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Endobronchial Tuberculosis: A Case Report

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Abstract Pulmonary tuberculosis (PTB) is endemic in Hong Kong. Endobronchial tuberculosis (EBTB) occurs in 30% to 60 % of children with PTB. The treatment of EBTB is different from PTB without endobronchial involvement as systemic steroid is required. We report a 20-month-old boy who presented with a two-day history of cough and shortness of breath and was subsequently diagnosed to have EBTB by flexible fibreoptic bronchoscopy. He was treated with standard anti-tuberculosis drugs plus steroid and recovered after 6 months of treatment.

Key words Bronchoscopy; Children; Endobronchial tuberculosis, Tuberculosis

Introduction

In 1999, there were 7,512 cases of pulmonary tuberculosis (PTB) notified in Hong Kong, 81 (1%) cases were reported in children aged less than 15-year-old.[1] Classical systemic symptoms include fever, night sweat, anorexia, weight loss and malaise. Organ-specific symptoms include persistent cough, pleuritic pain, haemoptysis, and shortness of breath. Endobronchial tuberculosis is present in 18% of adult patients with PTB.[2] In two case series, endobronchial lesions were found in 30% to 60% of children with PTB.[3,4] It was suggested that flexible bronchoscopy was important in the management of childhood pulmonary tuberculosis.[3,4] The finding of endobronchial lesion is important as systemic steroid is an effective treatment for endobroncial tuberculosis.[5] We report a child with endobronchial tuberculosis (EBTB) that was diagnosed by flexible bronchoscopy and treated successfully.

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Case Report

A 20-month-old boy presented with cough and shortness of breath for two days with no history of choking nor foreign body inhalation. There was no fever. He was a full term baby born in Hong Kong with birth weight of 4.09 kg. The immunisation was up-to-date. There was no family history of tuberculosis infection. Physical examination revealed no respiratory distress but bilateral expiratory wheeze and decreased breath sound in the right lung was noted. Bacille Calmette-Guerin (BCG) scar was present. Chest radiograph (Figure 1) reviewed hyperinflated right lung with perihilar lymphadenopathy. Blood for Erythrocyte Sedimentation Rate (ESR) was normal. Mantoux test was positive, i.e. 15 mm of induration. Flexible bronchoscopy was done which revealed no foreign body but an exophytic endobronchial lesion partially obstructing the bronchus was seen (Figure 2). No biopsy nor bronchial brushing was done. Computerised Tomography (CT) scan of thorax with contrast (Figure 3) revealed multiple enlarged, necrotic mediastinal and right hilar lymph nodes which was compatible with pulmonary tuberculosis (TB). He was treated as EBTB with isoniazid (15 mg/kg/Day), rifampicin (15 mg/kg/Day) for

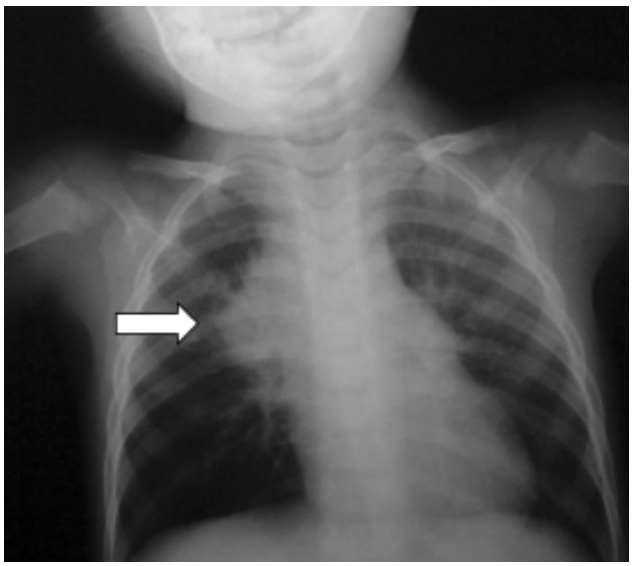

Figure 1 Chest radiography. Hyperinflated right lung with perihilar lymphadenopathy (arrow).

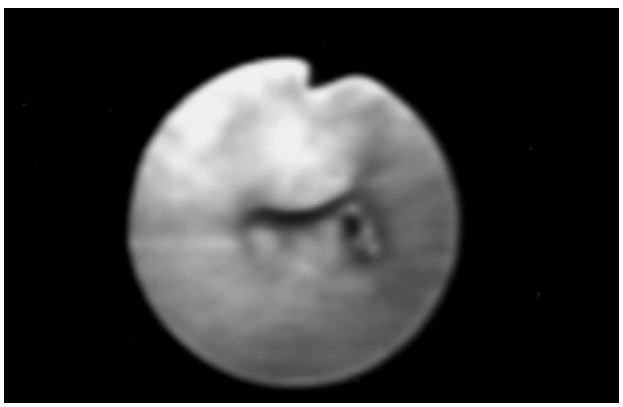

Figure 2 An exophytic endobronchial lesion obstructing the right bronchus intermedius.

