Mother to Child Transmission of Tuberculosis, a Problem in Resource Limited Settings under Reported or Undiagnosed - A Case Report

Felicity Zvanyadza Gumbo and Charlene Kembo
University of Zimbabwe, Zimbabwe

*Corresponding author: Felicity Zvanyadza Gumbo, University of Zimbabwe, Tel: 263 712 424 003, Fax: +263 4 700877; E-mail: zvanyadz@mweb.co.zw

Rec date: Feb 14, 2016; Acc date: March 21, 2016; Pub date: April 12, 2016

Copyright: © 2016 Lopes JM et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Introduction

Despite the global increase in Tuberculosis there is limited information on perinatal Tuberculosis. In high HIV prevalent settings mother to child Tuberculosis transmission has been reported [1-9]. In Zimbabwe we report a case of a newborn diagnosed with Congenital Tuberculosis whose mother was not infected with HIV.

V.M was a previously well 16 day old female child who presented to the emergency department at Harare Central Children’s Hospital with a one day’s history of fever and hot body of concurrent onset. Delivered institutionally through the normal vaginal route (cephalic presentation) and near term, she had no apparent risk factors for neonatal sepsis. Her birth weight was 2800 g and APGAR scores were 8/10 to 9/10 at 1 and 5 minutes respectively. The rest of the systems review was otherwise non-contributory and she had received the BCG vaccine at birth. She was being exclusively breastfed on demand and tolerating feeds.

There was no significant family history of neither cardiac nor chronic disease. She was the third child to her mother aged 38. Her mother worked as a nurse midwife at Harare Maternity Hospital throughout her pregnancy before transferring to a local primary polyclinic a month before delivery. The other 2 children were school going age and were well at the time of admission.

The family rented 4 rooms in a 7-roomed house which they shared with Landlord's son, at the time of admission they were unaware that the immediate neighbour was HIV infected and had been diagnosed of Tuberculosis. Both parents were well with no history of cigarette smoking however they used a hydrocarbon (paraffin) stove occasionally indoors.

On physical examination she was an ill neonate who was in respiratory distress. She had subcostal recessions and alare flaring. Her respiratory rate was 68 breaths per minute with a heart rate of 140 beats per minute. She was febrile, temperature -38.2 degrees Celsius. She had regained birth weight but with inadequate gain of 200 g above birth weight. Her hydration status was good. She had fine mvilla on forehead with no other skin rashes. She was not dysmorphic, without jaundice or cyanosis. Her lymph nodes were not enlarged. The chest was clear with normal heart sounds, abdominal examination revealed hepatosplenomegaly and a small reducible umbilical hernia. Her neurological examination was normal.

Her Full blood count on the day of admission had the following parameters: White Blood Cell count- 14 cells/microliter/cubic mm; Haemoglobin- 14.3 g/dL; Mean Cell Volume - 107.2 fl. and platelets – 361 000/ml. Unfortunately the differential count was not evaluated. On the same day her electrolytes were evaluated and noted to all within the normal range. Her cerebrospinal fluid analysis was normal with no bacterial growth. Her blood culture also grew no organisms. A screen for HIV and Syphilis on mother was negative. Her chest x ray findings a day after admission had hyper inflated lungs with poor penetration.

She was managed as neonatal sepsis with pneumonia initially and put in Oxygen. She was started on Benzyl Penicillin intravenous at a dose of 50 mg/kg per day and Gentamycin 5 mg/kg per day intravenously. Breast feeding was continued. On the third day of admission she remained febrile and in respiratory distress. Her Oxygen saturation by pulse oximeter was ranging from 80 to 85% out of Oxygen and above 90% in Oxygen. Bilateral wheezes where evident on chest auscultation with neither hepatomegaly nor significant tachycardia. She had started vomiting feeds and a nasogastric tube was inserted for feeding. Nebulizations with normal saline were also initiated.

She remained ill, pyrexial, temperatures ranging 38, 0- 38, 5 degrees Celsius and still in respiratory distress for the first 2 weeks after admission. Her Oxygen requirements remained significant despite antibiotic switch to Ceftriaxone 50 mg/kg per day intravenously. Wheezes subsided and gastric washings were collected for MTB gene Expert analysis as well as Acid Fast Bacilli staining. A repeat chest x ray was then ordered.

