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Tuberculosis of the mandible in a child

PRASAD KOTHARI, B.D.S., M.D.S., F.D.S. R.C.S.*, LIA BARTELLA, M.B., CH.B.†, JOHN CARTER, F.D.S. R.C.S., F.R.C.S.*, OTTO CHAN, F.R.C.S., F.R.C.R.†, KIM PIPER, B.D.S., F.D.S. R.C.S., PH.D.‡

Abstract
The incidence of notification of tuberculosis is increasing in the developed world. The disease has a variable mode of presentation and therefore diagnosis is not easy. We present an unusual case of tuberculosis involving the ramus of the mandible in a six-year-old boy and outline its management.

Key words: Tuberculosis; Mandible

Case report

A six-year-old boy of Asian origin was referred to the department of Oral and Maxillofacial surgery at the Royal London Hospital in February 1994 by his doctor regarding a swelling in the right side of the mandible and submandibular lymphadenopathy. The swelling had first been noticed four weeks previously and had a gradual onset. The boy, although of a small body stature, did not appear unwell but complained of loss of appetite. The swelling was approximately 3 cm in diameter situated in the right ramus of the mandible and was associated with discrete, non-tender, mobile right submandibular lymphadenopathy. The rest of the general examination was unremarkable.

The boy was born in Pakistan and had been living in the UK since 1992. There was no known history of exposure to tuberculosis and no evidence of BCG scarring, however the father insisted that the child was immunized in Pakistan. Routine haematological investigations showed microcytosis and low serum ferritin suggestive of iron deficiency. The Mantoux test and sputum culture were negative. Chest radiograph showed prominent hilar shadows consistent with mediastinal lymphadenopathy and right para-tracheal enlargement, the lungs were clear (Figure 1). A working diagnosis of tuberculosis was proposed by the reporting radiologist.

Facial radiographs showed a multilocular radiolucent area in the right ramus (Figure 2) and magnetic resonance imaging (MRI) confirmed an expansile lesion in the ramus showing breach of the cortex laterally and apparent extension of abnormal soft tissue beyond the bone limit (Figure 3). This appearance was non-specific and was not helpful towards the diagnosis. An open biopsy of the mandibular lesion was performed via an intraoral approach under general anaesthesia. The histology confirmed a specimen containing areas with a granuloma-like appearance. These comprised foci of inflammatory cells, macrophages and giant cells. Staining for acid-fast bacilli was negative however, the pattern of inflammation and giant cells were strongly suggestive of granulomatous inflammation and the possibility of tuberculosis could not be excluded (Figure 4).

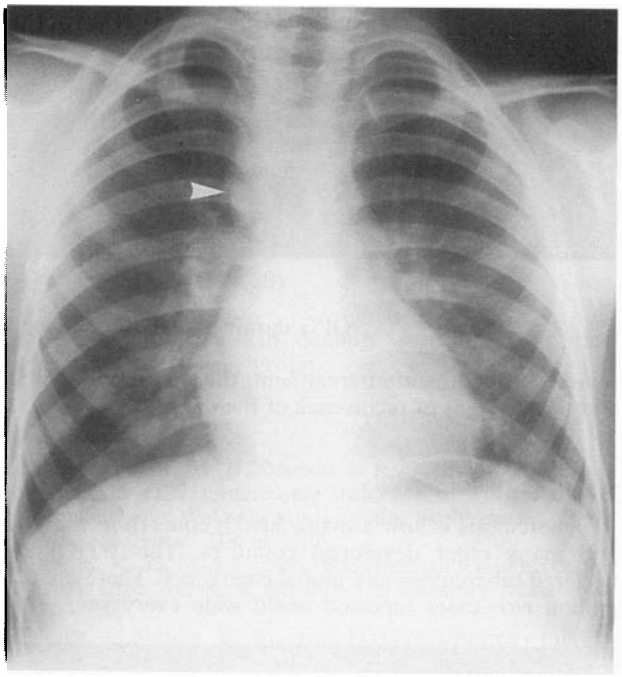

FIG. 1
Chest radiograph showing right para-tracheal lymph node enlargement. (arrowhead)

On the basis of the above results, the patient was referred to the chest physicians who initiated anti-tuberculosus chemotherapy involving rifampicin 250 mg, isoniazid 250 mg and pyrazinamide 875 mg.

