

Interesting Case Of Congenital Tuberculosis

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Abstract:

Background: *Mycobacterium tuberculosis (TB) is a global public health problem and is the causative organism of TB. There were 234,000 deaths of children due to tuberculosis. Since most of the pregnant women who have active TB are symptomless, diagnosis of TB is usually delayed^{2,3}. It is difficult to differentiate between true congenital TB and postnatally acquired TB. High suspicion is needed for early diagnosis and treatment.*

Case: *A 30-day-old girl had abdominal distension 1 week before admission and refusal to feed appeared on the 30th day. Clinically, sepsis, TORCH infection was suspected. USG abdomen showed multiple hypoechoic lesions in liver. Ct chest and abdomen showed multiple discrete non-calcified nodules in bilateral lung fields and liver. Gastric aspirate for AFB was negative. Mother was screened for TB; the TST was positive and TB QuantiFERON gold came positive. Hence, Tru-cut Liver biopsy was done for neonate and Biopsy for Gene-xpert showed low level Mycobacterium TB detected. Cerebrospinal fluid analysis for acid-fast bacilli was negative. 4 drug ATT regimen was started. Two weeks after anti-TB medication, the distension completely disappeared.*

Conclusion: *Early diagnosis and treatment is the key for the survival of neonatal TB.*

Keyword: *Tuberculosis (TB), abdominal distension, neonate, congenital TB*

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I. Introduction

Mycobacterium tuberculosis (TB) is a global public health problem and is the causative organism of TB. In its 2018 report, World Health Organization (WHO), estimated that out of 10 million cases of TB in 2017, about 1 million occurred among children less than 15 years. There were 234,000 deaths of children due to tuberculosis since most of the pregnant women who have active TB are symptomless, diagnosis of TB is usually delayed

There are two types of neonatal tuberculosis namely congenital TB (or perinatal TB) and postnatally acquired TB. It is difficult to differentiate between true congenital TB and postnatally acquired TB. However, clinical presentation and management remain the same between two groups.

Congenital TB present with nonspecific signs and symptoms, such as fever, lethargy, hepatosplenomegaly and respiratory distress at 2–3 weeks of age. Nonspecific clinical picture makes it difficult to distinguish TB from bacterial sepsis or intrauterine viral infection. Thus, high suspicion is needed for early diagnosis and treatment. Miliary patterns are common radiographic finding in many neonates with congenital TB.

Here, we present a neonate with miliary TB who had abdominal distension and refusal to feed in the first month of life.

II. Case Report

A 30-day-old girl was admitted to Indraprastha Apollo Hospital with 1-week history of progressive abdominal distension and refusal to feed for 1 day. She was born to a 24 year old mother at 37 weeks 4 days of gestation and weighing 2,379 gm by vaginal delivery. One week prior to admission, baby developed progressive abdominal distension with no respiratory distress. On physical examination, she was afebrile, with heart rate 140 beats/min and respiratory rate of 52 breaths/min. Abdomen was distended and tense with fluid thrill present. Liver and spleen could not be palpated. Baby was admitted and started on broad spectrum antibiotics. The complete blood count showed white blood cells, 28150/mm³ with neutrophil count of 52.8 %;

and platelet count 3.29 lakh/cumm . C-reactive protein (CRP) level was very high (181.4 mg/L). Liver function tests showed normal levels of aspartate aminotransferase (37 IU/L) and alanine aminotransferase (9 IU/L). Workup showed negative TORCH profile and normal urinary Vanillylmandelic acid; ruling out Neuroblastoma. To ascertain the diagnosis, Ascitic fluid was drained which showed SAAG gradient of 0.5, suggesting exudative fluid, Ascitic fluid cell count was 200 with 85% lymphocytes.

USG Abdomen showed multiple hypoechoic lesions in liver. Gastroenterology opinion was availed and focal nodular hyperplasia was considered- AFP and LDH was normal, ascitic fluid for malignant cytology was negative. Blood and urine cultures were negative for bacteria and fungi.

Her chest and abdomen computed tomography demonstrated multiple discrete non-calcified nodules in bilateral lung fields and liver. Strong clinical suspicion of Tuberculosis (TB) was considered. However, Gastric aspirate for AFB was negative. Meanwhile, mother was screened for TB, she was asymptomatic antenatally and did not receive BCG vaccination at birth. Mother's TST was positive with an induration of 15 mm and TB QuantiFERON gold came positive. Hence, Trucut Liver biopsy was done for neonate and histopathology showed caseating, granulomatous, non-necrotic lymphocytic picture. Biopsy for Gene-xpert showed low level Mycobacterium TB detected. Cerebrospinal fluid analysis for acid-fast bacilli was negative. We stopped intravenous antibiotic therapy and started a combination therapy of isoniazid, rifampicin, pyrazinamide, and ethambutol for both mother and baby. Mother was advised to start ATT regimen after physician reference and bronchoscopy. The abdominal distension gradually improved after TB treatment. Two weeks after anti-TB medication, the distension completely disappeared. After 8 months, the patient and her mother were well with no symptoms or signs suggesting TB.

