

## Mediastinal tuberculosis in a 10-month-old child

AFTAB AHMED, A.F.R.C.S., (ED.), SHOWKAT MIRZA, F.R.C.S.(ED.), MICHAEL P. ROTHERA, F.R.C.S.

### Abstract

We report a rare case of mediastinal tuberculosis in a child who presented as a possible inhaled foreign body. A 10-month-old girl was admitted with a five-month history of cough, wheeze and problematic feeding, thought initially to be due to asthma. A clinical deterioration and subsequent X-rays suggested an inhaled foreign body. However, at direct laryngotracheobronchoscopy no foreign body was found and subsequent investigations revealed a subcarinal mediastinal mass. She underwent a thoracotomy and excision of the mass, the histological analysis of which revealed it to be of tuberculous origin. When a patient presents with symptoms of upper airway obstruction which are highly suggestive of a foreign body, other causes such as mediastinal tuberculosis must be borne in mind when no foreign body can be found. Although rare, cases of tuberculosis are apparently increasing and the otolaryngologist must be aware of its various manifestations and submit specimens for appropriate analysis. We also briefly review mediastinal lymphadenopathy due to tuberculosis.

**Key words:** Tuberculosis, Mediastinum; Paediatric

### Case report

A 10-month-old girl presented to the Department of Otolaryngology with a five-month history of gradual onset of wheeze, cough and problematic feeding. She was initially diagnosed as asthmatic by the family doctor but her symptoms did not improve despite bronchodilators and repeated courses of antibiotics.

There was also an episode of possible choking on a cotton wool ball two months previously although there had been no significant change in her clinical signs at that time. Examination revealed a croup-like cough to be present but no stridor and there was decreased air entry to the right side of the chest. A chest X-ray showed right lung field hyperinflation with mediastinal shift to the left suggesting a right main bronchus foreign body.

She underwent a direct laryngotracheobronchoscopy under general anaesthesia which revealed granulation tissue and pus occluding the right main bronchus. The area was swabbed, biopsied and cleared but no foreign body was seen. Intravenous cefuroxime and metronidazole antibiotics were commenced. Microbiological cultures grew *Streptococcus pneumoniae* but unfortunately the histology specimen was unequivocal. A magnetic resonance scan of the thorax revealed right lower lobe consolidation and a soft tissue mass lying in the mediastinum just below the carina and posterior to the origin of the right main bronchus (Figures 1 and 2). A barium swallow revealed a well-defined extrinsic compression in the mid-portion of the right side of the oesophagus but with no compromise of contrast flow (Figure 3). The possibility of mediastinal tuberculosis was raised but a Mantoux test was negative. A provisional diagnosis of bronchogenic reduplication cyst was made at this stage.



FIG. 1  
Magnetic resonance scan of thorax (coronal view – T1).

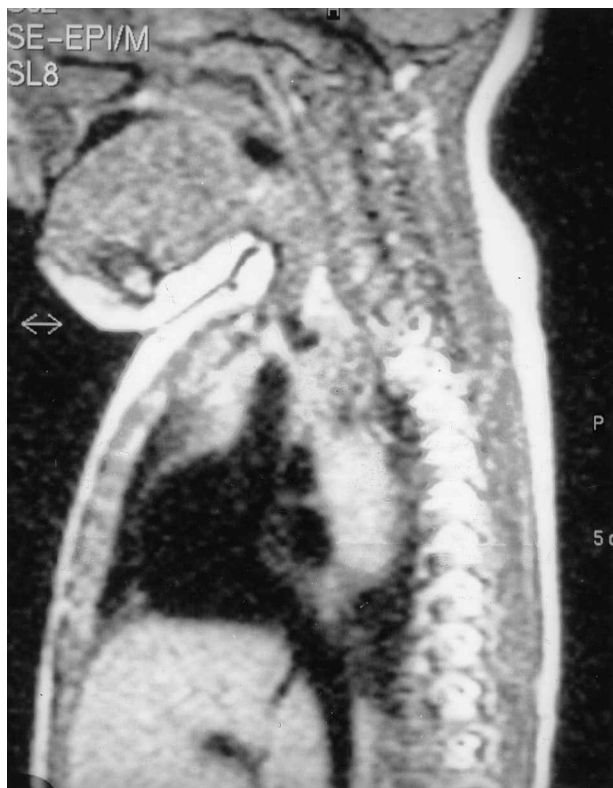


FIG. 2

Magnetic resonance scan of thorax (sagittal view – T1). Both Figures 1 and 2 show a soft tissue mass lying in the mediastinum just below the carina and posterior to the origin of the right main bronchus.



FIG. 3

Barium swallow (A-P view) This shows a well defined extrinsic compression in the mid-portion of the oesophagus at its right aspect.

The patient was referred to the paediatric cardiothoracic surgeons who undertook a right thoracotomy. During the operation a large ovoid subcarinal mass was found displacing the trachea and bronchi anteriorly and the oesophagus posteriorly. The lesion was also compressing and adherent to the posterior surface of the right main bronchus. It was enucleated where possible but a small portion of the right main bronchial wall had to be removed to achieve complete excision. The bronchial defect was approximated with interrupted prolene sutures. She made an uneventful recovery and was discharged home two weeks later.

Histological analysis of the lesion removed revealed it to be a large lymph node with evidence of chronic granulomatous necrotizing inflammation. Features were highly suggestive of a mycobacterial aetiology despite a non-caseous type of necrosis in the granulomata and negative Ziehl-Nielsen stain. A subsequent polymerase chain reaction (PCR) and tuberculosis culture were negative. On the basis of the histology a diagnosis of tuberculosis was made and the patient was commenced on a nine-month course of anti-tuberculous therapy consisting of isoniazid, pyrazinamide and rifampicin. Check bronchoscopies at two and five months post-operatively revealed some granulation tissue in the right main bronchus that was removed on both occasions. A check barium swallow undertaken five months post-operatively revealed no abnormality. The patient is currently well and asymptomatic.

