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Case Report on Congenital Tuberculosis

Dr. Vivek Gupta

Abstract: ***Congenital Tuberculosis is difficult to detect because the disease presents with few or no symptoms in the fetus during pregnancy and Non-specific symptoms in neonates. We report a case of 27 days old neonate having Congenital TB, born at term gestation, birth weight – 2.360 kgs and an APGAR score of 9 & 10 at 1 & 5 minutes respectively, who presented to us in almost moribund condition with high grade fever, respiratory distress, and hepatomegaly. X-Ray was suggestive of multiple opacities with pneumonia. It was a full term/ IUCR delivered by Normal Vaginal Delivery (NVD)& birth weight was 2.320 kg. Initially multiple antibiotic therapies were given but no response was obtained. X Ray picture was suggestive of nodular & patchy opacities. Tuberculosis was suspected and Gene-X-pert for TB was sent. It was positive (+) and showed rifampicin sensitivity. ATT (2HRZE) was started, baby gradually started improving &ventilator settings came down. Neonate's mother denied any TB contact history but told us that she had mildabdominal pain for last 2 months. In post-partum period too, mother had abdominal pain which was not recovered with routine treatment. USG was done and it showed mild free fluid with multiple internal septation and echos in pelvis & ascitic fluid ADA was positive.***

Keywords: Congenital Tuberculosis, neonate, symptoms, X-Ray, pneumonia, antibiotic therapies, Gene-X-pert, rifampicin sensitivity, ATT, mother, abdominal pain, ascitic fluid

1. Introduction

Tuberculosis (TB), a serious public health problem in many countries has the highest rates of incidence & mortality among all communicable diseases worldwide for many years. WHO estimated that in 2017, more than 1.6 million deaths were attributable to TB and 10 million people developed the disease. More than 90% of people who developed TB were aged more than 15 years and prevalence of TB increased with age. Common symptoms of Active TB in adults include cough, chest pain weakness, weight loss, fever & night sweats. However Congenital TB has rarely been reported with only 358 cases reported in the literature up to 1995 & another 115 cases reported between 1996 to 2019. The mortality rate is high in infants. Early diagnosis is critical but challenging because of non specific symptoms. Here in, we report the case of a neonate who developed Congenital TB and his mother who had unusual presentation of the disease.

2. Case

A 27 day old neonate was born to an Indian mother through Normal Vaginal Delivery (NVD) at term gestation, weighed 2.320 kg (Birth weight – 2.360 kg) and had APGAR score of 9 & 10 at 1 & 5 minute respectively. He was admitted to our hospital with c/o cough 3 days, high grade fever (101-102˚ F), respiratory distress with subcostal and intercostal retractions. The infant's family denied any medical history or TB contact. His physical examination on admission documented respiratory distress, Tachypnoea, SCR & ICRs, high grade fever (102˚ F), hepatomegaly but no splenomegaly. On admission CBC revealed total WBC count of 28790/mm³ with polys80lymphocytes 17 E 0 B 1. CRP 75, and Serum procalcitonin was 17.5. The findings of CSF analysis were normal. Bacterial culture of blood, urine& CSF were normal. IV Antibiotics, Piprecillin- Tazobactum, Netilmycin were administrated after admission on basis of suspicion of neonatal sepsis. Baby was initially on CPAP with PEEP 6 & FiO_2 40% but distress was not recovered and baby was shifted to ventilator after 6 hours. X-Ray was very bad and ventilator settings were increased to MAP of 12 and$Fi\ O_2$ 80%. Somode of ventilator was changed to HFOV (High Frequency Oscillatory Ventilation). Because there was no improvement in the condition of patient for not even two days after starting antibiotics, Other possibilities like infection caused by some virus and other atypical pathogen, including mycobacterium tuberculosis, was considered. Tests for herpes simplex, Epstein Barr virus, Cytomegolovirus, Hepatitis B virus, Rubella were sent.

Repeat CRP level was 148 after 2 days. Antibiotics were switched to Meropenem and Netilmycin. There was no response clinically and we couldn't decrease the ventilator settings. Vasopressor – Dobutamine was also started as peripheral circulation is poor. Gastric lavage for tubercle bacilli was sent & it was positive for tubercle bacilli. Repeat X-ray was done. Chest CT was done which showed multiple nodular opacities in both lungs with patch of pneumonia in right upper lobe.

Baby was administered Isoniazid (15 mg/kg/day), rifampicin (15mg/kg/day) and pyrazinamide (20ms/kg/day) along with ethambutol (20 mg/ kg/day).

