CASE REPORT

PULMONARY NOCARDIOSIS IN A PATIENT WITH DIABETES MELLITUS

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Nocardiosis is considered as one of the rare systemic infections. It is usually prevalent in immunocompromised individuals though few cases have been reported in immunocompetent individuals as well. With the advent of new microbiological classifications and increasing progress in laboratory technology this infection is being diagnosed more frequently. Hence it is important to diagnose and treat this disease timely in order to reduce its associated morbidity and mortality. Nocardiosis is a rare condition and is often overlooked. Hence this case is presented.

Keywords: Nocardiosis; Infection; Immunocompromised; Immunocompetent

Citation: Yasin M, Muhammad M, Ahmad A, Shamsurrahman, Jan F. Pulmonary nocardiosis in a patient with diabetes mellitus. J Ayub Med Coll Abbottabad 2022;34(4 Suppl 1):1036–7.

DOI: 10.55519/JAMC-04-S4-10139

INTRODUCTION

Nocardiosis is considered a rare infection. The causative organism is a bacterium, *Nocardia.* The infection usually affects many parts of the body including lungs, brain, bones and skin. Nocardia species occur worldwide and are commonly found as saprophytes in soil or water. As aerobic actinomycetes, *Nocardia* species are gram-positive, filamentous, beaded bacteria; they are weakly acid-fast and slow growing.[1] *Nocardia* species usually cause opportunistic infections but with the passage of time their prevalence is increasing due to the growing population of immunocompromised individuals throughout the world.[1] Long-term steroid use, lymphoreticular malignancy, Cushing's disease, acquired immunodeficiency syndrome (AIDS) and diabetes mellitus are the most common predisposing factors for nocardiosis.[2,3] Because the pathogenicity of *Nocardia* species is low, fewer cases of infections have been reported in immunocompetent patients in medical literature. Pulmonary nocardiosis (PN) presents mostly as subacute or chronic pneumonia.[4] Pulmonary nocardiosis is difficult to be diagnosed most of the times due to its similarity in features with other common pulmonary infections and disorders. A case of PN with diabetes mellitus is presented here.

CASE REPORT

A 65 years old diabetic woman presented to pulmonology clinic with one month history of cough, dyspnoea, low grade fever and weight loss. She also reported 2 episodes of haemoptysis during past month. Her blood sugar was well controlled with medication. Her general physical examination revealed temperature of 38.7 °C, SpO2 86%, pulse 102 beats per minute, respirations 18 breaths per minute and blood pressure of 140/70 mm Hg. Chest examination revealed dull percussion notes and diminished breath sounds over right middle and lower lung field. Her radiography including chest X-Ray and computed tomography (CT) scan showed multiple areas of centrilobular nodules with a linear branching (tree-in-bud) pattern in upper lobes bilaterally and right lower lobe segmental consolidation with cavity containing air fluid level and moderate hydropneumothorax (Figure-1). Diagnostic pleurocentesis revealed purulent fluid. She was started on empiric antibiotic therapy for pyothorax and tube thoracostomy was done with under water seal drainage system. Based on high suspicion for pulmonary tuberculosis (PTB) she was started on anti-tubercular medicines as well. Her pleural fluid turned out to be negative for AFB on microscopy and GeneXpert and yielded gram positive rods with *Nocardia* spp on culture. She was switched over to treatment regime including trimethoprim sulphamethoxazole as guided by fluid culture and sensitivity report. She showed clinical improvement in a week follow up visit.

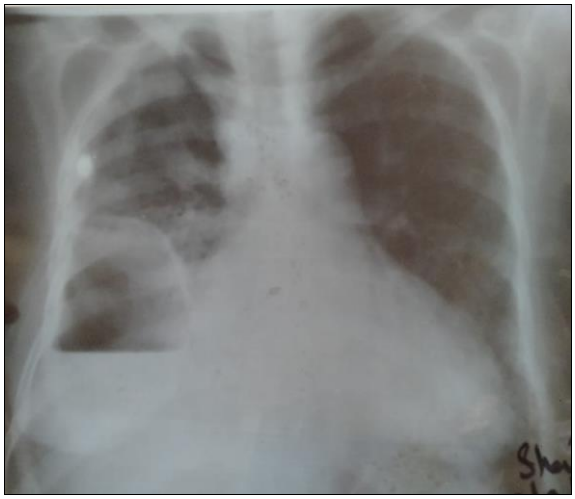

Figure-1: Chest radiograph showing right lower lobe segmental consolidation with cavity containing air fluid level and moderate hydropneumothorax

DISCUSSION

PN is rarely reported in literature but its occurrence is increasing with the passage of time as the number of immunocompromised patients are on the rise.[5] Pulmonary nocardiosis usually present as a suppurative infection of the lungs. The typical lesions consist of necrotic areas with abscesses which are highly infiltrated with neutrophils[6]. Mortality rate due to PN can rise up-to 45% in debilitated patients despite receiving best possible treatment. It is suggested that suppression of cellular immunity is responsible for acquisition of *Nocardia* infection.[7] In our case diabetes mellitus as a probable predisposing condition was present. In some instances, nocardiosis can occur in apparently healthy individuals but thorough evaluation of these patients may lead to discovery of some immunological diseases in the future.

Radiologically PN can present in so many different and nonspecific forms. The most frequent radiographic findings are lung consolidations and nodules with cavitation, lung masses and interstitial patterns; pleural effusions and chest wall extension can also occur.[8] Due to its non- specific clinical and radiologic features and difficult microbiological diagnosis, quite often PN is mistaken for other similar infections and disorders such as pulmonary tuberculosis (PTB), other bacterial pneumonias or neoplastic diseases. In TB endemic areas so many patients have been prescribed anti-tubercular drugs on the basis of radiographic and clinical features like in our case.

Pulmonary nocardiosis may coexist with pulmonary tuberculosis as reported by Kumar *et al*., and hence workup for the diagnosis of pulmonary tuberculosis should be carried out alongside especially where there is suspicion for TB.[9] Co-infection with other microorganisms may also occur especially in patients who have disturbed pulmonary defence systems; hence detailed microbiological assessment is mandatory in these cases.[10] Trimethoprim-sulfamethoxazole is the drug of choice for the treatment of nocardiosis. Other antibiotics like meropenem, ceftriaxone, ampicillin, linezolid, vancomycin, or amikacin also have been tried with good results. Some more serious patients need two or more types of antibiotics.[11,12] Our patient demonstrated good initial response to antibiotic treatment regimen consisting trimethoprim-sulfamethoxazole.

CONCLUSION

A high clinical suspicion is to be maintained and a meticulous approach is suggested both in immunocompromised patients and in those with chronic lung disease for diagnosing PN. Sulfonamides and some bacteriostatic antibiotics are good antimicrobials for the treatment of nocardiosis. Advanced microbiological techniques may lead to further increase in the diagnostic rate of nocardiosis.

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Submitted: September 15, 2021	*Revised: October 21, 2021*	*Accepted: March 23, 2022*

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