Congenital Tuberculosis with Multisystem Involvement: A Case Report

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Abstract
Tuberculosis is one of the leading infectious diseases in the world and is still a serious public health problem in many countries. Congenital tuberculosis is a rare but fatal condition if left untreated. In this report, three-month old boy who admitted to our clinic with respiratory distress, fever and failure to thrive still after birth, diagnosed as congenital tuberculosis. He had massive hepatosplenomegaly, pulmonary involvement with cavitation and central nervous system involvement. Her mother had active tuberculosis during pregnancy. With anti-tuberculous therapy, clinical remission was excellent. In the infancy period, therapeutic approachments against congenital or postnatally acquired tuberculosis were similar. If tuberculosis was diagnosed in infancy period, systemic evaluation and family surveillance, especially mother, for tuberculosis must be performed.

Keywords: congenital tuberculosis, tuberculosis, children, meningitis

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INTRODUCTION

Tuberculosis (TB) is one of the leading infectious diseases in the world and is still a serious public health problem in many countries. WHO estimates that one-third of the population is infected with TB and the infection rate increases nearly 1% per year. Congenital TB is a relatively rare subtype, but in many countries there is a global increase parallel to human immunodeficiency virus pandemy.[1-4] There are no specific signs of symptoms pathognomonic for congenital TB and is difficult to diagnose in time to treat successfully without knowledge of family history.[1, 4-7] In spite of difficult diagnosis, clinical suspicion and family history support diagnosis of congenital TB and early diagnosis prevents death in infancy period[1]. In this report, 3-month-old boy who admitted to our clinic with respiratory distress, fever and failure to thrive still after birth, diagnosed as congenital TB. He had massive hepatosplenomegaly, pulmonary involvement with cavitations and central nervous system involvement.

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CASE REPORT

A three-month old boy, first child of non-consanguineous parents, presented with a history of fever, cough, vomiting still after birth. He had bronchopneumonia and hepatomegaly at first week of his life and nonspecific antibiotic therapies started. He had still bronchopneumonia and also hepatosplenomegaly at first month of his life but his parents did not accepted hospitalization. His immunization schedule was delayed during this infection period. He was formula fed baby still after birth. On physical examination; he was pale, ha had pallor, fever as 38.7°C, tachycardia, tachypnea, malnutrition, bronchopneumonia and congestive heart failure. He had hepatomegaly measuring 5cm and splenomegaly measuring 3cm at the costal margin. He had leukocytosis, elevated erythrocyte sedimentation rate and serum CRP levels, respiratory acidosis and impaired liver function tests.

In our Pediatric Infection Unit, pulmonary infection was treated with ceftriaxone and amikacine therapy. Fifth days of this therapy vancomycin and fluconasole added to therapy. In spite of this combination therapy, spleen was palpated as 10cm and liver was palpated 7cm at the costal margin and he had also fever and hemodynamic status deteriorated. Chest X-ray showed extensive broncho-pneumonic changes. Abdominal ultrasonography confirmed hepatosplenomegaly and revealed portal lymph nodes. Because of persistent symptoms such as respiratory distress, fever and hepatosplenomegaly despite of broad spectrum antibiotic therapy we thought that he might have the diagnosis as congenital TB. He had positive tuberculin test as 16mm duration at 48 hours. Early morning gastric aspirate yielded acid fast bacilli on smear microscopy at three consecutive days. Cerebrospinal fluid obtained and showed protein 117mg/dl, glucose 3mg/dl (serum glucose level was 88mg/dl), chloride 126mg/dl, 55 polymorphonuclear leukocytes and 44 lymphocytes/mm^3 and these were compatible with tuberculous meningitis. Bronchopneumonic changes, cavitation and hilar-mediastinal lymadenopathy was observed in thorax tomography. Tuberculosis culture was negative. Family surveillance for the tuberculosis per-

formed in all close contacts people. His mother had history of the cough and yellow-white sputum during pregnancy. His father and his uncle had a history of use of anti-tuberculous drugs but they had no active TB. Her mother was diagnosed as active pulmonary TB but endometrial biopsy could not be done due to lack of her permission, however she had menstrual disturbances. The mother was started on multi-drug tuberculosis therapy.

He was administered four-drug antituberculous treatment including INH (10mg/kg), rifampicin (RMP) (10mg/kg), pyrazinamide (PZA), streptomycin (30mg/kg/day). Steroid therapy was given at 2mg/kg for one month and tapered of over 2 months. On the fifth day of the therapy he had generalized seizures and computerized cranial tomography showed communicant hydrocephalus. During the first month of the therapy he had gained weight, the fever and respiratory distress completely cesseated. He was discharged with INH, RMP and PZA. He was administered PZA for two months and combination of INH and RMP for 9 months. After three month his weight was 7500g, his height was 64 cm. Liver was palpated 2cm and spleen was palpated as 1cm at the costal margin. After nine months of therapy, all medications are cesseated. He has no signs and symptoms; neurologic evaluation and chest X-ray examination is completely normal.

