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CASE REPORT

Congenital tuberculosis: A case report and review of the literature

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Abstract Congenital tuberculosis (TB) is a rare infection transmitted from a mother to her foetus, either through an infected placenta or amniotic fluid. Congenital tuberculosis was previously thought to be rare but recent changes in the epidemiology of TB, have resulted in an increased risk.[1] Affected infants usually present with non specific signs and symptoms, hence a high index of suspicion is required to make a diagnosis. Fewer than 300 cases have been reported worldwide till date[1] and to the knowledge of the authors, there have been only three reported cases in Nigeria.[2-4] We herein report a case of congenital tuberculosis with a review of other published cases in this high TB prevalent region of Southern Nigeria with the aim of creating awareness of its existence in this region.

Key words: Congenital tuberculosis, case report, miliary tuberculosis

Introduction

Congenital tuberculosis defines tuberculosis in infants of women who have pulmonary or placental tuberculosis. It results from hematogenous spread through the umbilical vein to the fetus with primary lesions in the liver or from aspiration or ingestion of infected amniotic fluid in utero or during delivery, with pulmonary and gastrointestinal disease predominating.[5] It is of diagnostic consideration in areas of high prevalence of adult tuberculosis[6] like Nigeria which has the fourth highest burden of tuberculosis in the world.[7]

Case report

I.G, a 12 week old male child, was admitted to the Niger Delta University Teaching Hospital (NDUTH) following referral from the Federal Medical Center (FMC) Yenagoa with complaints of difficulty with breathing and poor weight gain from birth, cough of nine weeks duration, swelling of the left side of the neck of nine weeks duration, fever of 10 days duration and passage of frequent watery stools of two days duration.

Pregnancy was unsupervised and carried to term. Mother had cough from the 5th month gestation that was treated with unknown drugs bought over the counter. The cough was productive of whitish, non blood stained sputum. It resolved four weeks prior to delivery. Delivery was supervised by a traditional birth attendant. Baby I G had not received any immunization. He was predominantly breastfed for four weeks, then supplementary feeds with infant formula was added. He was yet to achieve any developmental milestone.
The infant was the only child of a cohabiting couple. His mother was 19 years old, unemployed and stopped her education at junior secondary school (JSS 2). Father was a 28year old civil servant with secondary level of education. They all lived in a one room apartment with poor ventilation (one window).

On examination at presentation, he was restless, in respiratory distress, severely pale, febrile (temperature-37.8^{oC}), and mildly dehydrated with oral thrush. He had significantly enlarged lymph nodes in both the posterior auricular and right cervical regions. They were discrete, non tender and measured about 3cm in size. His occipitofrontal circumference was 37cm (microcephaly), length was 43cm (77% of expected), weight 3.3kg (55% of expected).

He was tachypnoeic with a respiratory rate of 80cycles per minute, with vesicular breath sounds and coarse crepitations in both lung fields. There was tachycardia with a pulse rate of 160 beats per minute with normal heart sounds. The liver and sleen were both palpable 6cm and 4cm below the right and left costal margins respectively. He had hypotonia in all the limbs with cortical fisting, and depressed deep tendon reflexes.

He was initially managed as a case of septicaemia with intravenous antibiotics and was also transfused with

blood. Investigations done included: full blood count and differentials: packed cell volume of 19%, white cell count of 11.6 x10^9/l with predominant lymphocytosis. Retroviral screening for mother and child were both negative and malaria parasite was also negative. Erythrocyte sedimentation rate was 12mm/hr; Cerebrospinal fluid analysis was normal; Liver function test showed elevated liver enzymes ; the cytological evaluation of the fine needle aspiration of the cervical lymph node showed granulomatous inflammation. The child's chest x-ray showed nodular infiltration in both lung fields, suggestive of miliary tuberculosis (fig.1) while his mother's chest x-ray showed hilar infiltrates (fig. 2). The maternal Mantoux test was positive with 20mm induration. Funduscopic examination of the infant's retina by the ophthalmologist to rule out intra uterine infection was normal. His other household contacts (father and grand mother) both had negative mantoux tests and normal chest xrays.

Fig 1: Patient's chest x-ray

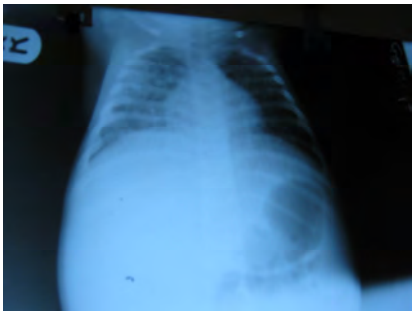
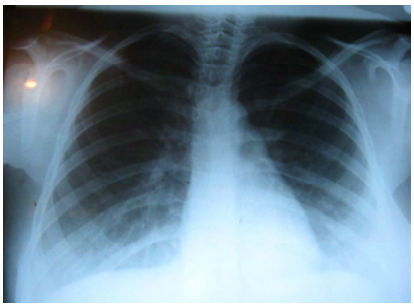


Fig 2: Maternal chest x-ray



On the 14th day of admission, the child had lost 16% of his weight with persistence of fever and respiratory distress. Anti-tuberculous therapy was commenced using: rifampicin, isoniazide, pyrazinamide, and streptomycin. Streptomycin was subsequently discontinued because the child had prolonged bleeding from the injection site. His mother was also commenced on anti-tuberculous drugs.

