Case Report: Pulmonary Nocardiosis in a Patient with Chronic Obstructive Pulmonary Disease and Receiving Corticosteroid Treatment due to Nephrotic Syndrome

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Abstract: Introduction: Nocardia spp. belong to Actinomyctes family and usually found on soil. They show variation in acid fast stain. Microscopic examination reveals Gram positive filamentous bacilli. Nocardiosis, is a rare clinical situation caused by Nocardia species and takes place especially in immunosuppressed individuals. In our case report we aimed to present pulmonary nocardiosis in a patient receiving corticosteroid treatment due to nephrotic syndrome and also accompanying chronic obstructive pulmonary disease.

Case Presentation: 53 year old male patient was admitted to the Chest Diseases outpatient clinic with fever, sputum and cough complaints. The patient had a previous story of nephrotic syndrome and chronic obstructive pulmonary disease and receiving corticosteroid treatment. Thorax CT image showed a 13 cm cavitory lesion at the lower lobe of the right lung, and 21 mm lesion neighboring to the other lesion. Fibrotic structure was detected on both hilus of the lung. This was evaluated as a sequela of infection. The patient underwent flexible bronchoscopy and respiratory tract specimens (bronchoalveolar lavage, bronchial lavage and sputum) were sent to the Microbiology Laboratory. The Gram stain showed filamentous Gram positive bacilli and on the fourth day of incubation Nocardia spp was reported. The patient was administered trimethoprim sulfamethoxazole treatment and recovered.

Discussion: Pulmonary nocardiosis is a rare disease. The importance of this infectious pathogen has increased due to recent increase immunosuppressive treatment modalities, HIV infection, and organ transplantation. The clinical and radiological symptoms are nonspecific and because of this microbiological methods are important in diagnosis of nocardiosis. Consecutive examination of clinical material showing the typical microscopic appearance in these patients should draw the attention of the clinician to this pathogen and treatment is needed to be done accordingly.

Keywords: Nocardia spp, immunosuppression, cavitary pulmonary lesion, nephrotic syndrome, chronic obstructive pulmonary disease.

INTRODUCTION

Nocardia spp is an important member of Actinomycetes family and usually found on soil. They show modified acid resistance and they are Gram positive filamentous bacilli on Gram stain [1]. Nocardiosis is a rare condition and especially takes place under immunosuppressive situations. Recently there has been paid more attention to this bacteria due to an increment in immunosuppressive treatments [2].

The infection can appear as pulmonary nocardiosis or cutaneous infection depending on the route of transmission [3]. Most of the infections (86%) in humans are due to N. asteroides [4,5]. Pulmonary nocardiosis takes place by inhalation of the bacteriae. It is usually subacute. Rarely a solitary lesion with a cavity can be detected. The lesion may mimick military tuberculosis and have nodular lesions on chest X-ray and pleural effusion; but the radiological and clinical findings are not easy to diagnose due to nonspecific data [6,7].

We aimed to present a male patient with pulmonary nocardiosis case due to corticosteroid treatment because of nephrotic syndrome.

CASE

53 year old male patient was admitted to Chest Diseases outpatient unit with cough, sputum and fever lasting for five days. The patient did not have any previous disorder; but he was taking 16mg/day methylprednisolone treatment due to nephrotic syndrome. The physical examination revealed the body temperature as 39.2°C, blood pressure 130/85 mmHg, heart beat 92/min and respiratory rate 26/min. The respiratory system examination showed that both hemithorax was participating respiration equally and no specific symptom about percussion was detected. Rales were detected bilaterally more significantly on the left side. The patient was hospitalized and his CBC revealed Hb 11.2g/dl htc 33.6%, leukocyte 15300/mm³, thrombocyte 376000/mm³ sedimentation 98 mm/hour.

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BUN: 38, kreatinin: 1.2 g/dl, glucose: 394 mg/dl; Na: 122 mEq/L and Cl: 85mEq/L. The blood gas analysis reported pH: 7.39, pO₂: 99 mmHg, pCO₂ 30.1 mmHg, HCO₃⁻: 19.6 and SO₂: %97.4. The thorax CT scan showed 13 cm caviatary lesion on the right medial basal and superior segment and 21 mm lesions in the neighborhood (Figure 1). Scattered emphysema regions and fibrotic structure as an infection sequela were detected on both hilus. The patient was initiated piperacillin/tazobactam treatment prophylactically and flexible bronchoscopy was applied for diagnostic purposes due to rapid progress in patient. No endobronchial lesion was detected during the bronchoscopy procedure. The bronchial specimens were cultivated on blood agar, EMB agar and chocolate agar. Gram stain was also applied. The Gram stain reported branched filamentous Gram positive bacilli (Figure 2). The acid fast stain was negative and tuberculosis culture did not yield any colonies. After four days of incubation of clinical specimens, Nocardia spp colonies with chalk appearance and soil odor were detected (Figure 3). The patient was initiated trimethoprim sulfametaksazol treatment. Then the patient recovered.

**DISCUSSION**

Pulmonary nocardiosis is a rare disease. The incidence of this pathogen has increased due to invasive procedures, immunosuppressive treatment, organ transplantation and infections such as HIV. Clinical and radiological symptoms are nonspecific. The disease can vary from nonspecific symptoms such as fatigue to serious symptoms such as respiratory insufficiency. Tuberculosis, malignity and fungal infection should be considered in differential diagnosis [8-11]. This situation may lead to misdiagnosis or late diagnosis. Because of this microbiological diagnosis in nocardiosis infection is very important. Nocardia species grow slowly on nonspecific culture [12]. First isolation of the bacteriae on culture takes 4-10 days and the typical colonies appear in two to four weeks. Samples having microbiota members may hide Nocardia colonies and they may easily be missed. The colonies have a velvet appearance due to short aerial mycelia and have R type colonies. The can have orange to red pigmentation or chalk like appearance [7]. In our case report the colonies were detected on the fourth day of incubation and this indicates the importance of culture and cultivating on appropriate culture media.

The radiological images in a case series with twenty one patients were evaluated and it was reported that consolidation areas and big irregular nodule formation was the most common appearance; but pleural effusion and interstitial lesions may be detected as well. Yildiz et al. reported that two patients had consolidation and done had pulmonary nodule [8]. The radiological image may not lead to diagnosis. The patient in our case report had a cavitary radiological image. Because of that tuberculosis, fungal infection and malignity were investigated for differential diagnosis. We eliminated tuberculosis diagnosis by AFB negativity, negative tuberculosis culture and M. tuberculosis DNA was not detected as well. Sulfonamides are the most effective
choice in pulmonary nocardiosis treatment. There may be healed cases with imipenem, ampicillin and monocyline. After three months of treatment the patient healed without sequela and the therapy last for six months in case of a relapse [11,13]. Respiratory infections due to Nocardiosis is important especially in immunosuppressed individuals and clinicians should keep this in mind when evaluating these patients.

REFERENCES