The patient did well on this regime and showed no signs of adverse reaction to the chemotherapy. Pyrazinamide was discontinued after two months and the other medications were continued for a further period of ten months. During this treatment the patient made good progress and the cervical lymphadenopathy resolved completely within three months and a repeat MRI of the mandible showed considerable resolution of the lesion in the ramus. On

From the Department of Oral and Maxillofacial Surgery* and Radiology† and Oral Pathology‡, Royal London Hospital, Whitechapel, London, UK.
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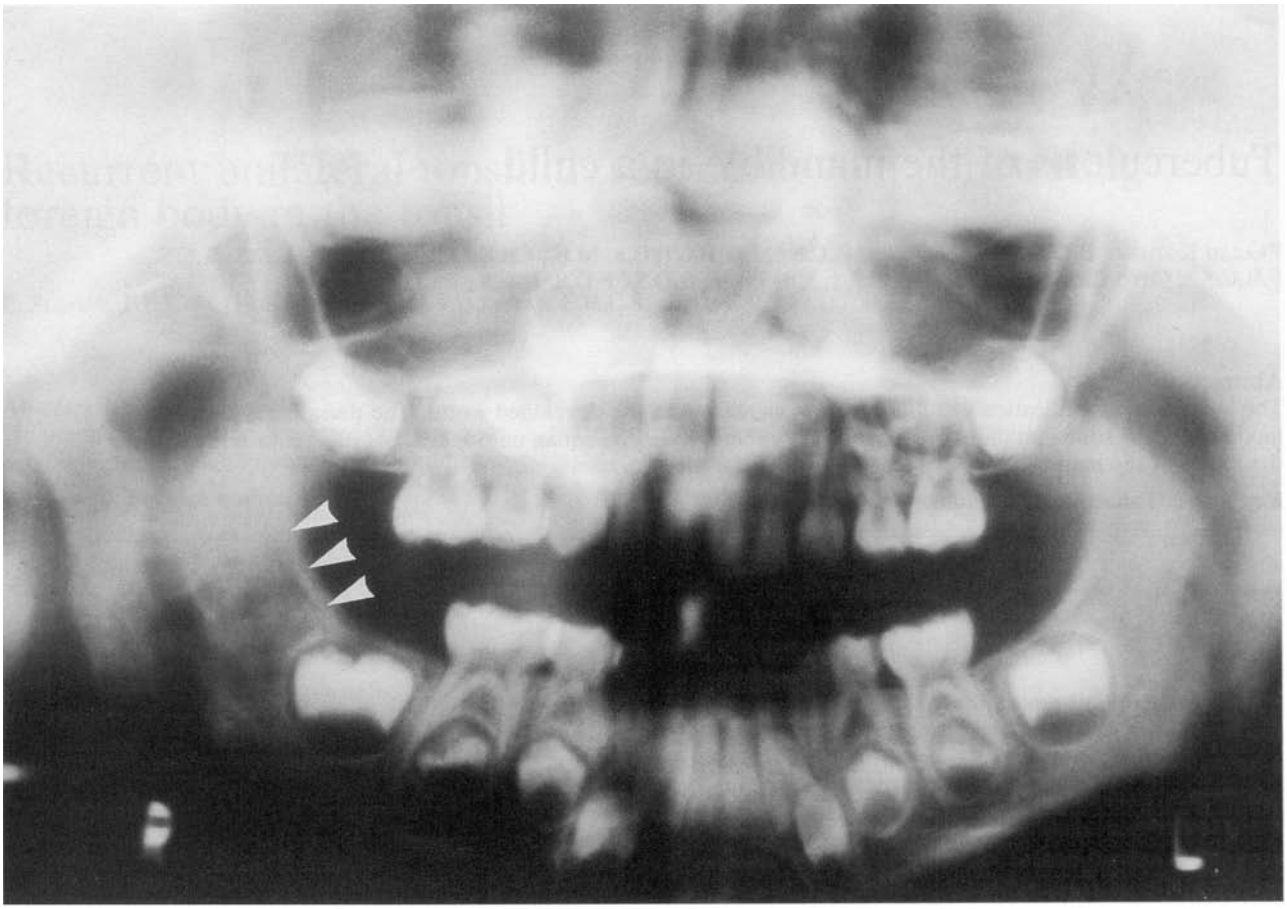

FIG. 2
OPG showing multilocular lesion in right ramus of mandible. (arrowheads)

review 18 months after treatment, the boy remains well and has no signs of recurrence of the disease.

