

# Pulmonary Nocardiosis in an HIV-Infected Patient - Need for early diagnosis: A Case Report

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## Abstract

The species *Nocardia* is majorly found in soil, invades primarily through respiratory route, and establishes the infection in the persons with immunocompromised status. A long-term immunosuppressive therapy, HIV and carcinomas are the most common reasons for a person to become immunocompromised. There is often a persisting confusion in the confirmatory diagnosis of pulmonary nocardiosis as the clinical manifestations are similar to that of pulmonary tuberculosis. Here we are presenting a case on Pulmonary Nocardiosis in a 33-year-old male HIV patient having complaints of fever, cough with expectoration and anorexia since 5 days. Chest X ray depicted the presence of fibrocavitary lesions in mid and lower zones with a bilateral pleural effusion, predominant on left side. Sputum culture showed absence of acid-fast bacilli (AFB) and revealed presence of gram-positive organisms suggesting few *Nocardia* like species. Patient was given with line of treatment for pulmonary nocardiosis and was symptomatically better within 5 days of treatment. Pulmonary nocardiosis has to be considered under differential diagnosis while suspecting pulmonary TB with fibrocavitary lesions. In case of suspected radiological finding along with a negative AFB culture report, testing for *Nocardia* species should be considered in the HIV positive patients and should be started on empirical therapy to prevent further worsening of condition.

## INTRODUCTION

Pulmonary nocardiosis is a rare infection caused by gram positive bacteria *Nocardia*, it is pronounced in immunocompromised patients as well in patients with chronic lung diseases (1). There are less incidences of pulmonary nocardiosis in immunocompetent patients as the pathogenicity of *Nocardia* is very low.(2) Most often the clinical and radiological manifestations of pulmonary nocardiosis resembles with that of the pulmonary tuberculosis (TB), the differential diagnosis for pulmonary nocardiosis can be done by observing the chest x ray or CT scan for the presence of pleural effusion, masses, nodules, or cavities(1)(3). In a country like India where there is a increased prevalence of human immunodeficiency virus (HIV) infection, we as well tend to possess a higher incidence of pulmonary nocardiosis (3). Here we present a case of pulmonary nocardiosis co-infected with HIV.

## Case History

A 33-year-old male HIV patient, presented to HIV care hospital with the complaints of cough, fever, tiredness, anorexia, difficulty in breathing and decreased sleep since five days. Patient was on Zidovudine(AZT)+ Lamivudine(3tc)+ Nevirapine(NVP) since two years. Past medical history showed he has stopped taking ART since 9 months and family history was nothing significant with the presenting symptoms. On examination, there was no pallor, cyanosis, icterus, finger clubbing, pedal edema, or lymphadenopathy and the SPO<sub>2</sub> was found to be 98% at Room Air. Respiratory system showed crepitations in left inframammary and axillary region, while the other systemic examination was nothing contributory. The recorded BP was 120/80 mmHg with a pulse rate of 80 bpm, CD4 count was 97 cells/mm<sup>3</sup>, CD3 count was 650 cells/mm<sup>3</sup> and the CD4 to CD3 ratio was 0.15. The laboratory results are as follows Hemoglobin level-11.3 gm/dl, RBC 4,85,000 cells/cumm, differential count: Neutrophils- 93%, Lymphocytes- 5%, Monocytes- 1%, Eosinophils- 1%. Sputum CB NAAT result indicated no presence of AFB and LFT reports were SGOT- 65 U/L and SGPT- 70 U/L. The chest X-ray showed fibrocavitary lesion in both mid & lower zones (? Pulmonary Koch's) and bilateral pleural effusion, more on the left side. Since X-ray showed presence of fibrocavitary lesion, pulmonary nocardiosis was considered under differential diagnosis. Sputum gram stain was suggestive for presence of few *Nocardia* like organisms and the diagnosis was made as pulmonary nocardiosis.

Since the clinical presentation and initial diagnosis was pointing towards *Pneumocystis Carinii* Pneumonia & Pulmonary TB, patient was empirically started with ATT (Anti Tuberculosis Treatment) and the treatment was stopped after the confirmation of Pulmonary nocardiosis. patient was continued with Co-trimoxazole, and Amikacin was added as a first

line therapy for pulmonary nocardiosis, cough & breathlessness started subsiding and patient was asymptomatic on day 5 of treatment.



- 1- X ray on day of admission showing Fibrocavitary lesion in mid & lower zones and bilateral pleural effusion, more on the left side.
- 2- X ray showing well demarcated fibrocavities in lower zone of left lung on 3<sup>rd</sup> day of treatment
- 3- X ray after 7 days of treatment

## Discussion

Nocardiosis is an uncommon infection in normal population, but in immunocompromised patients nocardiosis with pulmonary involvement is found predominantly than nocardiosis involving any other systems and nocardia asteroides is the most common species that can infect man.(3)(4). In an immunocompromised patient the diagnosis of pulmonary nocardiosis will be based on the positive sputum culture along with ruling out of other possible causes.(3)

The common symptoms of pulmonary nocardiosis include chronic cough, dyspnea, hemoptysis, and chest pain. In a case report of 10 cases infected with pulmonary nocardiosis, all the patients are with one of the concomitant conditions - HIV, COPD, carcinoma, there are 2 cases with HIV among them one case has turned out to be chronic and the other resolved. Among the 10 cases 5 turned out to be disseminated to other parts.(5) It is important to understand that, in the areas of high prevalence of tuberculosis, there are more chances for false interpretation of pulmonary nocardiosis with TB this has been shown by a set of two Indian studies conducted in HIV negative subjects, the studies showed that greater than two thirds of the subjects who were diagnosed with pulmonary nocardiosis were initially diagnosed as pulmonary tuberculosis and approximately 5% of the subjects with confirmed tuberculosis were known to be co infected with nocardiosis. So from the above study it is evident that pulmonary tuberculosis can mimic pulmonary nocardiosis (3)

Pulmonary nocardiosis will rarely exhibit as an acute disease, in most of the situation it is a chronic disease with a high mortality rate about 33%.(3) A case report suggested the need for alternative suspicion of pulmonary nocardiosis where the clinical manifestations are similar to that of tuberculosis and the patient is not responding positively to anti-tubercular medications. (6) Another case had reported that due to the lack of awareness, a culture report will only be done in situation where the patient is not responding for anti-tubercular drugs due to this there is a delay in the diagnosis of pulmonary nocardiosis.(7) In our case also, the patient was initially started on ATT and was not responding to it, but later when started treating for pulmonary nocardiosis, patient responded well.

Another case report based on retrospective analysis of data of 18 cases who are HIV positive and co-infected with nocardiosis, 10 cases showed a pulmonary involvement. In the study it was depicted that majority of the cases has turned out to be pulmonary, cutaneous, and soft tissue infections and 88% of the cases are treated with co-trimoxazole has shown a good microbiological and clinical response.(8)

## Conclusion

In patients who present with clinical features as well fibrocavitary lesion, and a culture showing absence of AFB there should be an alternative consideration of nocardiosis, and treatment should be started on empirical basis without waiting for the result as there is a delay in prognosis and increased risk of mortality in nocardiosis patients with HIV. Clinicians has to be aware of possibilities of pulmonary nocardiosis apart from pulmonary TB, if there is no clinical resolution of symptoms on ATT.

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