

BRIEF COMMUNICATION

Congenital Tuberculosis after *in-vitro* Fertilization in a Woman Previously Undiagnosed with Tuberculosis Salpingitis



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1. Introduction

Congenital tuberculosis (TB) is rarely seen with only several hundred cases reported in the literature.^{1,2} Because genitourinary TB causes infertility, rates of congenital TB have been low. However, the increased availability of assisted reproductive technology allows emergence of congenital TB if mothers are not properly evaluated and treated before implantation of the embryos.²

Diagnosis of congenital TB is difficult due to nonspecific symptoms, and a high index of suspicion is required for early diagnosis in infants. Here we present a 3-month-old infant with congenital tuberculosis after *in vitro* fertilization (IVF).

2. Case Report

A 3-month-old female infant was admitted to the hospital with cough and fever. The child was born vaginally at 36 weeks' gestation and discharged from the hospital with no health complications. In the 3rd week of life, she had poor weight gain and cough. The child was hospitalized at another institution because of fever and dyspnea and was diagnosed as pneumonia which subsequently failed to improve despite the use of various antibiotic regimens.

Physical examination on admission revealed malnutrition, pallor, and tachypnea with a respiratory rate of 56 breaths/minute and intercostal retractions. Chest radiograph showed bilateral extensive reticulonodular infiltrates (Figure 1A). Contrast-enhanced computed tomography of the chest revealed multiple pulmonary nodules in both lungs and consolidation in the left lung (Figure 1B). With a high index of radiologic suspicion of tuberculosis, gastric aspirate was obtained. It was negative for acid-fast bacillus staining; however, *Mycobacterium tuberculosis* was identified by polymerase chain reaction and culture grew *M. tuberculosis* complex. Her tuberculin skin test was 0 mm. She had a Bacillus Calmette–Guérin vaccination scar. Interferon- γ release assay was performed (Quantiferon TB Gold; Qiagen, Hilden, Germany) and gave a positive result.

Magnetic resonance imaging of the brain demonstrated supratentorial and infratentorial multiple contrast-enhancing parenchymal nodules consistent with tuberculomas (Figure 2). The cerebrospinal fluid (CSF) showed no acid-fast bacillus and CSF protein was mildly elevated at 58.9 mg/dL. *M. tuberculosis* was not identified in CSF by polymerase chain reaction or culture. Abdominal ultrasound revealed hepatomegaly.

As soon as TB was diagnosed, the family and all close contacts were screened for TB and no active TB cases were detected. When we searched the detailed history of the mother, we learned retrospectively that she had no significant medical history apart from her infertility and the baby was the result of IVF. We also learned that a diagnostic laparoscopy had been performed on the mother prior to the IVF procedure which had revealed intraabdominal adhesions with caseous necrosis. A biopsy had also been performed in the same procedure, which showed granulomatous salpingitis, but stains for acid-fast bacillus were negative. Culture for *M. tuberculosis* was not performed at that time. The

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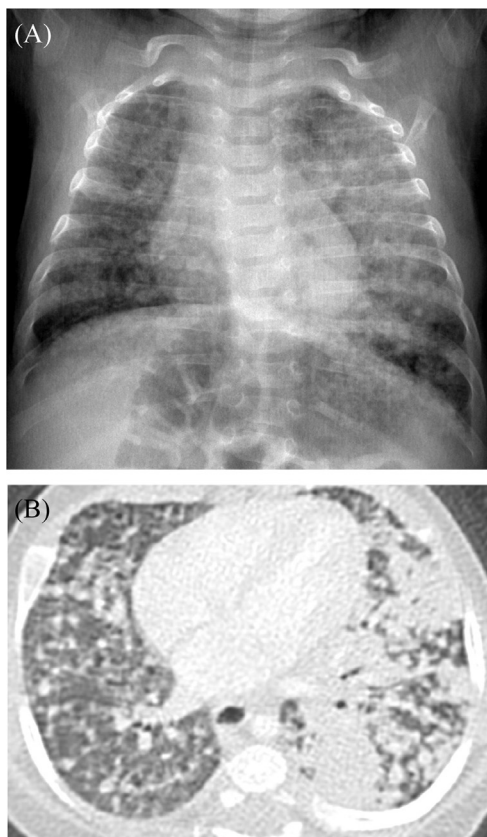


