Case Report

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An Immunocompetent Man with Pulmonary Nocardiosis

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ABSTRACT

Nocardia infections rarely occur among normal population. Nocardiosis typically develops in immunocompromised person. In this paper, we report a case of pulmonary nocardiosis in an immunocompetent man. A 77-year-old man was examined in the emergency department because of cough, sputum, and fever from 10 days before admission. Computed tomography (CT) of the chest revealed air space consolidation, necrosis and cavities. Positive culture for nocardia species was reported. The patient received cotrimoxazole two regular-strength tablets (400/80 mg) "per os" (P.O) every 12 hours, and was discharged. In the follow-up after a month, he was completely well, most of his symptoms were improved, and his chest CT was near normal.

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Introduction

Nocardiosis is an infection caused by gram-positive, weakly staining, acid-fast nocardiaasteroides (N asteroides) bacteria. These bacteria are commonly found in soil and water. Human infection usually arises from direct inoculation of the skin or by inhalation. A nocardia infection most commonly affects the lungs, but it can spread to other areas of the body (1). It can be isolated in other immunocompetent patients and consists at least 15 percent of the infections in patients without a definable predisposing condition (2). A clinician can diagnose nocardiosis by taking a tissue sample from the infected area and testing it

for the presence of N asteroides bacteria (1). Pulmonary nocardiosis is difficult to be diagnosed and often is confused with other lung diseases (3). The infection can be treated successfully with long-term antibiotics. We report a 77-year-old man with pulmonary nocardiosis who is immunocompetent, with no predisposing factor.

Case Report

A 77–year-old man was admitted to Imam Khomeini hospital, Iran, in January 2017, with a chief complaint of cough, sputum, fever, fatigue, and weakness from 10 days before admission. He had no alcohol or tobacco usage. He was admitted with a temperature of 37.3 ºC, pulse rate of 85 BPM, blood pressure of 105.70 mmHg, and oxygen saturation level of 88%. In the examination of both lungs, diffused rales were heard. All other tests were normal. In his laboratory test, he had leukocytosis and his white blood cell (WBC) was 12700 cells/µl. Human immunodeficiency virus antibody (HIV Ab), hepatitis C virus antibody (HCV Ab), and hepatitis B surface antigen (HBs Ag) were negative (Table 1).

Table 1. Laboratory tests

Variable	Value
WBC (/µl)	12700
HB (g/dl)	11.8
MCV (fl/red cell)	87.2
PLT (/mm^3)	239
Cr (mg/dl)	0.9
AST (IU/l)	13
ALT (IU/l)	11
HIV Ab	Negative
HCV Ab	Negative
HBs Ag	Negative

WBC: White blood cell; Hb: Hemoglobin; MCV: Mean corpuscular volume; PLT: Platelet; Cr: Creatinine; AST: Aspartate transaminase; ALT: Alanine transaminase; HIV Ab: Human immunodeficiency virus antibody; HCV Ab: Hepatitis C virus antibody; HBs Ag: Hepatitis B surface antigen

His echocardiography showed ejection fraction (EF) of 50%, minimal pericardial effusion, mild tricuspid valve regurgitation, and mitral valve regurgitation. Computed tomography (CT) of the chest revealed air space consolidation in left lower lobe (LLL) with necrosis and calcification; in addition, 3 cavitary lesions were seen in right upper lobe (RUL) and LLL as well as air space nodular consolidation in lingua. Several small nodules with speculated borders in lungs were seen with pleural effusion and several mediastinal lymph nodes (Figures 1 and 2).

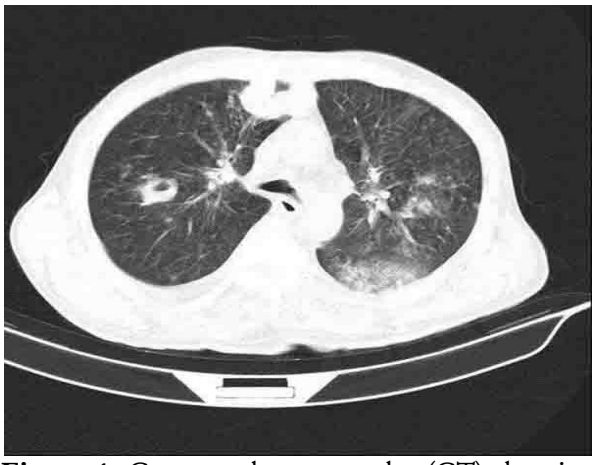

Figure 1. Computed tomography (CT) showing air space consolidation in left lower lobe (LLL) with cavitary lesion in right upper lobe (RUL) and air space nodular consolidation in lingua

Sputum smear was negative for acid-fast bacilli, and qualitative polymerase chain reaction (PCR) and genexpert test did not show mycobacterium tuberculosis (TB).

