Pneumonia Caused by Nocardia Caviae in a Healthy Neonate

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Introduction

Nocardia infections have been associated with patients of Aids[1], chronic granulomatous disease[2], recipient of organ transplant[3] and malignancy[4]. Pulmonary nocardiosis in neonates is an unusual infection. A case of neonatal pulmonary nocardiosis mimicking miliaiy tuberculosis has been reported in the past[5]. We report another case of pulmonary nocardiosis in a neonate presenting as consolidation with pleural effusion and cavitation.

Case Report

A 2200g male infant, twin II, was born at home to gravida 10 and para 9 mother following an uncomplicated pregnancy and delivery. Family history was unremarkable except that parents were first cousins. The baby remained well for the first 10 days of life, when he developed a cough and respiratory distress. Three days prior to admission, he was lethargic and reluctant to feed. On examination, he was tachypneic with respiratory rates of 80/thin, heart rate of 160/min, temperature 36°C (axilla) and peripheral cyanosis. On auscultation of chest, air entry was diminished on the left side, liver was 5cm below the costal margin. Laboratory workup showed Hemoglobin 15.5 Gm/dl, HCT 48, WBC $17x10^9$/L, platelets $405x10^9$/L, bicarbonate 7 mEq/L, blood glucose 12 mg/dl, CSF protein 206 mg/dl, CSF glucose 127 mg/dl (against blood glucose of 256 mg/dl, level acquired aftercorrectionofhypoglycaernia). CSF cell count and grams stain could not be done due to gross hernolysis. CSF, blood and stool cultures were negative. Chest X-ray showed complete consolidation of left lung with pleural effusion and cavitation (Figure 1).

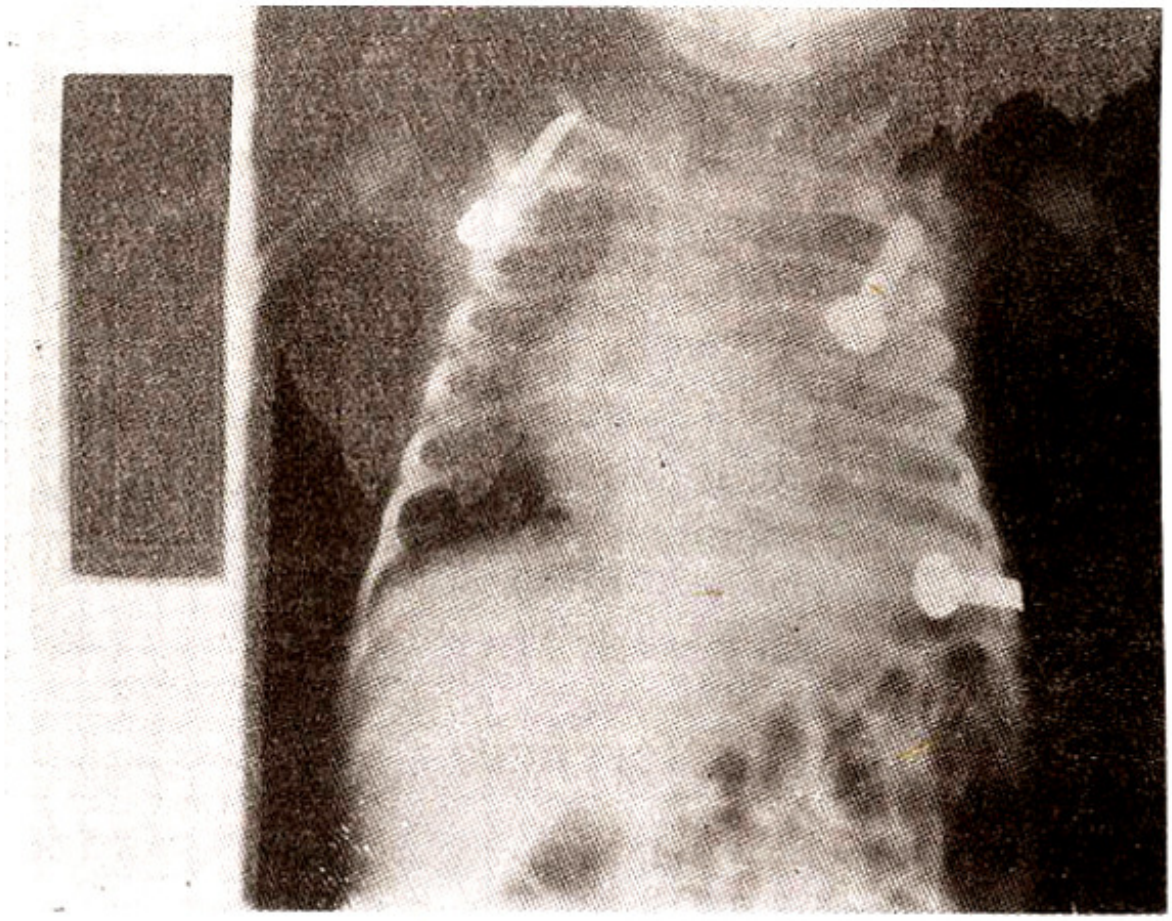

Figure 1. Chest radiograph showing complete consolidation of the left lung with pleural effusion.

