

CASE REPORT

BILATERAL EXTENSIVE PULMONARY TUBERCULOSIS IN A 3 MONTHS OLD INFANT

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ABSTRACT: INTRODUCTION: Progressive primary pulmonary tuberculosis is rare in infancy and may often be confused with bacterial pneumonia or congenital anomalies. However it may be an important cause of morbidity and mortality in a highly endemic country like India. **CASE REPORT:** A 3 month old female child presented with fever, cough and respiratory distress for past 1 month. She was treated for Pneumonia with antibiotics for 15 days by a local practitioner, with no improvement and so was referred to our Centre. She was BCG vaccinated and there was no history of contact with tuberculosis patient. Chest X-Ray PA view revealed bilateral extensive infiltrates suggestive of Bronchopneumonia. AFB staining of gastric lavage was positive. CSF analysis and USG abdomen were within normal limits. A provisional diagnosis of progressive primary pulmonary tuberculosis was made and she was started on anti-tuberculosis treatment, to which she responded dramatically and repeat AFB stain of gastric lavage was negative. **CONCLUSION:** A diagnosis of Pulmonary TB should be suspected in infants with non-resolving pneumonia, even in BCG vaccinated infants and without any history of contact, or extrapulmonary involvement.

KEYWORDS: Progressive Primary, Pulmonary Tuberculosis, Infant, Gastric Lavage, AFB.

INTRODUCTION: It is estimated that one third of the world's population (about 2 billion people) is infected with tubercle bacilli. According to the WHO Global Tuberculosis Report 2014, in 2013 an estimated 9.0 million people developed TB and 1.5 million died from the disease, out of which India and China alone accounted for 24% and 11% of total cases, respectively.¹ An estimated 5,50,000 children became ill with TB and 80,000 children who were HIV-negative died of TB in 2013. TB mortality is unacceptably high given that most deaths are preventable if it is diagnosed timely and the correct treatment is provided.

Since most children acquire the infection from adult pulmonary TB cases, the tuberculosis in children reflects the prevalence of the disease in adults as well as current transmission rates in the community.² Although tuberculosis is one of the major infections affecting children worldwide, it occurs mainly in disseminated forms such as miliary tuberculosis and tubercular meningitis having high mortality. Progressive primary pulmonary tuberculosis is rare in infancy, and may often be confused with bacterial pneumonia or congenital anomalies, causing diagnostic delay which may add to poor outcome.

CASE REPORT: A 3 month old female child presented with fever, cough and respiratory distress for past 1 month. There was no history of seizures or altered sensorium. She was treated for Pneumonia with antibiotics for 15 days by a local practitioner, with no improvement and so was referred to our centre. She was delivered through normal vaginal delivery at term with uneventful pre-natal period

CASE REPORT

and birth weight was 3.4 kg. She was adequately immunised for age as per National Immunisation Schedule including BCG given at birth. There was no history of contact with tuberculosis patient. Gynaecological examination and abdominal ultrasonography of the mother to look for possible genital tuberculosis were within normal limits. On examination, the baby was malnourished, with weight(4.4 kg) and length(53 cm) below 3rd percentile of normal according to WHO standard at 3 months, febrile (101°F) and tachypneic. There was no significant lymphadenopathy or organomegaly. Examination of the chest revealed bilateral diffuse crepitations. Her haemoglobin level was 9.1g/dl, total leucocyte count 12400/mm³, and CRP and ESR were raised. Chest X-Ray PA view revealed bilateral extensive infiltrates with macronodular opacities suggestive of Bronchopneumonia(Figure - 1). Her first morning gastric contents were aspirated through a paediatric Ryle's tube and examined for acid-fast bacilli (AFB) by Zeihl- Neelson staining method, which was found to be positive(Figure - 2). The mycobacterial BACTEC culture of the gastric aspirate was also positive subsequently. CSF analysis and USG abdomen were within normal limits. A diagnosis of progressive primary pulmonary tuberculosis was made and she was started on anti-tuberculosis treatment with Isoniazid, Rifampicin, Ethambutol and Pyrazinamide according to body weight, to which she responded dramatically. She became asymptomatic at the end of one month of treatment and repeat AFB stain of gastric lavage was negative.