Discussion

Tuberculosis is now a major health concern in the UK and many other developed countries. The WHO has declared tuberculosis as a global emergency. There are 6.5 million new cases reported world wide every year. The

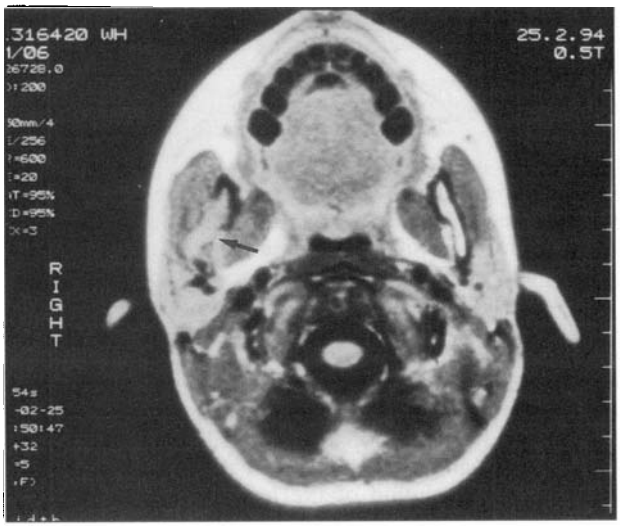

FIG. 3
MRI T_1 weighted axial scan showing intermediate signal lesion in the right ramus. (black arrows)

notification of tuberculosis in the UK increased by 12 per cent between 1988 and 1992 (Bhatti *et al.*, 1995) whereas it increased by 47 per cent in London for a similar period (Pearson *et al*, 1995) (Figure 5). The notification rate of tuberculosis in Tower Hamlets is five times the rate for England and Wales, however there has been a slight fall in the notification rate for 1995 as compared to 1994. Cases of respiratory tuberculosis fell from 67 to 65 and cases of non-respiratory tuberculosis fell from 35 to 29 (O'Sullivan, 1995). There were 363 notifications in East London and the city in 1996 (O'Sullivan, 1997). A similar trend of increase in notification has been noticed in USA where the overall incidence of tuberculosis is about 10 per 100 000 of population and increases to about 150 per 100 000 in certain areas (Brudney and Dobkin, 1991).

The majority of this increase is attributed to poor socio-economic conditions and also to an increase in immigrant population (Bhatti *et al.*, 1995). Amongst the immigrant population higher incidence is seen in people from the Indian subcontinent. In one study the crude incidence in indigenous white residents of England per 100 000 population was 4.7, compared with 135 in Indians, 101 in Pakistani/Bangladeshis and 29 in Afrocaribbeans (Tuberculosis committee report, 1994). The incidence is highest in the first two to five years after entry.

Tuberculosis in children is not uncommon and an overall incidence of eight to 10 per 100 000 is reported (Pearson *et al.*, 1995). The spine, long bones and joints are by far the most common sites of bony involvement in tuberculosis. Relatively very few cases of tuberculosis involving the mandible have been described. Before 1922 only 50 cases had been recorded in the literature, Meng reported an additional 14 cases between 1922 and 1939

