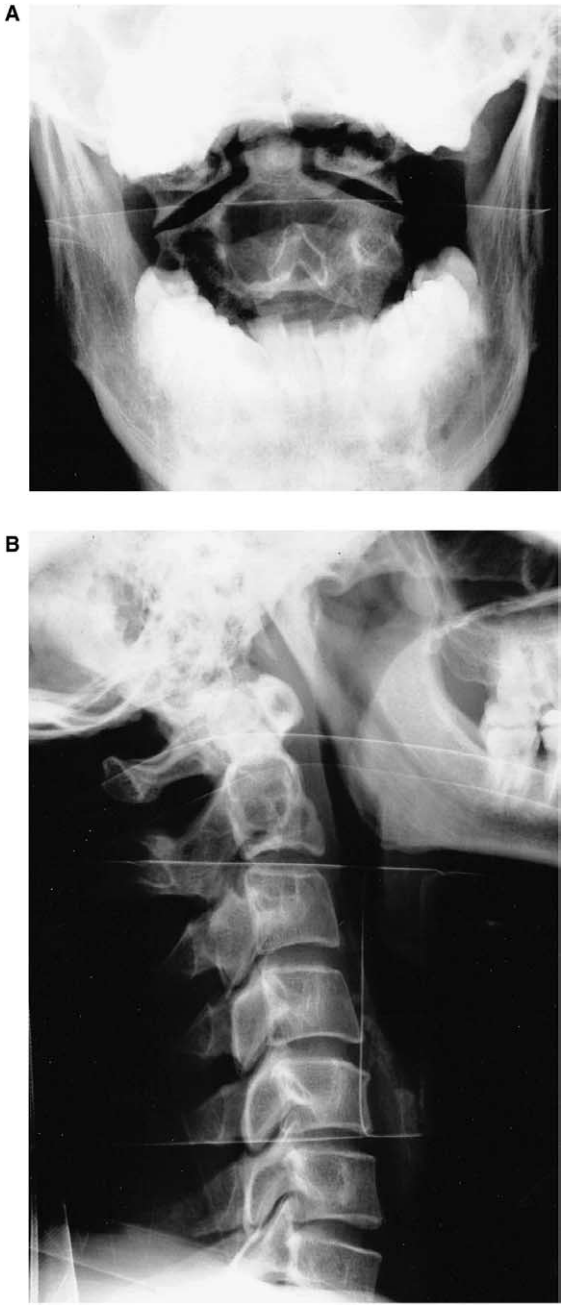

Fig. 1. A. Plain cervical X-ray, anteroposterior view showing a cystic lesion in the C2 vertebral body with extension into the pedicle. B. Plain cervical X-ray, lateral view showing the lesion in the C2 vertebral body.

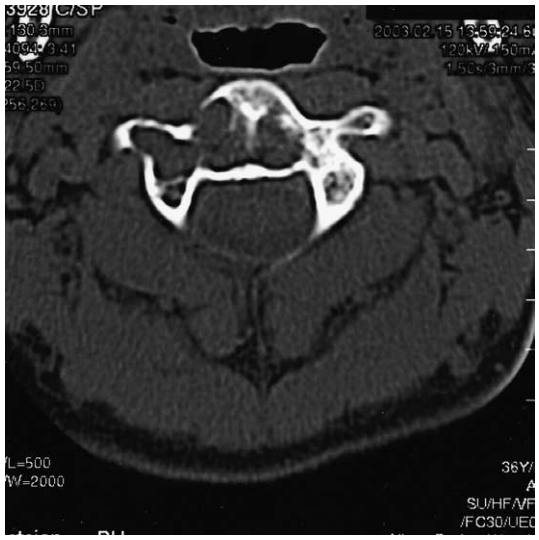

Fig. 2. Axial CT scan with bone windows confirmed an expansile, septated cystic lesion in the C2 vertebral body. There was destruction of the lateral mass on the right with narrowing of the C2/3 foramen. The cortex was eroded and thinned, but intact.

Fig. 3. Sagittal T2-weighted MRI of the cervical spine shows the C2 lesion, which enhanced brightly after gadolinium administration.

3. Discussion

3.1. Chondromyxoid fibroma

First described in 1948,[1] CMF is a rare benign primary bone neoplasm, accounting for less than 0.5% of all primary neoplasms of bone.[2] CMF may involve any bone of the skeleton but is most commonly found in the metaphysis of long tubular bones, particularly about the knee joint. In such locations it has characteristic clinical, radiological and path-