CT scan of brain was normal. After correction of hypoglycemia and metabolic acidosis, the infant was shifted to neonatal intensive care unit where he was subsequently intubated and placed on a mechanical ventilator. Tracheal and pleural aspirates were taken and submitted for gram staining and culture and he was started on cefotaxime and amikacin. Tracheal aspirate cultures grew mixed growth of Pseudomonas aerogenosa and Nocardia caviae. Gram stain of pleural fluid showed numerous branching grain positive rods and culture grew pure growth of Nocardia caviae, sensitive to trimethopnm- sulfa-methaxazole. Nocardia species were suspected when organisms were found to be gram positive rods as well as acid-fast on modified Kinyoun stain (Figures 2 and 3).

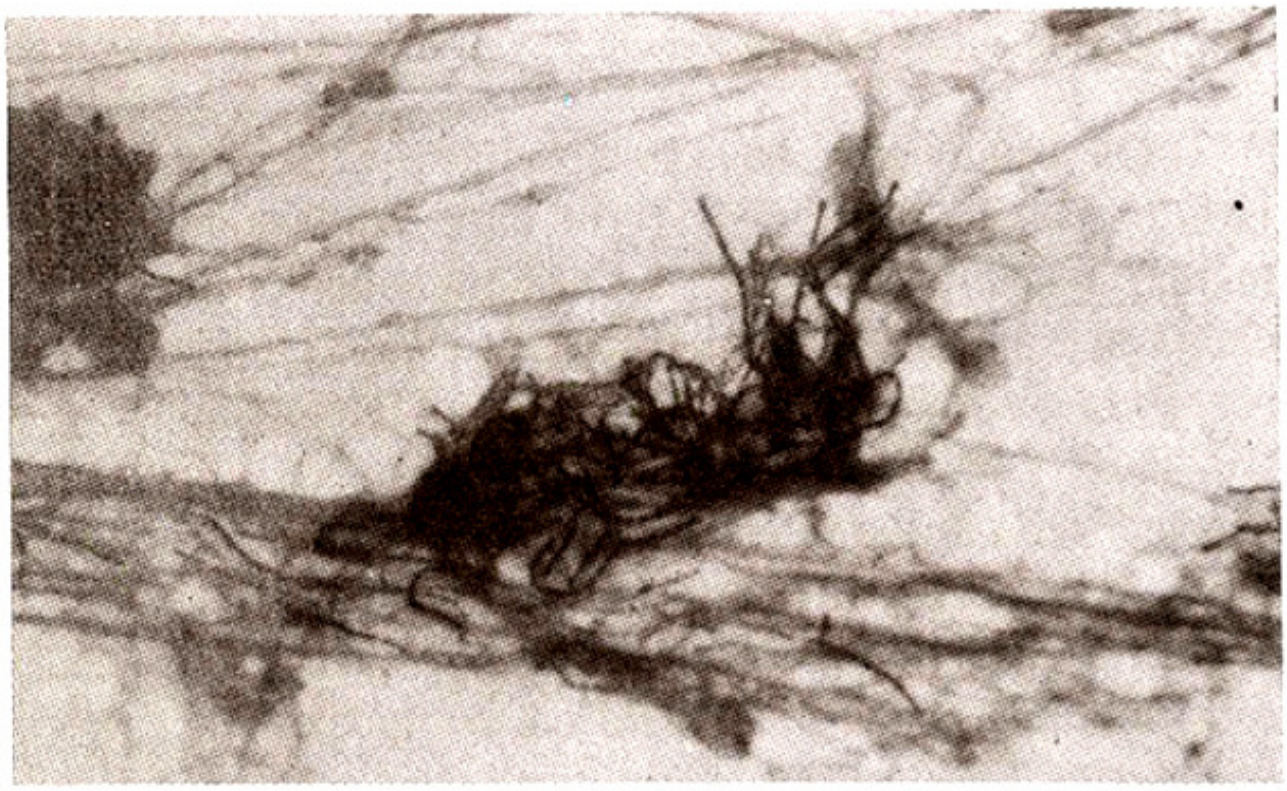

Figure 2. Histologic examination of tracheal aspirate showing branching N. caviae (Modified Kinyoun stain).

