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Case Report

Diabetes mellitus-a true immunosuppression

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ABSTRACT

Uncontrolled diabetes mellitus predisposes to variety of infections which are very difficult to manage. Here we report a case of diabetes mellitus with pulmonary tuberculosis who did not respond to anti tubercular therapy (ATT). On further evaluation patient found to have nocardiosis co-infection which usually occurs in immunocompromised patients like malignancy/ in HIV virus infected patients. This patient did not have any such condition other than uncontrolled diabetes mellitus which predisposed to nocardiosis co-infection. This co-infection of pulmonary tuberculosis and nocardiosis is very uncommon in HIV negative individuals and is reported because of this rare presentation.

Keywords: Pulmonary tuberculosis, Nocardiosis, Diabetes mellitus

INTRODUCTION

The relationship between diabetes mellitus and tuberculosis is known for centuries. The reasons for poor response to treatment in tuberculosis includes poor compliance to therapy, drug resistance and immunosuppression.[1] Here we report a case of diabetes mellitus with pulmonary tuberculosis which did not respond to ATT and found to have a rare coexisting infection.

CASE REPORT

A 58 years old male, known case of type 2 diabetes mellitus for the past 6 years on irregular treatment with HbA1C of 9 % presented with cough with expectoration, fever with evening rise of temperature and weight loss. Patient's chest X-ray showed right upper lobe consolidation (Figure 1). Patient's sputum showed acid fast bacilli. Cartridge based nucleic acid amplification test (CBNAAT) detected *Mycobacterium tuberculosis* bacilli in sputum and it was sensitive to rifampicin. Patient was started on Cat 1 ATT and insulin for optimizing his blood sugar levels. Patient did not improve even after 6 weeks of ATT. Patient was further evaluated. Patient HIV ELISA test was repeatedly negative. Patient's sputum gram staining showed gram positive branching filamentous organism resembling Nocardia species (Figure 2). Patient's Sputum with modified Ziehl-Neelsen staining also showed branching Filamentous organism which confirmed Nocardia (Figure 3). Patient was started on cotrimoxazole along with ATT. Patient improved after cotrimoxazole subsequently *Nocardia asteroides* was grown on sputum culture after 8 weeks and was sensitive to cotrimoxazole. Patient gained weight and chest x-ray showed improvement, and his symptoms resolved after 6 months of ATT and cotrimoxazole (Figure 4).

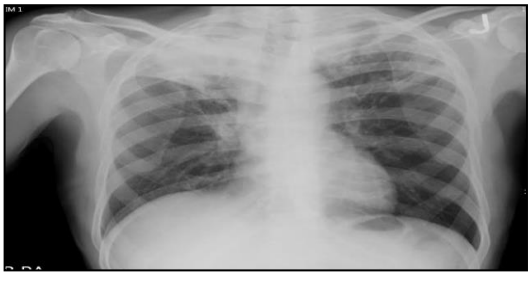

Figure 1: Right upper lobe consolidation.

Figure 2: Gram positive branching filamentous organism resembling Nocardia species in sputum gram staining.

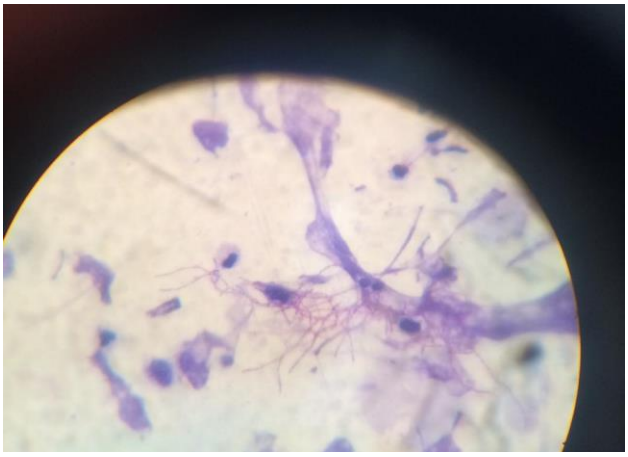

Figure 3: Nocardia species in Ziehl-Neelsen staining of sputum.

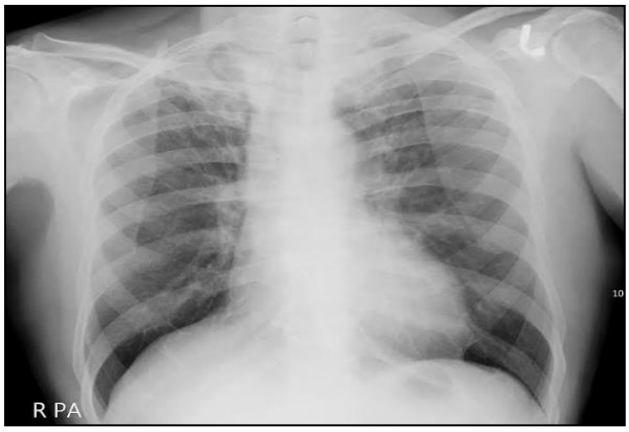

Figure 4: Chest X ray with improvement of right upper lobe consolidation.

DISCUSSION

Pulmonary nocardiosis is a subacute or chronic pneumonia caused by aerobic actinomycetes.[2] Pulmonary nocardiosis particularly affects individuals with depressed cell-mediated immunity for example those with malignancies, human immunodeficiency virus infection, solid-organ, or hematopoietic stem cell transplantation, and those on long-term treatment with steroids or other immunosuppressants.[2] In this case patient had only uncontrolled diabetes mellitus which can cause depression of cell mediated immunity. The clinical manifestations of pulmonary nocardiosis are non-specific.[3] It mimics pulmonary tuberculosis in both clinical symptoms and radiological characteristics.[3] A classic radiographic picture of tuberculosis that is unresponsive to medication should raise the suspicion of Nocardia infection as in this case.[3] Some reports indicate that greater than 2/3rd of patient diagnosed with pulmonary nocardiosis were initially diagnosed as having pulmonary tuberculosis and about 5% of patient proven with pulmonary tuberculosis were found to have coinfection with Nocardia.[4] The overall prevalence of pulmonary nocardiosis in a tuberculosis and chest hospital in Amritsar by Singh et al was found to be 1.4%.[5] In an another study the coincidence of pulmonary tuberculosis and nocardiosis was 1% for the entire study population and in those all had HIV infection.[6] This case is reported as here the pulmonary tuberculosis and nocardiosis coinfection occurs without HIV infection which is rarely Reported.

CONCLUSION

This case report emphasizes two things to clinicians: Nocardia can occur as a coinfection with tuberculosis and should be considered in cases of poor response to ATT. Even though Nocardia and Tuberculosis coinfection occurs predominantly in HIV positive individual (immunosuppressive states) it can also occur in uncontrolled Diabetes without HIV infection as in this patient which is rarely reported in literature.

Since the clinical features of tuberculosis and Nocardiosis are similar a high index of suspicion is necessary for diagnosing nocardiosis.

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