### Discussion

Mediastinal tuberculosis is rare although more common in Asians<sup>1</sup> and the incidence is rising.<sup>2</sup>

Mediastinal lymph node involvement usually occurs as a complication of primary tuberculosis but may occur without parenchymal disease. It has to be distinguished from lymphoma, sarcoidosis, metastatic malignant disease and fungal disease such as histoplasmosis.<sup>3</sup> Symptoms and signs may be absent or non-specific and include dry cough, fever, weight loss, failure to thrive, bronchial breathing and wheeze.<sup>4</sup> Enlarged mediastinal lymph nodes may compress and even erode the tracheobronchial tree<sup>5,6</sup> and oesophagus.<sup>5,7</sup>

The diagnosis of mediastinal tuberculosis in an isolated intrathoracic mass can be difficult as illustrated in our case in whom the clinical history was highly suggestive of an inhaled foreign body. A non-specific clinical presentation and absence of characteristic parenchymal chest lesions add to the diagnostic challenge. In our patient, following the initial bronchoscopy the presence of a mediastinal mass was only confirmed by magnetic resonance scan and barium swallow. The Mantoux test was negative in the patient but a false negative reaction is a common problem.<sup>8</sup> Most patients in these circumstances require an invasive procedure to establish a definite diagnosis. The decision to undertake surgery in our patient was made on the provisional diagnosis of a bronchogenic reduplication cyst. In adults, bronchogenic cysts are commonly asymptomatic, but in the early paediatric years they frequently produce symptoms, cause respiratory embarrassment due to bronchial compression and increase susceptibility to respiratory tract infections. These cysts can be removed completely with minimal morbidity and the patient will remain free of recurrence.<sup>9</sup> The diagnosis of tuberculosis in our patient was only established once the patient had undergone a thoracotomy, excision of lesion, and its histological analysis. The surgical intervention was not only diagnostic but also therapeutic in removing the compressing lesion. Papagiannopoulos *et al.*<sup>10</sup> presented

nine cases of children who underwent thoracotomies and enucleations of tuberculosis-affected mediastinal lymph nodes that were obstructing the airway. They stated that surgery successfully relieves obstructions and is devoid of complications providing that incision, evacuation and curettage of lymph nodes is performed, avoiding overzealous dissection. In a series by Freixinet *et al.*<sup>5</sup> five children underwent thoracotomy and excision of tuberculous mediastinal lymph nodes without any complications. Surgical excision and subsequent anti-tuberculous therapy should effect a resolution of symptoms as illustrated by our case.

### Conclusion

Mediastinal tuberculosis is rare and may present a diagnostic challenge. When a patient presents with symptoms of upper airway obstruction which are highly suggestive of a foreign body, other causes such as mediastinal tuberculosis must be borne in mind when no foreign body can be found. The otolaryngologist must be aware of all the clinical manifestations of tuberculosis and submit specimens for appropriate analysis. Surgical excision of the mediastinal lymph node and co-adjuvant chemotherapy should effect a cure as illustrated in this case.

### References

- 1 Medical Research Council Tuberculosis and Chest Diseases Unit. National survey of notifications of tuberculosis in England and Wales in 1983. *Br Med J* 1985;**291**:658–61
- 2 Modilevsky T, Sattler FR, Barners PF. Mycobacterial disease in patients with immunodeficiency virus infection. *Arch Intern Med* 1989;**149**:2201–5

- 3 Khan J, Akhtar M, von Sinner WN, Bouchama A, Bazarbashi M. CT – guided fine needle aspiration biopsy in the diagnosis of mediastinal tuberculosis. *Chest* 1994;**106**:1329–32
- 4 Ormerod LP. Respiratory tuberculosis. In: Davies PDO, ed. *Clinical Tuberculosis*, 2nd edn. London: Chapman and Hall, 1998, 167–8
- 5 Freixinet J, Varela A, Lopez-Rivero L, Caminero JA, Rodriguez-de-Castro F, Serrano A. Surgical treatment of childhood mediastinal tuberculous lymphadenitis. *Ann Thorac Surg* 1995;**59**:644–6
- 6 Worthington MG, Brink JG, Odell JA, Buckels J, de Groot MK, Klein M, *et al.* Surgical relief of acute airway obstruction due to primary tuberculosis. *Ann Thorac Surg* 1993;**56**:1054–62
- 7 Bloomberg TJ, Dow CJ. Contemporary mediastinal tuberculosis. *Thorax* 1980;**35**:392–6
- 8 Murthy NK, Dutt AK. Tuberculin skin testing: present status. *Semin Respir Infect* 1994;**9**:78–83
- 9 Whitaker LD, Lynn HB. Mediastinal tumours and cysts in the paediatric patient. *Surg Clin North Am* 1973;**53**:893–904
- 10 Papagiannopoulos KA, Linegar AG, Harris DG, Rossouw GJ. Surgical management of airway obstruction in primary tuberculosis in children. *Ann Thorac Surg* 1999;**68**:1182–6

Mr Aftab Ahmed,  
Department of Otolaryngology,  
Manchester Royal Infirmary,  
Oxford Road,  
Manchester M13 9WL, UK

Fax: (0161) 276 8511  
E-mail: aftabahmed1@hotmail.com

---

Mr A. Ahmed takes responsibility for the integrity of the content of the paper.  
Competing interests: None declared

---