

IS THERE ANY INDICATION TO ISOLATE CHILDREN WITH ENDOBRONCHIAL TUBERCULOSIS DUE TO EROSION OF A LYMPH NODE INSIDE THE BRONCHUS AFTER DIAGNOSTIC BRONCHIAL BIOPSIES?

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In developed countries, tuberculosis (TB) in children is a relatively uncommon disease (1). However, in recent years the risk of infection is progressively increased, due to refugees and immigrants coming from “at risk countries”, where drug-resistant mycobacteria are prevalent (1). Children are usually evaluated for TB for the presence of symptoms or signs suggestive of disease or because of closed contact with patients with active disease (2). However, the diversity of the clinical presentation and the non-specific nature of most symptoms often complicate the diagnosis. This is especially true for the primary infection, in which clinical signs are often subtle. When airway involvement occurs, the usual presenting symptom is a persistent, non-remitting cough with or without wheeze, unresponsive to treatment (2,3). When enlarged infected lymph nodes compress the airway, they cause either partial obstruction with a ball-valve effect, leading to lung hyperinflation, or a complete obstruction, with lobar collapse (3). Unilateral obstructive emphysema seen on chest X-ray in a pediatric patient may be related to a variety of conditions including aspirated foreign bodies, granulomas, neoplasms or extrinsic compression by mediastinal adenopathies (4). In the presence of a symptomatic,

progressive airway obstruction, not related to an aspirated foreign body, there is the need for a quick histological diagnosis (5). When airway compression by tuberculous adenopathies leads to endobronchial tuberculosis, the histological evaluation of bronchial biopsies shows the typical epithelioid cell granulomas with necrosis but also the presence of acid-fast bacilli (6). Whether bronchial biopsies induce the release of bacilli in the airways and, therefore, resulting in the need to isolate the patient is not known.

We report the case of a 3-year-old Caucasian girl, that was admitted with a 3 months-history of progressively worsening cough and wheezing, only partially responsive to treatment with inhaled β_2 -agonists and inhaled and, occasionally, systemic corticosteroids. She had a mild dyspnea: her SaO_2 was 95% in room air and a respiratory rates of 39 breaths/min. Breath sounds were almost absent over middle-lower portion of the right hemithorax and a chest X-ray showed marked hyperinflation of right lung in the middle-lower fields, with contralateral shift of the mediastinum (figure 1A). Fiberoptic endoscopy was performed with a 4 mm distal-end diameter video bronchoscope (Olympus BF-P180, Olympus Corp of America, New Hyde Park, NY, U.S.A.) (7). Subtotal occlusion of the bronchus intermedius was seen by a lobulated tumor mass, with a wide plant base, leading to a ball-valve phenomenon on expiration (figure 1B). No ulcerations of the mucosa covering mass were detected. Multiple bronchial biopsies were obtained through the 2 mm diameter working channel of the fiberoptic bronchoscope (insert in figure 1B): the histopathological examination demonstrat-

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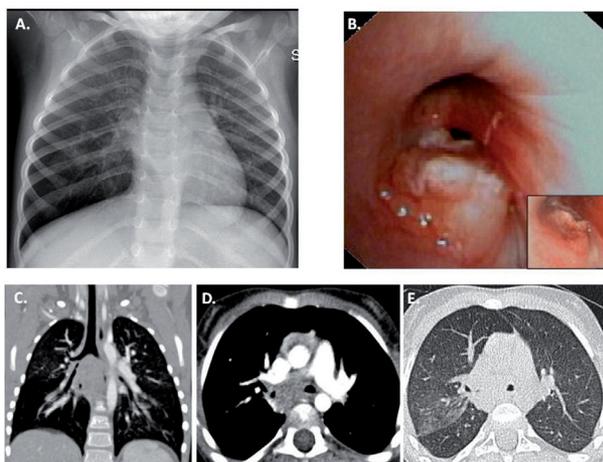


Fig. 1. A). Chest X-ray at admission showing marked hyperinflation of right lung in the middle-lower fields, with controlateral shift of the mediastinum. B). Endoscopic view of the lobulated tumor mass occluding the bronchus intermedius before and, in the insert, after multiple bronchial biopsies. C and D). Contrast-enhanced CT scan of the thorax performed after bronchial biopsy: coronal and axial views of the mediastinal window. E). Axial view of one section of the same CT scan, lung window

ed the presence of a granulomatous inflammation with caseation necrosis, lymphocytes and multinucleated giant cells, surrounded by epithelioid cells aggregates. The presence of few histiocytes containing acid-fast bacilli was demonstrated by Ziehl-Neelsen stain. Smear for acid-fast bacilli, culture and polymerase chain reaction for mycobacteria were negative on bronchial washing and aspirate performed after bronchial biopsies. Contrast-enhanced CT scan of the thorax, performed after bronchoscopy, demonstrated mediastinal lymphadenopathies, compressing the right main stem bronchus and obstructing the bronchus intermedius (figures 1C and D). Ground glass opacities were present in the posterior segment of the right upper lobe (figure 1E). The purified protein derivative skin test was positive and a three drug treatment (rifampicin, isoniazid and pyrazinamide) was prescribed. No evidence of TB infection was identified in the family or in close associates and the follow up visits in the following months, demonstrated an excellent clinical response to the treatment.

Endobronchial infections caused by *Mycobacterium tuberculosis* recognizes five potential mechanisms: (I) direct invasion from an adjacent parenchymal focus; (II) implantation of the organisms from infected sputum; (III) haematogenous spread; (IV) lymphatic drainage from the parenchyma towards the peribron-

chial region; (V) erosion of a lymph node inside a bronchus; (4-7). This last presentation, that is generally not associated with the presence acid-fast bacillus in sputum (8), is usually a complication of a primary infection caused by encroachment and fixation of enlarged lymph nodes to the bronchi (9). In the early stages the enlarged lymph nodes compress the bronchial wall reducing the airway lumen. The infection and the host inflammatory reaction may then progresses through the walls of the bronchi forming a submucosal tubercle that looks like a polypoid mass, as in our patient. Ulceration of the granulation tissue may occur, with extrusion of the caseous material in the airways which may contain live mycobacteria (3,9). However, the negative microbiological tests on bronchial aspirate suggest that the possibility that the diagnostic maneuvers had been made our child infectious was extremely unlikely. As compared to the subsequent ages, pediatric patients are considered to be relatively non-contagious because they often have paucibacillary disease, produce a less forceful cough and show low incidence of cavitary lesions, condition thought to be associated with respiratory spreading of infection (10-12).

Indeed, the presence of few histiocytes containing acid-fast bacilli, demonstrated in our patient, is a characteristic of lymph node involvement in primary TB (13). Although anecdotal reports of TB transmission of involving young infants without cavitary lesions are available (15-17), three reports from the United States demonstrated a complete lack of transmission from children with pulmonary TB to healthcare workers despite the occurrence of uncontrolled exposure (18-20). In general, when patients are at risk of spreading the infection but do not require hospitalization for other reasons, respiratory isolation can be implemented at home provided that there is sufficient family/social support and there are no risks for household members or the community at large (21).

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