After initiating Anti-TB treatment, the neonate's symptoms & signs subsided gradually. Ventilatory settings were reduced & baby was extubated to CPAP & then HHFNC & then Room air.

The Neonate's Mother

The neonate's mother is PRIMI 33yr old. She had been healthy with no previous medical history however she had mild dull aching abdominal pain in later months of pregnancy. Pain continued after her delivery. She had dry cough too. Two weeks after delivery, she experienced persistent generalized weakness and mild fever too . She was admitted again after 35 days of delivery. Laboratory examination indicated leucocytosis and thrombocytopenia. Her chest X-ray had few

nodular patches in both lungs. Because her neonate was highly susceptible to have TB infection at that time, acid fast staining and TB PCR of sputum were performed & both tests were positive. The mother is administered Anti TB therapy immediately and still on Anti TB therapy and she is improving.

3. Discussion

Congenital TB is rare and can be easily misdiagnosed. Our patient was a neonate with Congenital TB with rare presentations. This neonate developed fever with respiratory distress. Chest radiography showed nodular military shadows. His family denied that neonate's mother had TB contact history. TB infection was confirmed through CB-NAAT/ Gene-X-pert of tubercle bacilli.

In this study, we reviewed 20 cases of Congenital TB, around 80% cases were from asian origin. The male to female ratio was 9:11. The most common chest imaging findings were pneumonia, multiple pulmonary modules and military pattern. Only 3 cases presented with liver & spleen lesions and only two cases presented with plural effusion. The more common clinical presentations were respiratory distress (75%), fever (67%), hepatosplenomegaly (58%), and cough (33%). Other non-specific manifestations included poor feeding, lethargy, lymphadenopathy & seizure. These symptoms & signs are non-specific and easily confused with those observed in other neonatal conditions of sepsis. A review reported that mortality rate was 52.6% (1946-1996) and 33.9% (1994-2008). The mortality rate of infants with TB was 2.2 fold (20 vs 9) higher if mother had no symptoms.

Our patient was diagnosed with Congenital TB. He had clinical presentation of fever, cough with respiratory distress and his imaging findings included multiple nodular opacities and a patch of consolidation in right lung. M. Tuberculosis was isolated from gastric lavage.

Congenital Tuberculosis can be transmitted during the intrauterine period or during birth. The transmission of Congenital TB can be transplacental, where the primary complex is in the liver or through the aspiration of infected amniotic fluid or infected material where the primary complex is in the lung or gut. The most common infected organs are chest & abdominal organs, resulting in cough, fever, respiratory distress, hepatomegaly, jaundice, splenomegaly and abdominal distension. Other infected organs may be brain, lymph node, ear and skin.

The following diagnostic criteria for differentiating congenital TB from postnatally acquired TBwere initially established by Beitzke in 1935: isolation of M. tuberculosis from the infant; demonstration of the primary complex in the liver; and in the absence of the primary complex in the liver, (a) evidence of TB within days after birth and (b) absence of contact with TB cases after birth. Beitzke's criteria were later revised by Cantwell in 1994, and the revised criteria are as follows. Proven TB lesions are present in the infant and at least one of the following criteria is met: (1) lesions that occur in the first three weeks of life

(2) Caseating granulomas or primary complex in the liver, (3) TB infection of the placenta or maternal genital tract, and (4)a thorough investigation of contacts to exclude postnatal transmission.

Inhalation of M. tuberculosis by women results in four possible outcomes, namely the immediate clearing of the organism, latent infection, onset of an active disease, or onset of an active disease years later. In published reports, postpartum women have been found to be twice as likely to contract active pulmonary disease or become symptomatic as non-pregnant women. Only a few women have been diagnosed with TB during the third trimester of pregnancy.

