Primary Pulmonary Tuberculosis in Infancy With Respiratory Syncytial Virus Infection: A Case Report

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Abstract

A worldwide re-emergence of tuberculosis in infants has been observed during the last decade. Endothoracic tuberculosis predominates. However, few studies of infants with tuberculosis appear in the recent literature. As early diagnosis and treatment appear to prevent complications and reduce mortality, pediatricians should be alert for tuberculosis in infants with atypical picture suggestive of infection. We report a 5-month-old Lebanese female infant, living in Abidjan, who presented first with non-productive cough treated as pneumonia without clinical improvement, and diagnosed later on as primary tuberculosis. This case highlights the rare presentation of tuberculosis in infancy and the co-infection of respiratory syncytial virus. We describe the features, clinical diagnosis, and management of this case.

Keywords: Tuberculosis; Infant; Respiratory syncytial virus; BCG

Case Report

The patient was a 5-month-old girl from first-degree consanguineous parents born by cesarean section at full term, living in Abidjan. She was admitted to neonatal intensive care unit (NICU) for 6 days for meconium aspiration. Vaccination was done at birth.

One week before her travel to Lebanon, she developed an isolated non-productive cough. A chest radiography was done (image not available) in Abidjan and showed upper left lobe pneumonia treated by amoxicillin/clavulanic acid 75 mg/kg/day and betamethasone 0.5 mg/kg/day for 5 days. The housekeeper also presented with episodes of productive cough not investigated. There was no other relevant history. Given worsening of cough despite treatment and aggravation of signs of respiratory distress, she was transferred to Lebanon where she was hospitalized at Hotel Dieu De France Hospital.

On physical exam, the infant was tonic and reactive, and showed no cervical, axillar or inguinal lymph nodes, no wheezing, and no hepatosplenomegaly. There were no signs of respiratory distress. All lab tests were normal. Mantoux skin test (5TU PPD) was positive and showed local induration of 20 mm with erythema. A chest radiography revealed parahilar and left lower lobe lung condensation (Fig. 1). Pulmonary computed tomography showed large left hilar lymphadenopathy, with central necrosis and multiple mediastinal lymph nodes in the paratracheobronchial region < 12 mm in

Figure 1. Hilar and lower left lung condensation.
diameter. No pleural or pericardial effusion was shown (Fig.
2). Gastric fluid aspirates showed identification of *Mycobac-
terium tuberculosis* through Ziehl-Neelsen acid-fast stain and
culture on Lowenstein-Jensen. Two days after admission, she
developed fever and nasal aspirate was positive for respira-
tory syncytial virus. Lumbar puncture was negative for *M.
tuberculosis*. Bronchoscopy, ophthalmologic exam and ab-
dominal ultrasonography were advised but refused by the
mother due to financial issues. The patient was treated with
isoniazid 75 mg/day, rifampin 150 mg/day and pyrazinamide
200 mg/day for 6 months. Following discharge to Abidjan,
the mother was taught to follow monthly at the out-patient
clinic until completion of treatment. Investigation of family
and contacts for tuberculosis was advised for her close con-
tacts in Abidjan.

**Discussion**

In tuberculosis endemic areas such as South Africa, bacillus
Calmette-Guerin (BCG) vaccination is given within days of
birth. It protects against disseminated tuberculosis in young
children, and significantly reduces the risk of tuberculosis by
50%. However, BCG vaccination provides incomplete protec-
tion against tuberculosis in infants [2, 3]. Infants have a 50%
risk of disease following exposure through transmission from
an infectious adult family member compared to less than a 5%
risk of disease in older children. The course of tuberculosis in
infants differs from older children and adults, because progres-
sive primary disease is more frequently seen in young infants
while pleural effusions are uncommon [4]. Miliary spread and
meningitis are more common in infants than in older patients
[5]. Children under 3 years old have a high mortality rate due
in part to the diagnostic difficulty of tuberculosis, as well as
the increased rate of progressive disease and central nervous
system involvement [5, 6]. Clinical diagnosis of tuberculosis
in an infant is challenging because infants may present with
non-specific findings such as reduced playfulness, fatigue,
wheezing, non-remitting cough, failure-to-thrive or hepatos-
plenomegaly [7]. In infants who are more acutely ill, tubercu-
losis may be suspected on failure of first-line antibiotics [3].
Intradermal skin testing, the hallmark screening test for older
children and adults, is less reliable in infants due to immature
immune response. In our case, mild respiratory symptoms
were present and Mantoux skin testing was positive. Com-
municable diseases and public health implications are also an
important part of forensic pathology practice.

**Conflicts of Interest**

The authors have no conflicts of interest to disclose.

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