Pleural Nocardiosis

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ABSTRACT

Pleural involvement in nocardiosis is rarely documented in India. We report two cases of pleural nocardiosis. In both the cases, the aetiologic agent was isolated from pleural fluid and was later identified as Nocardia asteroides in one case and as Nocardia brasiliensis in the second case. The former case of pyopneumothorax died before the diagnosis was made and the latter with pleural effusion showed excellent response to six months of therapy with trimethoprim-sulfamethoxazole. [Indian J Chest Dis Allied Sci 2009;51:169-171]

Key words: Nocardiosis, Pyopneumothorax, Pleural effusion, Nocardia asteroides, Nocardia brasiliensis, Trimethoprim-sulfamethoxazole.

INTRODUCTION

Pleural involvement is common in pulmonary nocardiosis and was detected in 36% of the cases using computed tomography of chest.¹ In nocardiosis, pleural involvement occurs through direct spread from the chest wall or the lung parenchyma and pleural fluid may be the only source of diagnosis.² In the Indian literature, we could find only a few isolated case reports of Nocardia asteroides causing hydropneumothorax,³ empyema⁴ and pyopneumothorax.⁵ Among the Indian studies⁶-⁹ of nocardiosis, a recent study from Chandigarh⁹ documented two cases of pulmonary nocardiosis with concomitant pleural involvement (one each of pleural effusion due to Nocardia asteroides and pyopneumothorax due to Nocardia brasiliensis). We describe here two unusual cases of pleural nocardiosis in adults.

CASE REPORTS

Case 1

A 49-year-old male was referred with complaints of exertional breathlessness of one month duration and occasional left-sided chest pain. There was no cough or fever. The patient had been on oral prednisolone for nephritic syndrome during the last three months. On physical examination, he was visually challenged, obese and had bilateral pedal oedema. There was no digital clubbing or significant lymphadenopathy. The body temperature was 37.5 °C and blood pressure was 150/90 mmHg. Chest examination revealed features of loculated hydropneumothorax in the left side. Investigations showed the total leukocyte count to be 11,300/mm³ with 89% neutrophils. Fasting and postprandial blood sugars were 319mg% and 382mg%, respectively. Blood urea was 80mg% and serum creatinine was 1.7mg percent.

The electrocardiogram and echocardiogram did not show any abnormality. Computed tomography of the chest (Figure 1) revealed a left-sided loculated hydropneumothorax with underlying collapse and consolidation. On thoracentesis, the pleural fluid was observed to be thin, odourless and purulent. All the...
sputum and pleural fluid smears were negative for bacteria, acid-fast bacilli and fungi. Human immunovirus serology was negative. Blood cultures were sterile. Empiric intravenous ceftriaxone 2gm per day was started along with insulin to control diabetes mellitus. Repeat sample of pleural fluid had to be sent, as all the reports of initial pleural fluid including bacterial culture were negative. Tube thoracostomy and antituberculosis treatment were planned but patient did not survive. The pleural fluid grew *Nocardia* after three days of culture on brain heart infusion blood agar and Sabouraud's dextrose agar at 37 °C (Figure 2), the morphology of which was consistent with *Nocardia*.

![Figure 2. Sabouraud dextrose agar plate showing dry, pale yellowish orange colonies of *Nocardia asteroides* after two days of incubation of pleural fluid at 37 °C.](image)

The isolated *Nocardia* were later identified as *Nocardia asteroides* based on phenotypic methods and were later found to be sensitive to trimethoprimsulfamethoxazole (TMP-SMX), amikacin and cefotaxime. Subsequent reports of mycobacterial cultures of sputum and pleural fluid were negative.

**Case 2**

A 62-year-old businessman presented with a right-sided pleuritic chest pain of 10 days duration. There was no history of cough or fever. There was no past history of tuberculosis. He had symptoms of asthma for 20 years and was on inhaled steroids (beclomethasone dipropionate) for the past two years. He was also on medication for diabetes mellitus and hypertension since 12 years. General examination was unremarkable. Chest examination revealed decreased breath sounds over the right lower lobe area. Total leukocyte count was 16,300mm$^3$ with 83% neutrophils. Erythrocyte sedimentation rate in the first hour was 102mm. Blood chemistry was normal. Chest radiograph (Figure 3) showed minimal pleural effusion and a calcified nodule on the right side. Under ultrasound guidance, 40mL of straw-coloured pleural fluid was aspirated. Pleural fluid was exudative and all smears were negative. Pleural fluid adenosine deaminase was 47 IU/L. Pleural fluid cytology was negative for malignant cells. Bacterial culture of pleural fluid incubated in Sabouraud's dextrose agar at 37 °C grew organisms resembling *Nocardia* (Figure 4A) within 48 hours and the modified Kinyoun staining (Figure 4B) of cultured *Nocardia* showed partially acid-fast branching filamentous rods. The isolate was later identified as *Nocardia brasiliensis* based on colony morphology, biochemical and hydrolysis testing already described. 10

![Figure 3. Chest radiograph showing minimal effusion and a calcified nodule on the right side of the patient in Case 2.](image)

![Figure 4A. Growth of dry, pale brown, wrinkled colonies of *Nocardia brasiliensis* colony as seen on Sabouraud dextrose agar on seventh day of incubation at 37 °C.](image)
in routine bacterial culture in many cases. Rapid and accurate identification of nocardial species is now possible through molecular techniques\textsuperscript{15} but these tests are not available widely. Sulphonamides are the drugs of choice for the therapy of nocardiosis but TMP-SMX is now more frequently used.\textsuperscript{17} The TMP-SMX appears to be effective for treating pleural effusion due to *Nocardia brasiliensis*. In any undiagnosed case of pleural disease on prolonged steroid therapy, routine search for *Nocardia* should be done by incubating the cultured clinical specimens for at least one week.

**REFERENCES**