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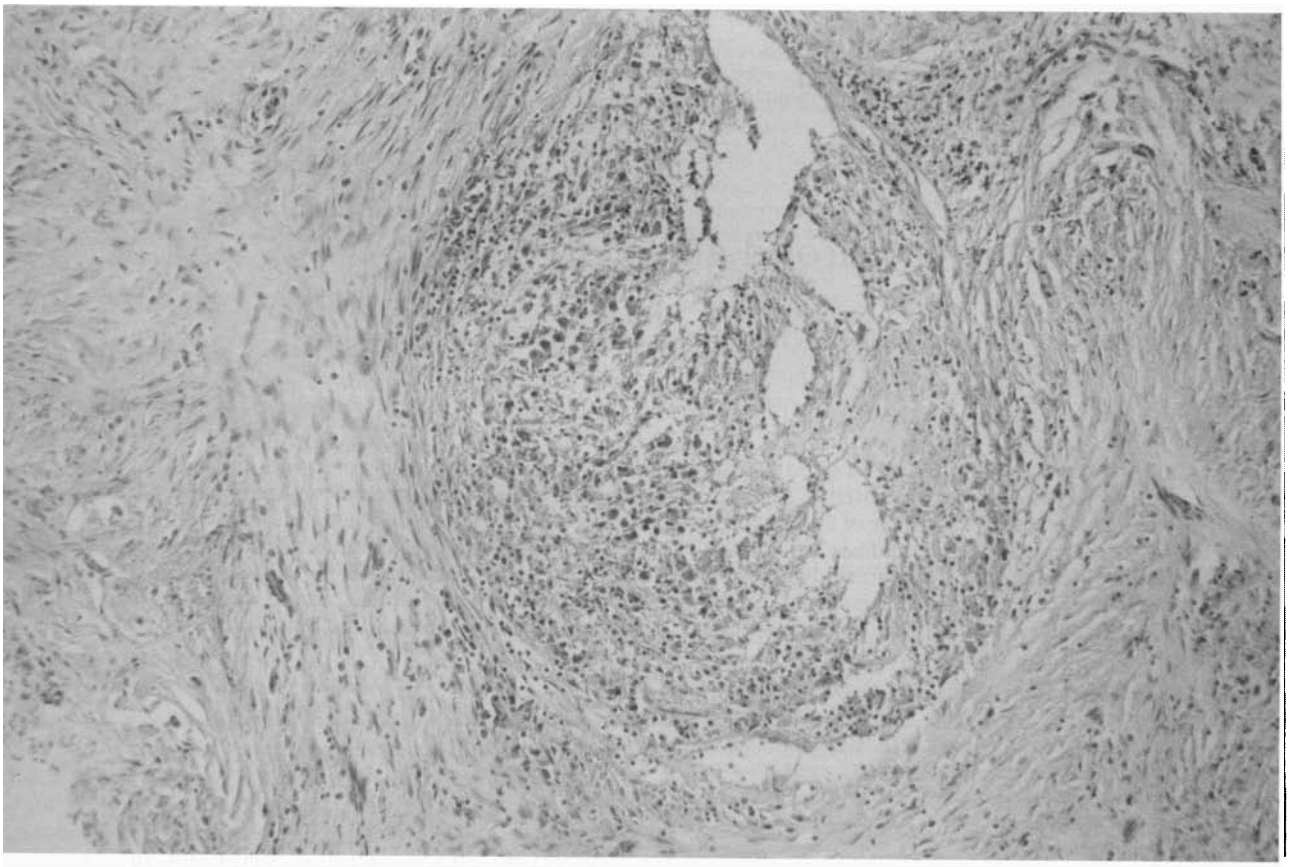
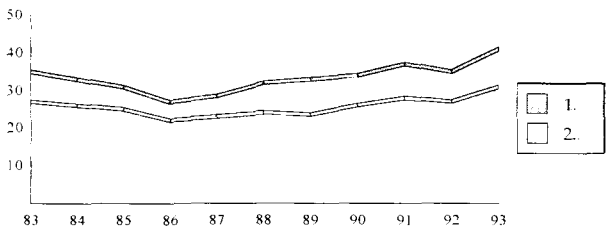


FIG. 4
Photomicrograph showing typical granulomas (H & E; × 20).

(Meng, 1940). Recently tuberculosis in the mandible has been reported presenting as osteomyelitis in adults (Khosla, 1970; Fukuda *et al.*, 1992).

In children most cases of skeletal tuberculosis are in the long bones and joints. The case described above is unusual not only because of the age of the patient but also due to the nature of presentation. Most cases of skeletal tuberculosis present as acute osteomyelitis with pain, swelling and occasionally discharge through sinuses. Our case did not have any acute symptoms and therefore infection was not the most likely diagnosis in the early stages of presentation. The exact route of infection cannot be specified but haematological spread or disease following vaccination has been suggested.

Tuberculosis is no more a disease of the past. With modern ease of transport, immigration patterns and increase in the number of refugees world wide, the incidence of tuberculosis in the UK is increasing. We highlight the importance of including tuberculosis as a differential diagnosis in dealing with head and neck pathology for any age group.



TB notification rate/100,00 in London, 1983-1993
1. Inner London
2. Greater London

FIG. 5
Notification of TB in London 1983–1993.

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Address for correspondence:
Mr Prasad Kothari,
12A West Court,
North Wembley,
Middlesex HA0 3QH.

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