III. Discussion

Tuberculosis (TB) is a global health problem, India and China together account for 40 per cent of the world's TB.

Neonatal TB can be transmitted either congenitally by acquisition in utero or neonatally by postnatal direct contact.

Definition:

The diagnostic criteria for congenital tuberculosis were put forth by Beitzke and was subsequently revised by Cantwell in the year 1994.

Diagnostic Criteria:

Proven tuberculous lesions plus one of the following:

1. The tuberculous lesion in a newborn baby in the first week of life
2. Primary liver complex or caseating hepatic granulomas
3. Maternal genital tract or placental TB
4. Exclusion of postnatal transmission by a thorough investigation of contacts

Postnatal TB is contracted after birth either by TB bacilli inhalation or by infected breast milk ingestion and the infant subsequently present with signs and symptoms of tuberculosis.

Clinical presentation:

It is difficult to suspect TB in pregnant women due to nonspecific nature of symptoms and reluctance for radiography during pregnancy. Thus, many mothers are only diagnosed as having TB following diagnosis in their babies as in our case.

Neonatal TB commonly manifest at a median age of 24 days, ranging from 1 to 84 days.

Abdominal distension and respiratory distress are the most common presentation of congenital tuberculosis followed by fever, poor feeding, failure to thrive, irritability, lethargy, cough and low birth weight.

Neonatal TB may present in the form of septicemia, jaundice, persistent or recurrent pneumonia, meningitis, lymphadenopathy, ascites, otitis media, disseminated intravascular coagulation, osteomyelitis, paravertebral abscess and cold abscess.

In our case, the initial manifestation was similar to sepsis. Hence, the clinician should keep a high index of suspicion if a sick newborn does not improve with antibiotics and has negative microbiological and serological results for infections.

Diagnosis:

Almost 50% neonates have miliary disease pattern in chest X-ray.

Confirmation of tuberculosis is done by testing body fluids for positive acid-fast bacilli smear and cultures such as gastric aspirates, tracheal aspirates, and tissue biopsy. Cerebrospinal fluid analysis for

acid-fast bacilli is important because tubercular meningitis occurs in 1/3rd cases of congenital TB.

There is no added benefit of mantoux test in neonates due to low reactogenicity and poor helper T cell responses. In one of the studies, only two of the 14 infants with congenital TB had positive tuberculin tests.

Liver biopsy, though invasive should be considered if ultrasound shows abnormal findings or if there is a diagnostic dilemma to look for caseating granulomas. Liver biopsy is proven to be 100% sensitive in the diagnosis of congenital tuberculosis.

In our case, gastric aspirate for AFB was negative but liver biopsy was done after strong clinical suspicion and CT findings of caseating granulomas in lungs and liver.

Newer methods such as LED fluorescence microscopy and mycobacterium growth indicator tube (MGIT) are used for rapid diagnosis in developed countries.

Gene Xpert is a rapid diagnostic tool used in TB prevalent countries including multidrug-resistant TB.

Management:

There is no specific RNTCP treatment guidelines exist for perinatal tuberculosis at present. The AAP recommendation for the management of neonatal tuberculosis includes four-drug regimen in the intensive phase (first 2 months)—isoniazid (INH), rifampin (RIF), pyrazinamide (PZA) and either ethambutol (EMB) or an aminoglycoside (Amikacin). Amikacin is more commonly used than Ethambutol because neonates are at higher risk of developing meningitis or disseminated disease, and Amikacin has bactericidal activity and better CNS penetration ability.

After the intensive phase completion, the recommended duration of continuation phase is 7–10 months of 2 drug regimen (Isoniazid and Rifampin). The overall duration of treatment for neonatal tuberculosis is usually 9–12 months.

Prednisone (2 mg/kg/day) must be administered for 4–6 weeks if TB meningitis is suspected. The drug is gradually tapered and stopped.

Our case was neonatal TB with no suspicion of TB meningitis. Hence anti-TB treatment was continued for 12 months. He responded well to the treatment. Abdominal distension gradually subsided in initial 2 weeks.

The mortality of congenital tuberculosis even with effective treatment is 25–50%, hence, the prognosis is guarded. Complications of delayed treatment of congenital miliary TB include meningitis, deafness, otitis media, seizures, and death. If congenital TB is left untreated or its treatment is delayed, it may result in fatal outcome.

However, we have reported a favorable case of congenital miliary TB whose mother had pulmonary TB and who recovered well after anti-TB treatment.

IV. Conclusion

It is difficult to differentiate between congenital TB and postnatally acquired TB. Both have similar line of management. Early diagnosis and treatment is the key for the survival of neonatal TB.

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