In the third week, her chest X ray showed bilateral miliary shadowing, Gastric washings revealed AAFB’s presence as well Gene Expert positivity for MTB. She was commenced on anti TB medication: Rifampicin (10 mg/kg), Isoniazid (10 mg/kg), Ethambutol (25 mg/kg) and Pyrazinamide (30 mg/kg) according to national guidelines. Three days after starting anti Tuberculous therapy she deteriorated. She collapsed and was intubated and admitted into Pediatrics ICU. She was ventilated and stayed in ICU for 5 days and improved. Her hemoglobin had dropped during the stay in hospital and she was transfused after spending a month in hospital. She was discharged at the age of 7 weeks, well with a weight of 2800 g.

With regards to her mother, during the period of the child’s hospitalization she was completely asymptomatic. She had no sputum, her chest X-ray was normal with an unreactive Purified Protein Derivative (Mantoux). She became unwell after the child was discharged. She was seen by local team of Internal Medicine who ordered an Ultrasound scan of the abdomen. This confirmed ascites and enlarged abdominal lymph nodes. She was then started on anti tuberculous medication and improved.

When mother was collecting her medication at local primary site she then met her immediate neighbor (Landlord’s son) who was now completing his TB treatment! Arrangements were made for older siblings and household contacts to come in for screening for TB.
Discussion

The diagnosis of congenital Tuberculosis is often difficult to make because the signs and symptoms are nonspecific. The maternal history of TB therefore remains an important tool in the diagnosis of congenital TB. In this case report the diagnosis was delayed because the mother was asymptomatic and there was a delay in eliciting a family history of TB [6].

A diagnosis of congenital TB most certainly equals maternal TB, no matter if she is asymptomatic. Transmission can be hematological through the placenta, via the umbilical vein, with primary lesions occurring in the liver.

Transmission can also occur as a result of aspiration and or ingestion of infected amniotic or cervicovaginal secretions in utero or during delivery (intrapartum) with resultant pulmonary and or gastrointestinal disease. Transmission more likely if: Mother has miliary, untreated, diagnosed late in pregnancy or post-delivery and has sputum positive TB [9].

Symptoms and signs in the newborn period are usually nonspecific. Patient may present with, low birth weight, lethargy, poor feeding, failure to thrive, fever and unresolving pneumonia [3]. Our patient had fever and an unresolving pneumonia. On physical examination these findings have been reported: Respiratory distress, hepatosplenomegaly, lymphadenopathy, jaundice, ear discharge, seizures, skin lesions, para vertebral abscess and hematological anomalies [6,7].

Nearly all infants have an abnormal CXR, close to half showing a miliary picture. Mantoux is positive in less than 15% of infants, gastric or tracheal aspirates are positive in 80% of cases. The new interferon gamma release assay (IGRA) tests are recommended in BCG-vaccinated pregnant women with positive Tuberculin Skin Test (TST) and no known risk factors for TB, and in those immune compromised, with clinical suspicion of TB but negative TST [4]. Liver and lung biopsies have a sensitivity of close to 100%, but are usually not practical or feasible in making a diagnosis. Mortality is high about 10-50%. Infants who present above the age of 4 weeks have a higher survival rate-77%, compared to those who present before 4 weeks of age-44% survival [1,4,8].

In 1935, a lady named Beitzik did extensive work on congenital TB and came up with criteria for diagnosis; however, these were later revised by Cantwell et al in 1994. Infant should have confirmed TB and any one of the following: Lesions in the first week of life, A primary hepatic complex or and exclusion of untreated TB infection in other household contacts. In our view this case fulfilled some of the above [5].

V.M initially did well for 4 months following her discharge, was reviewed in outpatients and noted to be gaining weight adequately and attaining milestones at expected times. However she developed probably another infection at the age of 5 months still on TB treatment and demise on the way to hospital. Mother reports she had developed cough and fast breathing for 2 days prior to the demise. This case summarizes the major challenges related to managing patients in resource constrained settings with high TB prevalence.

References