

# Pulmonary Nocardiosis: A Case report from a Tertiary Care Hospital

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## ABSTRACT

**Introduction:** Pulmonary nocardiosis is an uncommon bacterial infection that may lead to severe disease in immunocompromised patients. There are few reported cases as disease recognition is difficult.

**Case Report:** Here is a case report of pulmonary nocardiosis in 40 year old female presenting with cough & breathlessness with clinicoradiological & microbiological (modified ZN staining) findings suggestive of pulmonary nocardiosis.

**Conclusion:** Microbiological isolation is crucial for diagnosis. Early diagnosis and treatment of pulmonary nocardiosis can help in reduction of morbidity & mortality.

**Keywords:** Nocardia Spp; pulmonary Nocardiosis; Trimethoprim-sulfamethoxazole

## INTRODUCTION

Nocardiosis is an opportunistic infection in immunocompromised patients & one-third of the infected patients are found immunocompetent.<sup>1</sup> As there is similarity of its presentation with other respiratory pathogens (actinomycetes and Mycobacterium tuberculosis (TB) making clinical diagnosis of pulmonary nocardiosis difficult.<sup>2</sup> Prognosis remains poor in immunocompromised patients especially disseminated forms with central nervous system (CNS) involvement.<sup>3</sup> Here, we present a case report of pulmonary nocardiosis in an immunocompromised host.

## CASE REPORT

A 40 year old female presented with chief complaints of dry cough, dyspnoea, throat pain and generalized weakness since 3-4 days.

She was given symptomatic treatment. Patient had a history of intake of Prednisolone for period of 10-12 yrs. On examination patient was tachypnoeic with oxygen saturation of 98% on room air with extensive ronchi through both the lung fields. Hematological investigations showed anaemia (Hb-6.8g/dl), leukocytosis (11200/cu.mm). she was started on empirical oral antibiotic, amoxycylav 625mg TDS along with other symptomatic treatment. Test results of. Cartridge Based Nucleic Acid Amplification Test for Mycobacterium tuberculosis in sputum sample was reported negative. Chest radiograph showed bilateral heterogenous opacity. Contrast Enhanced Computed Tomography of chest revealed multiple discrete nodules, hypodense lesions of varying sizes in both lung fields with evidence of cavitation & air fluid level in most of them with coalescing similar density in the upper lobe & subtle ground glass attenuation around most of the lesion. Modified ZN staining of Sputum revealed weak acid fast, filamentous bacilli resembling Nocardia spp. She was started

on trimethoprim/suplhamethoxazole (tab.cotrimoxazole 960mg OD x14days following microbiological diagnosis. However, her general condition worsened and patient expired due to cardiac arrest.

## DISCUSSION

The aerobic actinomycetes group of bacteria includes Nocardia spp. which are gram positive branching filamentous, nonsporing, and mildly acid fast bacilli.<sup>4</sup> These bacteria are found in soil and water & are saprophytic. Human gets the infection through inhalational route or contact with the bacteria through a cut or abraded skin.<sup>5</sup> Earlier, it was thought to be an unusual infection but survey conducted by the Centre for Disease Control in 1976, reported nearly 500–1000 new cases per year in the US alone.<sup>6</sup> Recent years have shown increase in incidence of the disease mainly due to the increase in the number of immunocompromised individuals due to HIV infection, organ transplantation, and the patients receiving prolonged corticosteroids. COPD is unlikely to be found as a predisposing factor for pulmonary nocardiosis. 73%–77% of nocardiosis infection is found in lungs<sup>7</sup> followed by other organs being CNS, skin, and rarely cardiac, ocular, and osteoarticular. 29% to 80% of mortality rates was observed in immunocompromised patients with localized pleuropulmonary involvement.<sup>6</sup> Since, the deceased had a history of use of steroids for 10-12 years, hence, the immune system of the patient was compromised. This draws attention to the fact that steroids, which have a profound inhibitory effect on granulocyte, lymphocyte, and monocyte activity makes the individuals susceptible to contract rare bacterial infections irrespective of the phase of immunosuppression.<sup>8</sup>

Cough, fever, malaise were presenting complaints in this case. The clinical presentations of pulmonary nocardiosis are usually nonspecific with subacute or chronic duration and similar to that of other bacterial and fungal infections.<sup>9</sup>

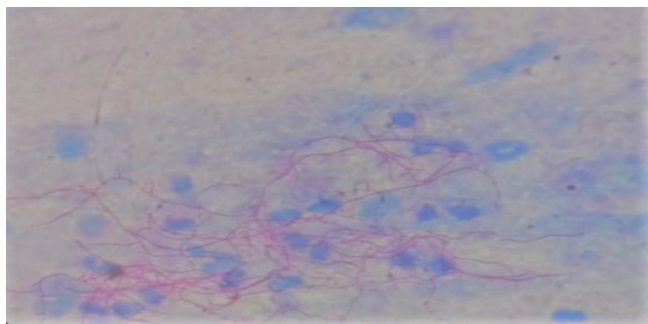
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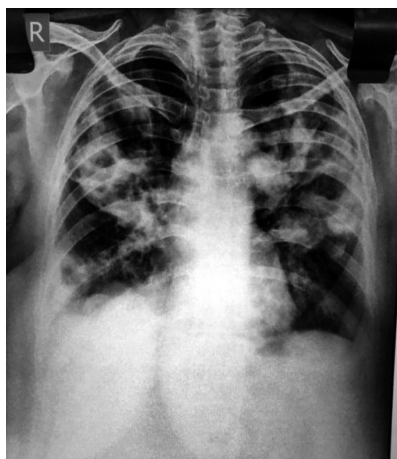
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**Figure-1:** Modified ZN staining of Sputum showing weak acid fast, filamentous bacilli resembling *Nocardia* spp



**Figure-2:** Chest radiograph showed bilateral heterogenous opacity

In countries where the incidence of Tuberculosis is high, most of the cases are misdiagnosed to be suffering from Tuberculosis. One should always exclude nocardiosis among patients who are not responding to anti-tubercular treatment. The radiographic pattern in nocardiosis is nonspecific with varied presentation such as lobar or multilobar consolidation, solitary lung masses and/or nodules, and reticulonodular infiltrates.<sup>10</sup> In 30% of cases cavitation is seen commonly in upper lobes of lungs.<sup>8</sup> In this case, patient with suggestive symptoms demonstrated *Nocardia* in sputum sample. Due to lack of requisite infrastructure species identification could not be done.

The drug of choice in the treatment of nocardial infection is cotrimoxazole. The alternate drugs that have activity against *Nocardia* are Amikacin, imipenem, ceftriaxone, minocycline, levofloxacin, linezolid, and amoxicillin-clavulanic acid.<sup>8</sup>

## CONCLUSION

When radiological features are atypical then one should always consider pulmonary nocardiosis in the differential diagnosis of pneumonia and tuberculosis not responding to treatment. Microbiological isolation is crucial for diagnosis. Early diagnosis and treatment can reduce the morbidity and mortality caused by pulmonary nocardiosis.

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