Figure 1 (A) Chest radiograph shows extensive reticulonodular infiltrates in both lungs. Nodules are coalescing to form areas of consolidation in the left lung and (B) contrast-enhanced axial computed tomography image at lung window setting revealed multiple pulmonary nodules in both lung and areas of consolidation in the left lung.

gynecologist did not take the possibility of TB into consideration, the mother was not diagnosed with genitourinary TB, and therefore she was not treated with antituberculosis drugs preconceptionally. Finally, the IVF procedure was performed, which resulted in conception and congenital TB in the baby. After learning about this history and the pathology result of the mother, we diagnosed her with genitourinary TB and referred her to the Adult Chest Diseases and Infectious Diseases departments. The mother's chest x-ray revealed old fibrotic changes in the right upper lung, but no evidence of active tuberculous disease. She

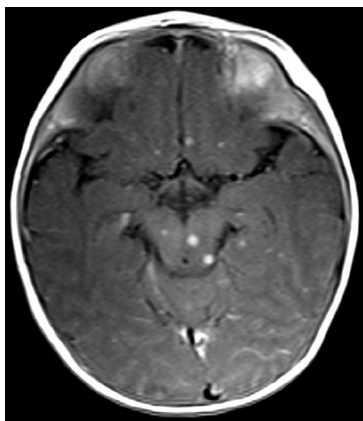


Figure 2 Contrast-enhanced axial T1 weighted image of the brain magnetic resonance imaging shows supratentorial and infratentorial multiple enhancing parenchymal nodules consistent with tuberculomas.

was prescribed anti-TB medication. The absence of other cases of active TB disease in the family suggested that this patient did not acquire TB postnatally but had congenital tuberculosis.

The baby was started on isoniazid, rifampicin, pyrazinamide, and ethambutol; and dexamethasone was given at 0.6 mg/kg/day for 4 weeks. After initiating anti-TB treatment, the child began to gain weight and progressively improved. She was treated with a 2-month course of isoniazid, rifampicin, pyrazinamide, and ethambutol followed by a 10-month course of isoniazid and rifampicin. Dexamethasone was then tapered off in the following 4 weeks as adrenal suppression was detected with laboratory findings. After the completion of the treatment, the baby is symptom-free, is gaining adequate weight, and has totally normal physical examination findings with radiological improvement.

3. Discussion

Congenital TB is defined as TB occurring in infants as a result of maternal TB when the illness involves the genital tract or the placenta. In 1935, Beitzke³ first suggested diagnostic criteria mainly for distinguishing congenital TB from postnatally acquired disease based on *postmortem* findings. Revised diagnostic criteria are proven TB lesions in the infant plus one of the following: (1) lesions occurring in the 1st week of life; (2) a primary hepatic complex; (3) maternal genital tract or placental TB; or (4) exclusion of postnatal transmission by thorough investigation of contacts.¹ Our case meets three criteria: the infant's tuberculous lesions (thoracic infiltrates, tuberculomas in the brain, and *M. tuberculosis* isolated in gastric aspirates); involvement of the genital maternal tract; and no evidence of transmission to the child from other close contacts.

TB can be difficult to recognize in infants as symptoms may be nonspecific and easily mistaken for more common neonatal illnesses, such as bacterial sepsis or congenital viral infections.⁴ The symptoms generally begin in the 2nd or 3rd week of life, and most commonly include fever, low weight gain, irritability, respiratory distress, poor feeding, and hepatosplenomegaly.^{2,5}

Genital TB is a major cause of infertility in women belonging to high-risk groups, causing up to 17% of cases of infertility. As IVF is a useful treatment for infertility caused by TB, it can be expected that in the future more women with undiagnosed and improperly treated genital TB will present for IVF because of infertility.⁶ Genital TB is common in Turkey and 47.2% of women with genital tuberculosis are infertile.⁷

Here, we emphasize that genital TB should be kept in mind in women with infertility in endemic countries, and screening for TB should be extensively done before the IVF procedure. Also, congenital TB should always be considered in ill neonates who present with nonspecific symptoms that do not respond to conventional antibiotic therapy.

Conflicts of interest

The authors have no conflicts of interest to declare.

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