

# Foreign body aspiration and tuberculosis: possible misdiagnosis

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## Abstract

Childhood tuberculosis (TB) is common in developing countries whereas foreign body aspiration is relatively less frequently diagnosed. This report is of a child contact (same household) of a smear-positive index case who presented with suggestive clinical features, and was admitted as a case of pulmonary TB, but subsequently found to have an aspirated foreign body was accounting for his symptoms.

Due to the similarity in the clinical features of a delayed clinical presentation of foreign body aspiration with pulmonary TB, clinicians attending to children with chronic respiratory pathology in a TB-endemic area should be mindful of the possibility of a foreign body in the airway and should always carefully review chest radiographs.

## Introduction

Most cases of foreign body aspiration are diagnosed early due to the dramatic initial clinical presentation with unmistakable pointers such as sudden bouts of coughing, choking, stridulous respiration, or wheezing. However in some cases it is asymptomatic or the initial phase symptoms quickly resolve and the foreign body remains lodged in the lower airways.<sup>1</sup> Missed foreign bodies present later with chronic ill health and varied symptoms that could easily be diagnosed as other chronic respiratory conditions.<sup>2</sup>

Childhood tuberculosis (TB) is common, and a significant contributor to childhood morbidity and mortality in the developing world, whereas foreign body aspiration is relatively less frequently encountered/diagnosed.<sup>3</sup> The diagnosis of childhood TB is most frequently based on clinical symptoms and signs, a history of contact with a sputum smear-positive adult TB case and suggestive chest radiographs. A chronic foreign body could be misdiagnosed as TB in a TB-endemic setting and treated as such with poor outcome.

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## Case presentation

A 6-year-old boy presented with a 2-month history of weight loss, low grade fever, reduced appetite, and cough productive of whitish, foul-smelling sputum. There was no history of haemoptysis. He had received treatment at various health centres with courses of antibiotics including ampicillin, cotrimoxazole, and amoxicillin. Despite this his symptoms progressively worsened.

Prior to the onset of this illness the boy had no significant medical or surgical history, apart from primary nocturnal enuresis. The mother claimed he had received complete vaccinations according to the National EPI (Expanded Programme on Immunization) schedule. His growth and development were appropriate for age. He lived in the same household with his grandmother, a confirmed case of pulmonary TB treated at our TB clinic 3 years earlier.

On examination the boy appeared chronically afebrile with mild pallor, Grade 1 finger clubbing, and a weight of 17 kg (approximately 85% of expected weight for age). He had multiple, discrete non-tender cervical lymph nodes measuring up to 1 cm in diameter. There was a visible BCG (Bacillus Calmette-Guérin) scar on his left deltoid muscle. He was dyspnoeic with nasal flaring, lower chest wall and intercostal recessions. Oxygen saturation was 98% on air. He had decreased chest movement with dull percussion notes on the right lower zone anterior and posterior, with markedly diminished breath sounds in the

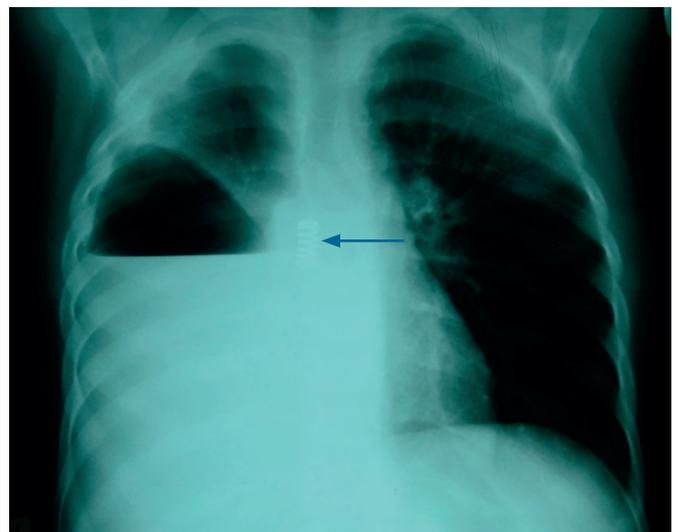


Figure 1 X-ray showing air fluid level, collapse consolidation of the right upper lobe, and a radiopaque foreign body in the right bronchus (arrowed).

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right lower zone. Other systems were essentially normal.

