FIBROUS CAVITY IN AN IMMUNOCOMPROMISED LUNG: NOCARDIOSIS MASQUERADING AS TUBERCULOSIS

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ABSTRACT

Nocardia species can cause fulminant necrotizing cavitory pneumonia. Diagnosis involves identification of the organism, speciation, and correlating with appropriate clinical and radiological findings. Speciation is often difficult due to the complexities involved in culturing the organism. Treatment involves administering antibiotics for a prolonged duration. The authors hereby report a case of pulmonary nocardiosis in a patient who had pre-morbidities such as cirrhosis of the liver and membrano-proliferative glomerular nephritis on immunosuppression with high dose corticosteroids making him vulnerable to the organism.

Keywords: Nocardia, Pneumonia, Actinomycetes, Lung.

BACKGROUND

Nocardia is a group of Gram-positive aerobic actinomycetes that are most commonly found in the soil. They most often affect immunocompromised people, e.g., those on long-term glucocorticoid therapy, AIDS, post-transplantation, and lymphoma [1]. The disease is transmitted by inhalation of fragmented bacteria mycelia resulting in either pulmonary or disseminated disease. 50% of pulmonary disease is found in the form of pneumonia.

The clinical picture of nocardiosis resembles pulmonary tuberculosis (TB). Hence, the diagnosis may be delayed if the clinician and the microbiologist do not suspect the disease [2]. We hereby present a case of pulmonary nocardiosis that mimicked pulmonary TB in a patient with pre-morbidities of liver cirrhosis and membrano-proliferative glomerulonephritis on long-term glucocorticoid therapy.

CASE REPORT

A 38-year-old male patient recently diagnosed to have cirrhosis of the liver (cryptogenic) and primary membrano-proliferative glomerulonephritis on high dose corticosteroids (1 mg/kg) presented with symptoms of a cough, fever, and pleuritic type of chest pain of 3 weeks duration. Clinical examination revealed coarse crackles in the right lung base. Salient routine investigations showed hemoglobin of 10.4 g/dL, leukocytosis of 20,900/µL, and extracytoplasmic stress response of 57 mm/hrs. A right hilar homogenous opacity was seen on chest radiography (Fig. 1).

Empirical treatment for severe community-acquired pneumonia with intravenous piperacillin and tazobactam was administered. As the patient had history prolonged hospital stay before this presentation, possibility of hospital-acquired pneumonia was considered but was ruled out, as cultures did not show growth of any pathological bacteria.

Due to worsening clinical picture, a contrast-enhanced computed tomography (CECT) scan of thorax was obtained, which showed multiple nodules (5-10 mm) diffusely scattered in both lobes, few of them showing central cavitation, and large consolidatory patches with areas of breakdown and cavitation in anterior segment of right upper lobe and superior lingular segment of left upper lobe (Fig. 2). Pulmonary TB

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Presented with the pleuritic type of chest pain and cough. The subject of this discussion is a 38-year-old male, with pre-morbidities of cirrhosis of the liver and membrano-proliferative glomerular nephritis, on long-term glucocorticoid therapy who was suspected as the patient was on immunosuppression therapy and presented with history of low-grade fever and prolonged cough. It was ruled out as repeated sputum samples and fluid from bronchoalveolar lavage sent for staining of acid-fast bacilli tested negative despite chest radiography revealing features of the cavity. After discussing the clinical and radiological scenario with the microbiologist, a possibility of nocardiosis was considered. A modified acid-fast staining was performed that revealed acid-fast filamentous branching rods suggestive of *Nocardia* (Fig. 3). However, further speciation of *Nocardia* was not possible due to lack of relevant facilities.

Ideally, the treatment of nocardiosis is to be done following speciation of the organism and decided accordingly. The most common species are *Nocardia asteroides* sensu stricto, *Nocardia farcinica*, *Nocardia nova*, and *Nocardia transvalensis* complex. According to the species, the organism has varying susceptibility to trimethoprim-sulfamethoxazole, amikacin, third generation cephalosporins, linezolid, and imipenem. The first line therapy that is usually used is the trimethoprim-sulfamethoxazole combination. However, in severe infections, empirical therapy with 2-3 drugs should be started [2]. Treatment should ideally be for 1 year in immunocompromised individuals. As speciation was not possible in this facility, the subject of this discussion was empirically started on meropenem, amikacin, and sulfamethoxazole-trimethoprim. Monitoring of the effect of the treatment was done both clinically and radiologically. After the initiation of treatment, there was a remarkable improvement in the patient's symptoms. After a month of therapy, there was a significant improvement in clinical and radiological. The patient will further be followed up monthly for 1 year.

**DISCUSSION**

*Nocardia* is a Gram-positive aerobic actinomycete which results in diseases ranging from pulmonary to central nervous system (CNS) to disseminated infections, i.e., serious pulmonary infections, CNS infections, or disseminated disease, immunocompromised patients should be treated for at least a year. Following the start of treatment, the patient had improved clinically.

**CONCLUSION**

Diagnosis of nocardiosis is a challenge. The case treating clinician and the microbiologist must have a high index of suspicion for the prompt diagnosis of this condition. In case of immunocompromised individuals, nocardial infections should always be kept in mind, especially when radiological findings mimic TB, but repeated sputum examinations are negative for TB bacilli. The case highlights the importance of early diagnosis, appropriate antibiotics for the appropriate duration that led to the successful management in this gentleman.

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![Fig. 3: Histopathology showing acid-fast bacilli](image-url)