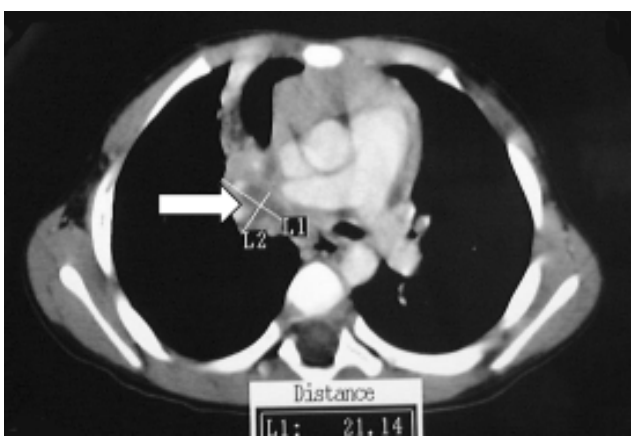

Figure 3 CT scan of thorax with contrast. Multiple enlarged, necrotic mediastinal and right hilar lymph nodes (arrow).

six months, pyrazinamide (20 mg/kg/Day) for two months and prednisolone (2 mg/kg/Day) for four weeks. The early morning gastric lavage for acid-fast bacilli (AFB) smear and culture were negative. Bronchoscopy and chest radiography were repeated after full course of treatment. They showed normal tracheobronchial tree and no more perihilar lymphadenopathy was seen.

Discussion

This patient presented two atypical features of PTB, i.e. a rather short history of cough for two days in contrast to the usual duration of 2 weeks before diagnosis and absence of fever.[6] As reported by Sham et al,[6] only 4% to 6% of childhood PTB had a short history of a few days before diagnosis and 65% of children had fever. However, the chest radiograph that showed hilar lymphadeonpathy would arouse the suspicion of PTB in this child.

M. tuberculosis is transmitted from an adult whose sputum production is positive for the bacilli to a 'naive' child. This primary pulmonary tuberculosis pathophysiology includes bronchial involvement. The endobronchial lesions include polypoid or ulcerative granuloma, obstructive caseum, inflammed mucosa, fibrostenosis and extramural compression by enlarged lymph nodes. The commonest endobronchial lesion was ulcerative granuloma (42%) followed by fibrostenosis and polypoid granuloma was found in 20% of endobronchial tuberculosis in one series.[7] The pathogensis of EBTB remains speculative. Suggestions for pathogenesis of EBTB lesions included direct implantation of the tubercle bacilli in the bronchus, infiltration from adjacent mediastinal lymph nodes, direct extension of peripheral tuberculous pneumonia, lymphatic or hematogenous spread, or a hypersensitivity reaction producing inflammatory granulation tissue or a polypoid mass.[8]

In view of the high percentage of endobronchial involvement in childhood PTB,[3] a flexible bronchoscopy was performed with the subsequent diagnosis of endobronchial tuberculosis made in this patient. No biopsy was taken from the current patient as he had clear evidence of PTB as evidenced by the positive Mantoux test and hilar lymphadenopathy. At the time of bronchoscopy, the standard practice of the authors' department did not dictate bronchial brushing nor biopsy of endobronchial lesions. This practice was similar to that reported in other paediatric centre.[4] However, a recent study showed that bronchoscopic sampling of endobronchial lesions produced more than 90%

yield on smear and culture in adult patients.[9] A similar study is warranted in children to see if the yield is similar to that seen in adults. If the yield is as high as that in adult patients. It is probably advisable to routinely sample the endobronchial lesions to enhance the chance of positive culture. This would be especially important in places with high prevalence of multi-drug resistant *M. tuberculosis*. The clinical features of EBTB are non-specific. Cough is the most common symptom.[10,11] It is important to perform flexible bronchoscopy to evaluate for the presence of endobronchial lesions and to achieve an early diagnosis.[12] As there is a high likelihood of developing bronchial stenosis after recovery from active EBTB, repeated flexible bronchoscopy is mandatory for the possible complications of bronchostenosis which may require surgical intervention. In contrast to children with no endobronchial involvement, children with EBTB are highly contagious.[13] Appropriate infection control measures would be required.

Anti-TB drugs are effective in controlling the infection, the cure rate is reported to be 95-98%.[14,15] Systemic steroid is important in the treatment of EBTB to relieve obstruction and atelectasis.[5]

Conclusion

Endobronchial tuberculosis is common in childhood PTB. The most accurate way to the diagnosis is flexible bronchoscopy. Hence, early flexible bronchoscopy is strongly advised in children with highly suspected or confirmed PTB. This would allow early systemic steroid therapy resulting in faster healing of bronchial lesions and reduced frequency of bronchial sequelae like bronchial stenosis and bronchiectasis.

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