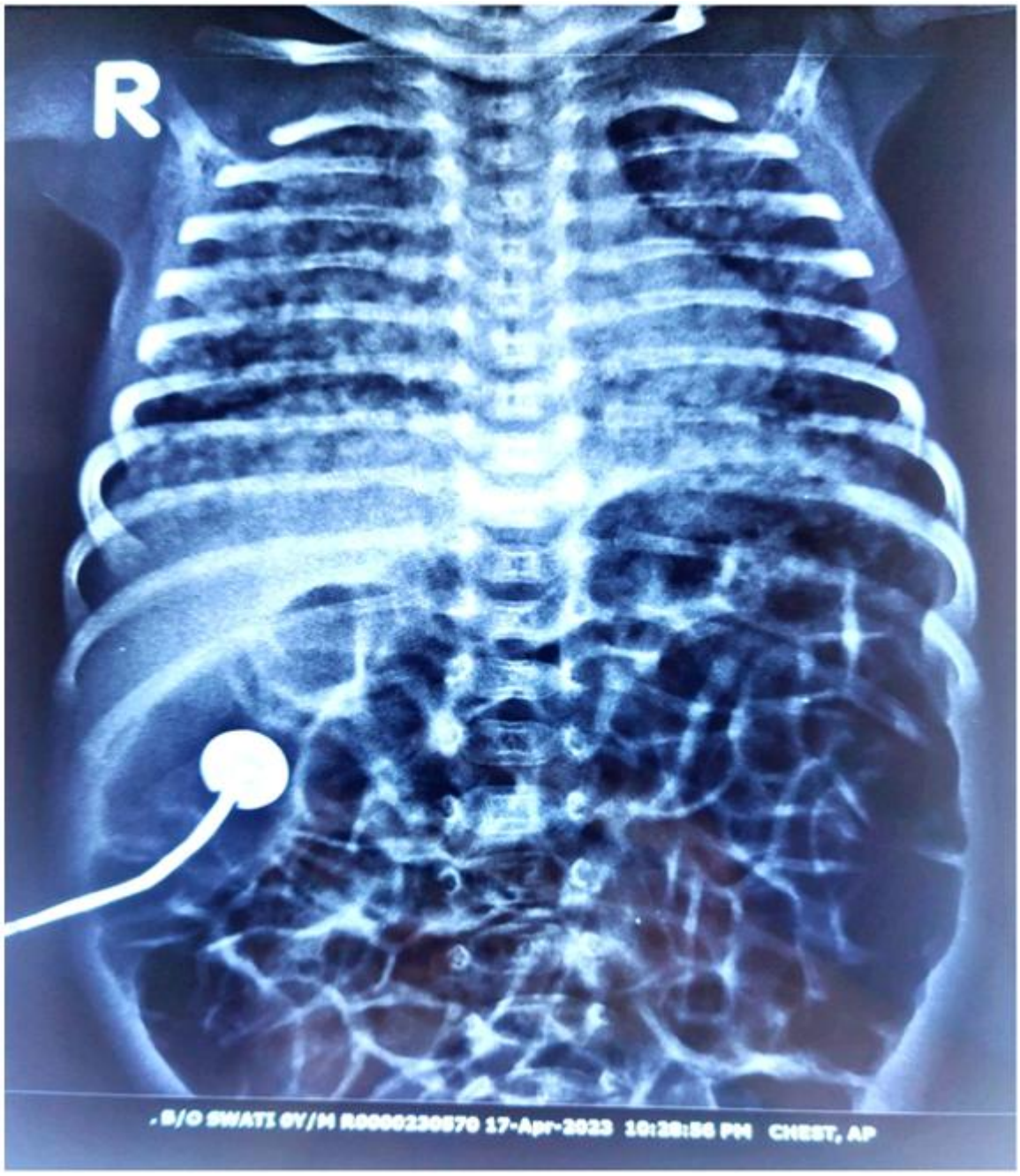
Additionally, some mothers whose infants had active TB remained asymptomatic postnatally. Congenital TB is rare but fatal without early diagnosis and treatment. In our case report, the neonate was saved because of early diagnosis and his mother is also improving after taking Anti TB therapy.

In India, the standard treatment of severe extrapulmonary TB in children, including congenital and miliary TB, consists of isoniazid, rifampin, pyrazinamide, and ethambutol in the first 2 months, followed by isoniazid and rifampin for 7-10 months.