Three weeks after commencement of anti-tuberculous drugs, the infant showed remarkable improvement with weight gain, absence of fever and respiratory distress, and reduction in size of the enlarged lymph nodes. Vital signs became normal. He was discharged home six weeks after admission on parental request to complete eight months of anti-tuberculous drugs as an out-patient.

Discussion

Congenital tuberculosis is very rare because the most common result of female genital tract tuberculosis is infertility.[5] Two possible routes of in-utero infection are postulated; either from hematogenous infection through the umbilical vein with primary lesions in the liver or from prenatal aspiration of infected amniotic fluid with pulmonary and gastrointestinal disease predominating.[5] According to the revised diagnostic criteria for congenital tuberculosis by Cantwell et al[8] in 1994, the infant should have proven tuberculous lesion and at least one of the following: symptoms occurring in the first week of life, a primary hepatic TB complex, maternal genital tract or placental tuberculosis and exclusion of postnatal transmission by thorough investigation of contacts. The index patient fulfilled these diagnostic criteria, in that he had miliary tuberculosis as shown in the chest x-ray and tuberculosis of the superficial glands, as confirmed by histologic examination as well as a dramatic response to anti-TB drugs. In addition, his symptoms started from the first week of life and post natal transmission was excluded as apart from his mother, his other household contacts tested negative to screening tests.

The most common presentation of congenital tuberculosis is respiratory distress, lethargy, poor feeding, fever, irritability, abdominal distension, failure to thrive and hepatosplenomegaly.[9-10] The index case presented with most of these features. These signs could also be present in bacterial sepsis and other congenital infections such as toxoplasmosis, rubella, cytomegalovirus, herpes simplex and syphyllis. It is not surprising therefore that the index patient was initially managed for septicaemia with intravenous antibiotics. Tuberculosis was only suspected as a result of his poor clinical response. Similar to this case, Orogade et al,[2] in Zaria, reported a case of a five day old term baby who was managed for pneumonia with intravenous antibiotics for two weeks without improvement and was discharged home on parental request. Their patient re-presented at seven weeks and was found to be failing to thrive. It was only then that TB was suspected and a diagnosis made on screening. Lee et al[11] also reported a case of a preterm neonate who was admitted at birth and managed for pneumonia with antibiotics. Their patient, however continued to deteriorate until he died at 65 days of age. The diagnosis of congenital TB was only made at autopsy. Agarwal et al[12] and Ray et al[13] in India have also reported similar cases. Patel and DeSantis,[14] after reviewing published case reports, recommended that congeinital TB should be considered in the differential diagnosis of newborns who have (1) nonresponsive or worsening pneumonia, especially in regions of high rates of TB, (2) non specific symptoms but have a mother diagnosed with TB, (3) high lymphocyte counts in the cerebrospinal fluid without an identified bacterial pathogen or (4) fever and hepatosplenomegaly. The index patient fulfilled the first, second and fourth criteriae.

The difficulties in the diagnosis of pulmonary TB in the index patient was compounded by the paucity of mater-

nal symptoms. His mother had cough for four months in pregnancy which subsided before delivery. She received unknown medications bought over the counter as she did not have any antenatal care. Other authors in Northern Nigeria[2] and South Florida[15] also reported paucity of maternal symptoms. In a review by Abughali et al,[16] twenty four of thirty two mothers of infants diagnosed with congenital TB were asymptomatic. The lack of antenatal diagnosis in the mother of the index patient highlights the need for early detection of the disease during pregnancy with institution of appropriate therapy to prevent infection of the foetus.[1, 9]

Several authors[8,16,17] have shown that complications of late diagnosis of congenital TB include meningitis, military TB and otitis media, resulting in seizures, deafness, and death. It is therefore not surprising that the index case who presented at twelve weeks of age, had miliary tuberculosis. Peng et al[18] reviewed imaging findings in 143 cases of congenital tuberculosis and 46.8% of them demonstrated a miliary pattern. Similarly, Hagemann[17] showed that 50% of infants with congenital TB presented with miliary pattern of pulmonary involvement.

Congenital TB if left untreated or if treatment is commenced late, may have a fatal outcome as were the cases presented by Lee et al,[11] Chen et al,[19] and Ray et al.[13] It is recommended that treatment regimens for congenital TB should contain at least two or preferably three drugs to which the organisms are likely to be susceptible.[9,20]

The index patient fortunately, even with late presentation and diagnosis, showed a good response to a combination of three anti-tuberculous drugs; isoniazid, rifampicin and pyrazinamide.[23] There are other case reports in the literature of successful treatment of congenital TB [21-23].