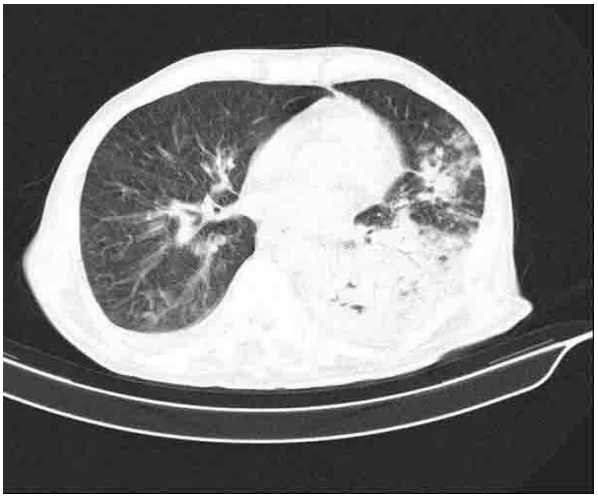

Figure 2. Computed tomography (CT) showimg air space consolidation in left lower lobe (LLL) with necrosis and calcification

We started levofloxacin and vancomycin as treatment for bacterial pneumonia, and because of unusual chest CT, bronchoscopy was done. There was no abnormality in bronchoscopy. Bronchoalveolar lavage (BAL) was done, and specimens were sent for bacterial and fungal culture, TB PCR, and viral infection and malignancy. Positive culture for nocardiosis was reported. His brain magnetic resonance imaging (MRI) was also normal. The patient received cotrimoxazole two regular-strength tablets (400/80 mg) "per os" (P.O) every 12 hours. In the fallow-up after one month, he was completely well, most of his symptoms were improved, and chest CT was near normal. Cotrimoxazole was continued for additional 5 months.

Discussion

Nocardia infection is a rare disorder caused by bacteria, which tends to affect the lung, brain, and skin. Pulmonary nocardiosis is a subacute or chronic pneumonia (3). Nocardia infections are rare among normal population. Nocardiosis typically develops in immunocompromised person (4). Singh et al. have also reported a case of immunocompetent individual with subcutaneous involvement of nocardia brasiliensis (5). Involvement of lungs (75-80%) and skin are the most common form of presentation, but virtually any organ system may be involved (6, 7). The clinical presentation of pulmonary nocardiosis is variable and nonspecific (8). In this case, symptoms were present from 10 days before admitting in our hospital. The usual symptoms are that of dyspnea, productive cough and fever. In our patient, productive cough was his prominent chief complaint. Sometimes, imaging findings are not specific for nocardiosis (5). Consolidations and large irregular nodules, often cavity, are most common; nodules, masses, and interstitial patterns also occur (9). Upper lobes are more commonly involved (10). In our case, air space consolidation in LLL with necrosis and calcification, and also three cavities in RUL and LLL with several small nodules with speculated borders in lung and pleural effusion were seen in CT scan. Since the clinical and radiologic manifestations are nonspecific, and the microbiological diagnosis is often difficult, it seems likely that in some patients pulmonary nocardiosis will be mistaken for other infections such as TB, bacterial pneumonia, or malignancies (5). lkari et al. recommended that physicians carefully differentiate pulmonary nocardiosis from pulmonary nontuberculous mycobacterial disease in immunocompetent patients (11). Patients with pulmonary nocardiosis should therefore be considered for brain imaging and blood culture testing for assessing possible disseminated or central nervous system disease (5). The diagnosis is confirmed by direct microscopy and culture (12). In our case, nocardia was detected in BAL culture. The treatment for this infection includes sulfonamides and more recently, trimethoprim and sulfamethoxazole associated with surgical drainage when required, but other regimens like amikacin, imipenem, minocycline, linezolid, and cephalosporins are alternatives (13, 14).

The place of surgery in the management of nocardiosis depends on the site and extent of infection. In extramural disease, indications for aspiration, drainage, or excision of abscesses are similar to those for other chronic bacterial infections. In patients with brain abscesses, surgery should be performed when abscesses are accessible and relatively large, the patient’s condition deteriorates or lesions progress within 2 weeks of therapy, or there is no reduction in abscess size within 1 month. Small abscess can be cured by prolonged antimicrobial therapy (15). The duration of treatment for nocardiosis depends on the disease site (3). For pulmonary involvement, therapy is usually continued for 2-3 or 6-12 months after disease resolution (16). The present case highlights that pulmonary nocardiosis should be keep in mind in immunocompetent patients as well.

Conflict of Interests

Authors have no conflict of interests.

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