

Paediatric calvarial tuberculosis

S. Andronikou
FC Rad Diag (SA)

C. Welman
MBChB

E. Kader
MBChB

Department of Paediatric Radiology, University of Cape Town and Institute of Child Health, Red Cross War Memorial Children's Hospital, Rondebosch, Cape Town

Corresponding author
S. Andronikou

Department of Paediatric Radiology
Red Cross War Memorial Children's Hospital
Cape Town
7700

Telephone: 021-6585442
Fax: 021-6585101

E-mail: docsav@mweb.co.za

Abstract

Calvarial tuberculosis is a rare presentation of tuberculosis. We present two cases seen in the paediatric age group of tuberculosis involving the sphenoid bone. One of the patients was positive for the human immunodeficiency virus (HIV). The literature is reviewed in brief.

Key words

Calvarial, skull, tuberculosis, HIV, CT

Introduction

While tuberculosis (TB) is common in South Africa, it does not commonly affect bone. When it does, skull involvement is rare. We present two paediatric cases of calvarial TB with discussion of the relevant literature.

Case 1

A three-and-a-half year-old boy presented with a two-month history of a slowly increasing swelling over the right frontoparietal region of the skull. There were no constitutional symptoms of TB or TB contacts. The swelling was non-tender and was not fluctuant. A skull X-ray (Figure 1a) and a subsequent CT brain (Figures 1b and c) were performed. The diagnostic differential at this stage included



Figure 1a: Lucency involving the lateral right orbit with lytic destruction (open arrow) of the right greater wing of sphenoid.

TB, eosinophilic granuloma, neuroblastoma metastases and a primary bone tumour. The ESR was raised (55 mm/hour) and the Mantoux was strongly reactive. Chest X-ray was suggestive of bilateral hilar adenopathy. Full blood count and bone marrow aspirate were normal. Biopsy demonstrated necrotising granulomatous inflammation in keeping with TB.

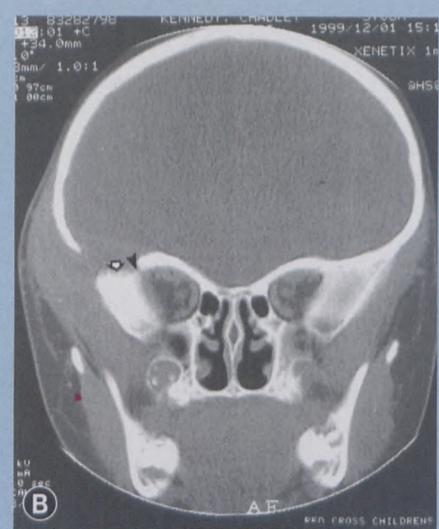


Figure 1b: Coronal post-contrast CT of the head demonstrates lytic destruction of the right greater wing of sphenoid (open arrow) and lateral wall of orbit (arrowhead) with associated soft tissue mass extending into the temporal fossa.



Figure 1c: Axial post-contrast CT of the head shows soft tissue swelling in the right frontoparietal region with contrast enhancing soft tissue on both sides of the calvarium and in the region of the right anterior temporal lobe.

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He was commenced on three-drug anti-TB treatment. At follow-up at three months, the child was well and the mass was decreasing in size.

Case 2

A 22-month-old HIV-positive boy presented with fever and cough. He had received four months of anti-TB treatment for pulmonary TB, ending six months prior to the current admission. There were no features of meningitis but he was noted to have marked developmental delay and a CT brain was performed (Figures 2a and b). CSF studies were supportive of a diagnosis of tuberculous meningitis. He was commenced on four-drug antituberculous therapy.

Discussion

TB is endemic in developing countries and is becoming more prevalent with the rise in human immunodeficiency virus (HIV) infection. Calvarial TB is rare, with only a few cases described in the current literature.¹⁻⁴ About 0.01% of mycobacterial infection involves the skull. It is a disease of children, with 50% of the cases under 10 years of age and 90% under 20 years of age. It usually presents with a painless scalp swelling (Case 1) or a discharging sinus.¹ The outward expansion of the calvarium produces Pott's puffy tumour.⁵ Lesions are usually single, well-circumscribed and lytic with involvement of the frontal or parietal bones, and rarely in the sphenoid (Cases 1 and 2) and occipital bones. The calvarial lesions can penetrate both the inner and outer table and

have an associated soft tissue component. They rarely penetrate the dura. There may occasionally be diffuse involvement of the calvarium or a single lytic lesion with surrounding sclerosis.¹ Most skull involvement is seen

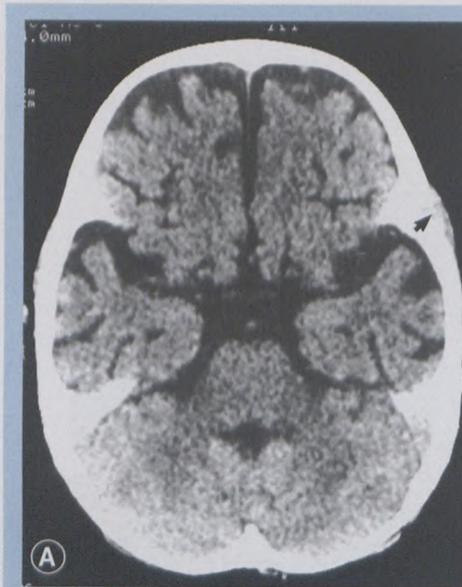


Figure 2a: Axial post-contrast CT of the head demonstrates extracranial enhancing soft tissue (arrow) in the left frontotemporal region.



Figure 2b: Axial post-contrast CT of the head shows that the focus of the enhancing tissue seen in Figure 2a is associated with a lytic bone lesion (arrow).

in children with disseminated disease.³ The differential diagnosis for a lytic lesion seen on the skull radiographs includes pyogenic osteomyelitis, metastasis, haemangioma, aneurysmal bone cyst, meningioma and histiocytosis.² CT is useful to exclude a concurrent intracranial TB component.¹ While isolation of acid fast bacilli from the lesion would be ideal, a combination of clinical, radiological and histopathological findings in association with a good response to antituberculous therapy are often used for diagnosis.² Treatment is with four-drug anti-TB therapy for 18 months. Surgery is reserved for cases of uncertain diagnosis or for those where the suspected calvarial TB, with an extradural collection, is associated with neurological deficits, sinus formation or a large pocket of caseating material.¹

Conclusion

Calvarial TB is a rare manifestation of a disease that is endemic in South Africa and may be imaged incidentally or because of symptomatology. Changes in the bone will be seen on skull radiographs, but a CT head is required to exclude intracranial TB.

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