A plain chest X-ray showed an air fluid level in the right hemithorax, occupying the midzone and some collapse and consolidation of the right upper lobe (see Figure 1).

An initial diagnosis of pulmonary TB with pleural effusion and a pneumothorax was made at the clinic; the patient was admitted for investigation and TB treatment started.

A Mantoux tuberculin skin test was non-reactive and two sputum samples were negative for acid and alcohol fast bacilli. An initial thoracentesis yielded 365 mls of pus which was sent for microscopy and TB culture and routine microbiology. Microscopy showed a pleocytosis with 80% neutrophils and 20% lymphocytes. No AFB (acid-fast bacilli) was seen, however, Gram-positive cocci were visible on Gram stain. There was no growth on the culture.

### Management

The patient was initially commenced on intravenous ceftriaxone and metronidazole. A review of X-rays identified a spring-shaped opacity in the right main bronchus. The diagnosis was revised to right lung abscess secondary to inhaled foreign body. An attempt to remove the foreign body using flexible fiberoptic bronchoscopy was unsuccessful.

Because of the limited cardiothoracic services available in our region the patient was transferred to a specialist centre in Dakar, Senegal where the foreign body, a metal spring (see Figure 2), was successfully removed by rigid bronchoscopy.

The final diagnosis was foreign body inhalation with lung abscess and empyema thoracis; the patient was not treated for TB. A follow-up, 30 months after successful treatment, showed no clinical or radiological evidence of lung pathology (see Figure 3).

### Discussion

Foreign body aspiration into the tracheobronchial tree is common in children.<sup>1,4</sup> In a report from Ethiopia correct diagnosis was delayed or missed in 20% of the series.<sup>4</sup>

Late presentation, delay in diagnosis and interven-

tion, as well as missed diagnoses were major causes of prolonged morbidity and high mortality observed in the reported cases.<sup>4</sup>

The diagnosis of pulmonary TB in children remains a challenge because of the difficulties in collecting sputum samples and the low yield of *Mycobacterium tuberculosis* from sputum.<sup>5</sup> Diagnosis therefore, is often made on the basis of clinical history and presentation, contact with an adult smear-positive TB case, and a suggestive chest X-ray. This case fulfilled these criteria. If the foreign body in this child had not been radiopaque, the diagnosis would have been missed and he would have ended up being treated for TB with resultant 'treatment failure' and possibly death. The fact that only a small portion of inhaled foreign bodies in children are radiopaque contributes to a high likelihood of foreign bodies not being identified on plain chest Z-ray with delayed and possible misdiagnosis of the chronic complications.<sup>1,2,6</sup> In some situations also, despite modern imaging techniques, radiopaque foreign bodies cannot be diagnosed clearly.<sup>7</sup> Bronchoscopy appears to be the more reliable and accurate method of diagnosing foreign bodies in the airway. Rigid bronchoscopy is usually preferred to fiberoptic flexible bronchoscopy for its therapeutic superiority.<sup>8,9</sup>

### Conclusion

Healthcare personnel attending children with chronic respiratory pathology in a TB-endemic area should be mindful of the possibility of a foreign body in the airway and always carefully review chest X-rays. A computed tomography (CT) scan of the chest (if available) and bronchoscopy should be considered for cases diagnosed as sputum smear-negative pulmonary TB that have suggestive complicated chest radiographs, particularly where there is a failure to respond to standard treatment with good drug adherence.

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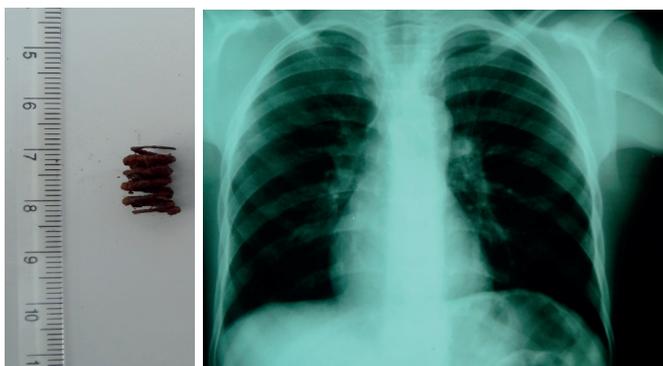


Figure 2 (left) Metal spring removed from the child's lung. Figure 3 (right) chest radiograph taken 30 months after removal of foreign body showing normal lungs.