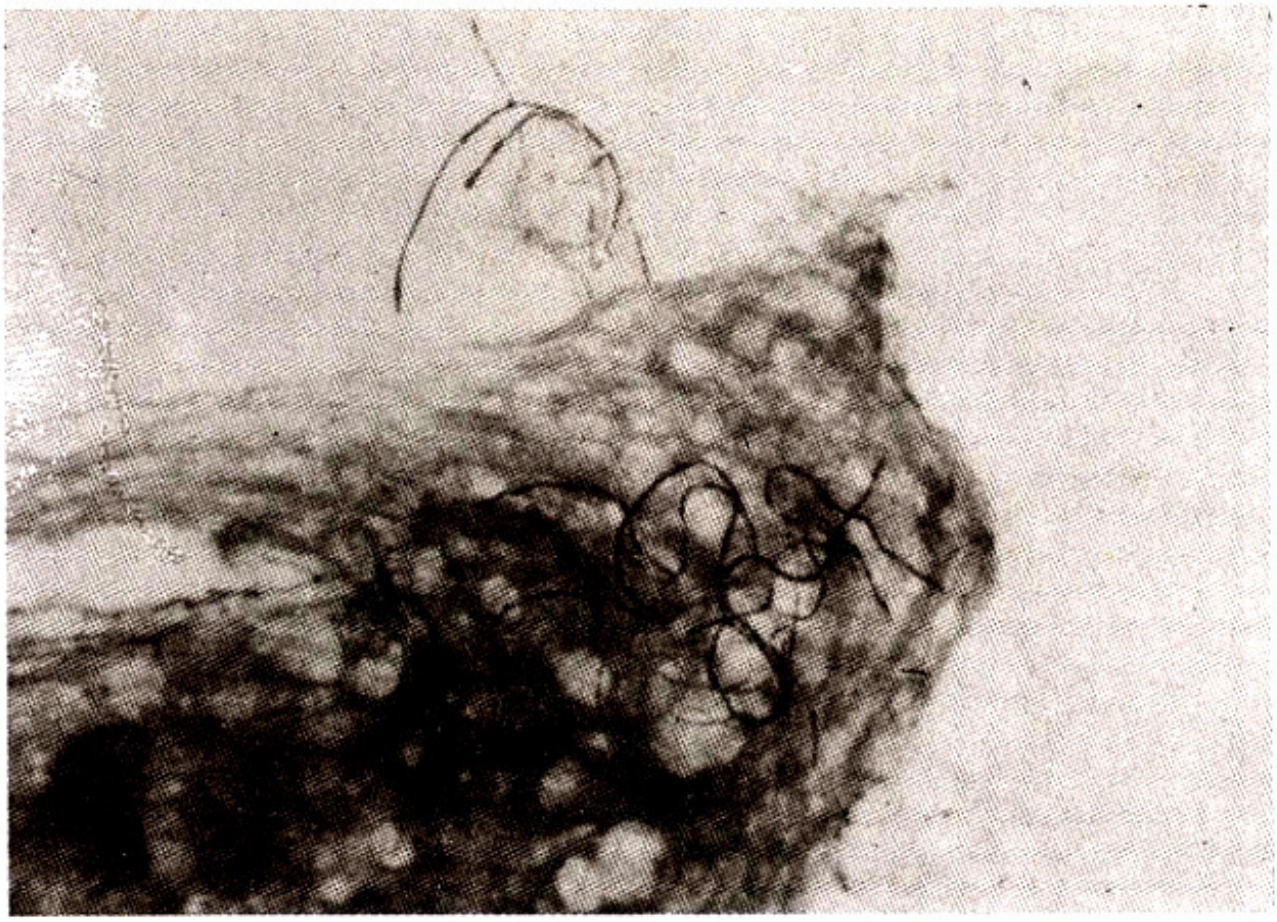

Figure 3. Histologic examination of pleural fluid showing branching N. caviae (Modified Kinyoun stain).

The specimens were inoculated on blood sheep agar at 37°C for 48 hours. Further speciation of nocardia was done on the basis of xanthine decomposition and urease production. Antibiotic susceptibility tests were done by disc diffusion method at mom temperature on Isosensitest agar. Inspite of aggressive measures, the clinical course was complicated by severe respiratory failure; pneumothorax which required chest tube insertion, subcutaneous emphysema and disseminated intravascular coagulation. The patient died 25 days after hospitalization. Just before death Immunoglobulin studies were done. Results showed: Serum IgG 13.7 gm/dl, IgM 1:3 g/dl, IgE 245 IU/ml. All were within normal limits. An autopsy was refused on religious grounds.

Discussion

Nocardia species are soil borne, aerobic, branching gram positive rods belonging to genus Actinomyectes. Human nocardiosis is usually caused by N. asteroides, N. brasiliensis and N. caviae. The inoculation usually occurs by inhalation and in susceptible individuals it may either result in pneumonia or disseminated infections. N. brasiliensis infections in majority of cases are limited to skin and subcutaneous tissue. These infections are opportunistic in nature, occuring mainly, in immune comprised patients and have rarely been reported in healthy individuals[6]. All siblings, including 1st twin of this patient, were healthy and family history was negative for chronic granulomatous disease. The most significant factor in this neonate was home delivery attended by a traditional birth attendant,

which was possibly not performed under aseptic conditions. This along with suboptimal host defenses were probably predisposing factors for the infection in this neonate. Nocardiosis should be considered in differential diagnosis of neonatal pneumonia presenting as consolidation with cavitation and pleural effusion.

References

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