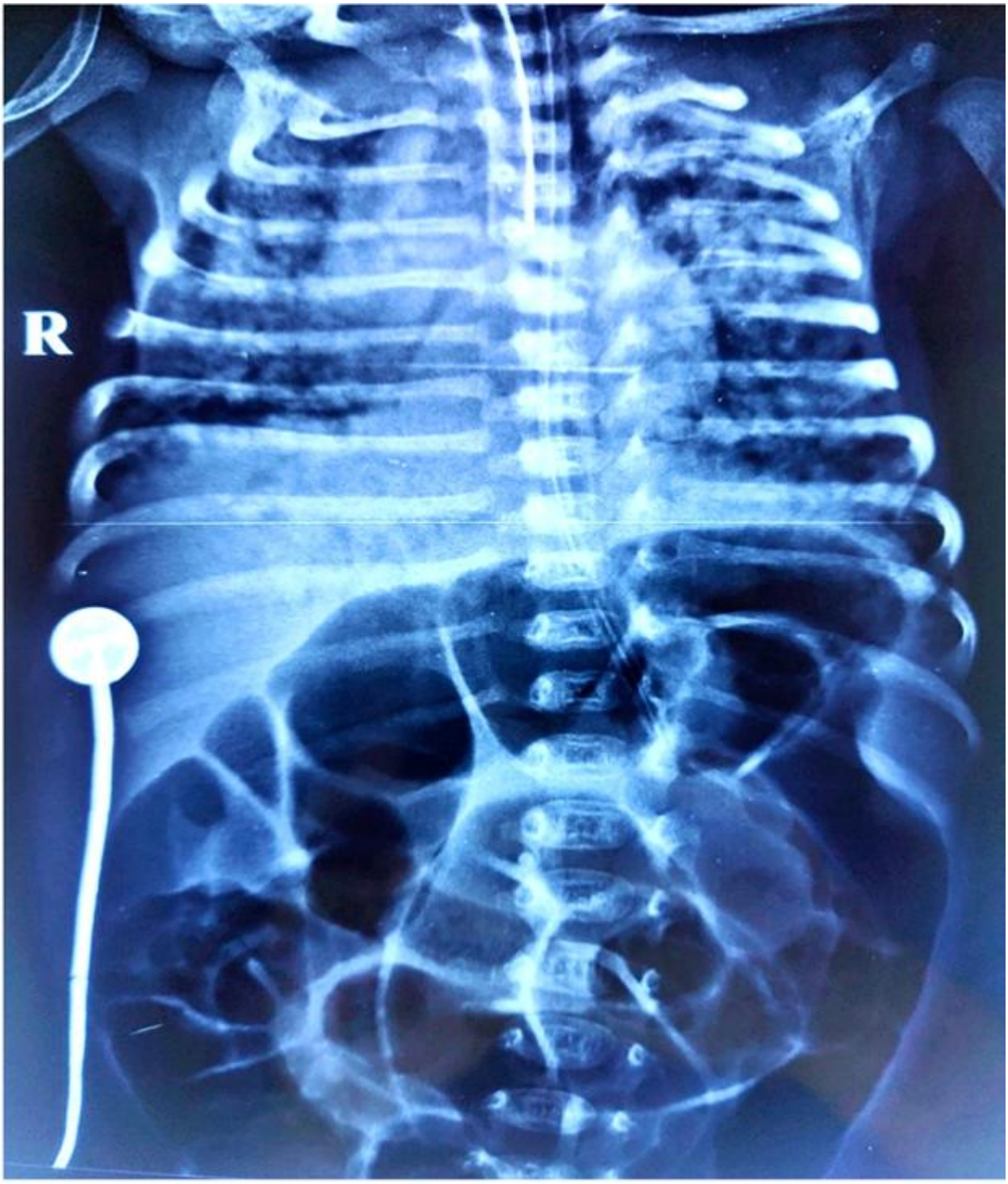
Congenital TB is treatable if diagnosed and treated early. In areas where it is endemic, it should be taken into consideration, even if aneonate's only symptom is fever. Accurately documenting a maternal history of TB and any clinical symptoms of the disease are critical for early diagnosis. Therefore, particularly in TB-endemic areas, when neonates present with nonspecific symptoms that fail to respond to standard antimicrobial therapy and when postpartum women deny TB contact history but show symptoms of cough with poor activity, the family medical history should be thoroughly examined.

The dilemma in our case was whether this was a case of Congenital or Acquired TB as the neonate presented to us at 27^{th}day of life. In our case, mother was started on ATT 15 days post delivery following symptoms soon after delivery and is suggested latent TB in her during pregnancy. The presence of hepatomegaly, respiratory distress and fever in neonate suggested the mode of spread to be likely hematogenous via umbilical vein as it led to more fulminant course and hepatosplenomegaly. In our case, the symptoms appeared in third week of life whereas Congenital TB usually occurs during initial weeks but some studies suggest that it may even occur within one month of life.

To conclude, we have reported a rare case of Congenital TB in a neonate, presenting with respiratory distress and hepatosplenomegaly in late neonatal period. The early diagnosis & management is crucial in Congenital TB as it has high mortality of above 50%.



Xray at the time of admission



Xray after intubation and ventilation

Conflict of Interest
The authors have nothing to declare.

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