Conclusion

Congenital tuberculosis, though rare, should be considered in an infant diagnosed with pneumonia that is resistant to antibiotic therapy especially in areas of high tuberculosis prevalence. Also there is need for anti tuberculosis therapeutic trial to be initiated as diagnostic tool in resource limited settings where diagnosis could easily be missed. A high index of suspicion is required towards diagnosis of tuberculosis in pregnancy. Screening for tuberculosis should be part of the routine prenatal care at the slightest suspicion of tuberculosis.

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References

1. Massik TS, Carrel T, Duppenthaler A, Zeilenger G, Guelim HE. Congenital tuberculosis in a premature infant. *Swiss Med Wkly 2002; 132: 598-602.*
2. Orogade AA, Ogala WN, Onala A. Congenital tuberculosis: case report. *Niger J Paed 2011; 38(2): 100-103.*
3. Airede K.I, Congenital military tuberculosis, *Ann Trop Paediatr 1990; 10: 363-368.*
4. Akinyoola AL, Adejuyigbe EA. Perinatal Tuberculosis with Spinal involvement: a case report and review of the literature. *Niger J Paed 2005; 32(3): 52-54.*
5. Starke J.R, Munoz F.M. Tuberculosis. In: Behrman R, Kleigman R, Jenson H (eds). Nelson Textbook of Paediatrics, 18th ed. 2007; Chapter 212: 885 - 897.
6. Bate TW, Sinclair RE, Robinson MJ. Neonatal tuberculosis. *Arch Dis Child 1986; 61: 512-514.*
7. World Health Organization. WHO report global TB control: Nigeria. In: WHO (ed). Geneva, Switzerland: WHO; 2008. http://www.who.int/globalatlas/predefinedreports/TB/PDF_files/nga.pdf.
8. Cantwell MR, Shehab ZM, Costello AM, Sands L, Green WF, Ewing EP, Valway SE, Onorato IM. Brief report: congenital tuberculosis. *N Eng J Med 1994; 330: 1051-1054.*
9. Bahera D. Tuberculosis. In: Text book of pulmonary medicine. 1st Edition, Jaypee Brothers Publishers, New Delhi 1995: 233-286.
10. Seaton A, Seaton D, Leitch AG. Clinical features of tuberculosis. In: Crofton and Doughla's Respiratory Diseases. 4th Edition, Blackwell Scientific Publications, London 1998: 395-422
11. Lee LH, LeVea CM, Gramen PS. Congenital tuberculosis in a neonatal intensive care unit: case report, epidemiological investigation and management of exposures. *Clin Infect Dis 1998; 27: 474-477.*
12. Agarwal AK, Agarwal M, Verma DC. Congenital tuberculosis. Pediatr on call, child health care; 2011: 8(9): 45. ISSN 0973 – 0958.
13. Ray M, Dixit A, Vaipei K, Singhi PD. Congenital tuberculosis. *Ind Pediatr 2002; 39: 1167-1168.*
14. Patel S, DeSantis ERH. Treatment of congenital tuberculosis. *Amer J Hlth Sys Pharm 2008; 65(21): 2027-2031.*
15. Laartz BW, Narvarte HJ, Holt D, Larkin JA, Pomputius WF. Congenital tuberculosis and management of exposures in a neonatal intensive care unit. *Inf Contr Hosp Epidemiol 2002; 23(10): 573-579.*
16. Abughali N, Vanderkuyp F, Annable W, Kumer ML. Congenital tuberculosis Paediatr *Infect Dis J 1994; 13: 738-41.*
17. Hageman J, Shulman S, Schreiber M, Luck S, Yogev R. Congenital tuberculosis; critical reappraisal of clinical findings and diagnostic procedures. *Paediatr 1980; 66: 980-984.*
18. Peng W, Yang J, Liu E. Analysis of 170 cases of congenital TB reported in the literature between 1946 and 2009. Paediatric Pulmonol 2011:1-10.
19. Chen A, Shih S. Congenital tuberculosis in two infants. *AJR 2004; 182(1): 253-256.*
20. Chanta C, Jariyapongpaibul Y, Triratanapa K. Congenital tuberculosis presenting as sepsis syndrome. *J Med Assoc Thai 2004; 87(5): 573-577.*

21. Nemir R, O'Hare D. Congenital tuberculosis. *Am J Dis Child 1985; 139: 284-287*.

22. Ramos A, Hibband L, Craig L. congenital tuberculosis. *Obstet gynecol 1974; 43: 61-64*.

23. Gordon-Nesbitt D, rajan G. Congenital tuberculosis successfully treated. *Brit Med J 1973; 1: 233-234*.