DISCUSSION

Congenital TB is rare or probably underestimated because usually the patients die before diagnosis or are not published in developing countries.[1,3,8] Approximately 300 cases of congenital TB have been reported in the medical literature.[1,3] Initial manifestations were delayed or misdiagnosed because of the similarity with the other respiratory disorders during neonatal or infancy period. It is difficult to diagnose in time, to treat successfully without knowledge of a maternal history of TB and clinical suspicion supplemented by careful family history. After the first clinical suspicion for congenital TB, family members -especially mothers- must be evaluated for pulmonary or extra pulmonary TB.[9] Hageman et al.[10] demonstrated mothers -16 of the 26 cases- with congenital TB who were not diagnosed as TB before the diagnosis was put in the neonate. The mother must be evaluated for pleural effusion, fever of unknown origin, cough or endometritis.[11] After diagnosis of our case, we evaluated the family and found that his mother had active pulmonary TB and a combination of INH, RMP and PZA therapy was given.

Symptoms of the congenital TB are varied and nonspecific. Symptoms may be evident at birth but are usually present at 2-3 weeks of age.[1-5] Hepatosplenomegaly and respiratory distress are most frequent signs of congenital TB[1]. Fever, lymphadenopathy, abdominal distention, lethargy or irritability, ear discharge, popular skin lesions are other signs. Loss of appetite, failure to gain weight, nasal discharge, vomiting, apnea, cyanosis, and seizures may be seen still after birth and none of them are pathognomonic.[1-5, 8-9, 12] Persistent respiratory distress with conventional therapy must be evaluated for congenital TB in newborn intensive care unit. Postmortem examination is important for the diagnosis and family counseling. The predominant clinical findings were progressive pneumonia, pyrexia, growth retardation, hepatomegaly, splenomegaly and menengitis[11]. Recent report emphasizes the importance of considering congenital TB is a newborn or infant with pneumonia who fails to respond to conventional treatment as in our case.[3] Also congenital TB should be in the differential of the infant presenting acutely with sepsis syndrome.[13] Berk and Sylvester[14] reported one case with congenital TB presenting as progressive liver dysfunction in the absence of respiratory symptoms.

M. tuberculosis infection in utero can be indistinguishable from perinatal or early postpartum infection. Cantwell et al.[9] described set of criteria for congenital TB requires the infant to have a tuberculous lesion (e.g., infiltrates on the chest radiograph or granulomas) and at least one of the following: 1) onset during the first week of life, 2) a primary hepatic TB complex or caseating hepatic granulomas, 3) infection of the placenta or maternal genital tract, or 4) exclusion of postnatal transmission by a contact investigation. Transmission of the Koch bacilli is achieved through hematogenous route or more frequently through inhalation or ingestion of infected amniotic fluid by transplacental spread via the umbilical vein from a mother with primary hematogenous tuberculosis occurring during pregnancy and this form is described as true congenital tuberculosis.[11] The primary complex was seen in the liver and enlarged portal lymph nodes may be present.[1,14] Primary lung complexes may be seen in hematogenous route or amniotic fluid aspiration during delivery.[9] Recent literature also demonstrate that true congenital TB defined as the neonate is the acquisition of tuberculosis infection shortly after birth which tends to progress rapidly to serious disease in large proportions of untreated infants.[1-3] Singh et al.[3] reported clinical and laboratory findings for investigate for TB as 1) if newborn with unresponsive worsening pneumonia, particularly in those from endemic areas, 2) if the mother was diagnosed to have TB and baby has non-specific symptoms, 3) when the CSF revealed a high lymphocyte count in the absence of any identifiable bacterial pathogen and 4) in presence of fever and hepatosplenomegaly. Our case had massive hepatosplenomegaly and lymph nodes

in abdomen in ultrasonographic examination. Pulmonary infiltration, cavitation and hilar, mediastinal multiple lymphadenopathy in thorax tomography and communicating hydrocephalus in cranial computerized tomography were observed. He had respiratory symptoms that failed to conventional treatment and failure to thrive after birth. Early onset and multisystem involvement supported true congenital TB. An important clue in the diagnosis of infection leads to the discovery of tuberculosis in the mother. The mother was not examined for uterine tuberculosis but anti-TB treatment was started for active pulmonary TB. Transmission via breast milk was unlikely because the mother lacked findings of mastitis and our case was formula fed baby still after birth.

Laboratory examinations are tuberculin skin test, early morning gastric aspirate for acid fast bacilli and mycobacterium culture in all body fluid and biopsy specimen such as lymph node, liver.[1,5,9] The tuberculin skin test is universally negative in neonates at initial presentation, but usually converts to a positive result month later.[1] Despite of tuberculin, skin test is very rarely positive in infancy; our case had positive reaction as 16mm. All symptoms and signs were improved with antituberculous therapy in our case. With early diagnosis, clinical response is excellent but sometimes clinical response may be very slow and extensive calcifications may result.[11] Respiratory infections that are unresponsive to conventional antimicrobial agents also support congenital TB.[3,12] With empirical antibiotic therapy symptoms and signs were not improved in our case.

In conclusion, we demonstrated congenital TB with clinical suspicion. We support this diagnosis with laboratory examination such as tuberculin test and early morning gastric aspirate examination for acid fast bacilli and multisystem involvement. With anti-tuberculous therapy, clinical remission was excellent. If untreated, congenital TB is fatal, which underscores the importance of suspecting congenital TB in infants who are at risk and who have unexplained illness. In the infancy period, therapeutic approachments against congenital or postnatally acquired tuberculosis were similar. If tuberculosis was diagnosed in infancy period, family surveillance for tuberculosis must be performed.

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