DISCUSSION: Tuberculosis is still one of the most important diseases causing mortality and morbidity in developing countries. Following infection with tubercle bacilli, a Primary Complex is formed in 3- 8 weeks³ which includes focus of primary parenchymal infection and infected draining lymph nodes with intervening lymphatics. When the primary complex is formed in lungs, it is also known as Ghon's complex. In majority of cases, the primary complex heals spontaneously, leaving behind residual hyalinised or calcified lesions (Ranke's Complex). However, in some patients, hematogenous dissemination of infection may occur causing miliary tuberculosis or tubercular meningitis. Rarely, as a result of poor host defences and favourable conditions for the growth of tubercle bacilli, the primary complex may enlarge with underlying mycobacterial multiplication and liquefactive necrosis due to the effect of proteolytic enzymes released from dead neutrophils, leading to caseation and parenchymal destruction which is called as Progressive Primary Tuberculosis. It may present as consolidation, cavitation, atelectasis, pleural effusion, empyema or tubercular bronchopneumonia. It may be difficult to differentiate progressive primary tuberculosis from a simple TB focus with superimposed acute bacterial pneumonia.⁴

Diagnosis of pulmonary tuberculosis in infants is difficult because of non-specific signs and symptoms and difficulty in obtaining adequate specimen for bacteriological confirmation.⁵ Bacterial pneumonia, particularly that caused due to Staphylococcus is the most important differential diagnosis. Tuberculin Skin test which is an important screening test for older children and adults, is not reliable in infants due to their immature immune response, and may further be confounded by BCG vaccination.⁶ A high index of suspicion is required for the early diagnosis of tuberculosis in childhood, as a missed or delayed diagnosis may lead to considerably more serious consequences in them than at a later age.⁷ Children under three years of age have a high mortality rate partly due to the diagnostic difficulty of TB in infants and small children, as well as the higher rates of disseminated infections such as miliary tuberculosis and tubercular meningitis which have poor outcome.⁸ So, it should be considered as a differential diagnosis for infants who are unresponsive to pneumonia

CASE REPORT

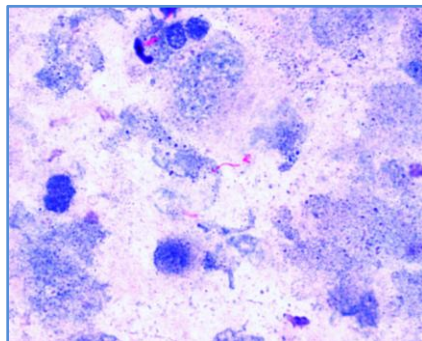
treatment with first line antibiotics. Early morning gastric lavage can be a useful tool to help in the diagnosis of TB in cases of non-resolving pneumonias during infancy.

This case was unusual in presentation as progressive primary tuberculosis is rare at this age, moreover there was no history of contact with active TB case, patient was BCG vaccinated at birth and there was no evidence of disseminated infection in the form of tubercular meningitis, miliary tuberculosis, hepatosplenomegaly or lymphadenopathy which are common modes of presentation of tuberculosis in infants.

CONCLUSION: Diagnosis of Pulmonary TB should be suspected in infants who are not responding with first line antibiotics for the treatment of bacterial pneumonia, even in BCG vaccinated infants and without any history of contact, or extrapulmonary involvement. A high index of suspicion, staining of morning gastric lavage for AFB, and chest radiography may be valuable in arriving at a diagnosis in such patients.

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Acid Fast Bacilli seen in ZN stain of Gastric Lavage (oil immersion- 100X)

CASE REPORT



Chest Radiograph of the patient showing bilateral extensive infiltrates

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