Case Report

Isolated pulmonary candidiasis in a patient with diabetes mellitus: A rare case report

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Abstract

Fungal infections are as a cause of morbidity and mortality in immunocompromise patients. Because the respiratory tract is colonized with *Candida*, the presence of this agent in respiratory specimens makes the diagnosis of *Candida* pneumonia problematic. *Candida* pneumonia is a rare infection, and the majority of cases are secondary to hematogenous dissemination. Furthermore isolated *Candida* pneumonia originating from endotracheal inoculation is an extremely rare entity. We describe a case of isolated pulmonary candidiasis in the form multiple nodular lesions in a patient with long-term history of diabetes mellitus without evidence of fungemia or systemic involvement who responded to antifungal therapy.

Key Words: *Candida*, Candidiasis, fluconazole, pneumonia

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INTRODUCTION

A genus of yeasts as the significant cause of fungal infections worldwide is *Candida*.[1] The most prevalent *Candida* species is *Candida albicans*. This fungus is a part of the normal flora of upper respiratory and gastrointestinal tract.[2] However, *Candida* pneumonia is a rare manifestation, especially primary form.[3,4] Most of the cases of *Candida* pneumonia occurs in immunosuppressed patients with hematogenous dissemination from a distant site.[4] There are several risk factors for candidiasis such as the broad spectrum of antibiotics, neutropenia, indwelling catheter, diabetes mellitus (DM), human immunodeficiency virus (HIV), acute renal failure, surgical procedure, and long term corticosteroid treatment. Predisposing factors for pulmonary candidiasis also are the same. Fungal colonization is considered a major risk factor for subsequent fungal disease in these patients.[4,5]

In this paper, we report a rare case of isolated *Candida* pneumonia in the form of nodular lesions in a patient with DM that responded to antifungal therapy.

CASE REPORT

A 55-year-old man with a 10-year history of DM was admitted to our hospital with a 2 months history of dyspnea and cough. The patient was alert and afebrile and complained of chronic nonproductive cough. The patient had no history of immunosuppressive treatment or disease except the history of DM. The patient denied alcohol abuse and smoking. His vital sign was stable. Physical examination was not notable. Cell blood count (CBC) showed hemoglobin (Hgb) 9.9g/dl, white blood cell count (WBC)

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6500, with polymorphonuclear dominant (56%). The level of C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were 50mg/dl and 105 mm/hour respectively. HIV test was negative. In chest X-ray, nodular pattern was seen. This pattern also was showed in thorax computed tomography (CT) scan [Figure 1].

Considering the course of the disease, clinical manifestations and stable vital signs, the antibiotic was not started.

3 sets of blood cultures and echocardiogram were negative for endocarditis. Examination of the sputum specimen showed *C.albicans*. As the patient complained of a chronic cough and according to pulmonary lesions, bronchoscopy and bronchoalveolar lavage (BAL) was performed. The specimens evaluated for bacteria, nocardia, actinomyces, fungi and mycobacterium tuberculosis (TB) smear and culture, polymerase chain reaction for TB and also cytology for malignancies. The results were all negative except the culture of BAL fluid which revealed *C. albicans*. The serum and BAL fluid galactomannan were negative.

Hence, CT-guided percutaneous biopsy of the lesion of the lung was performed. The result showed yeast and pseudohyphae that was compatible with the diagnosis of *Candida*. The tissue culture yielded *C. albicans* as well. Furthermore, microscopic studies for other microorganism such as acid-fast staining were negative. On special sectioning, no evidence of granuloma or malignancy was reported. Considering diagnosis, antifungal regimen (intravenous fluconazole) was started. Parenteral antifungal therapy continued for 2 weeks and then followed with oral fluconazole. Control chest CT scan was done 5 weeks later, which showed significant regression of pulmonary lesions [Figure 2]. At the completion of treatment, the level of CRP and ESR decrease to 6 mg/dl and 17mm/hr, respectively.

DISCUSSION

In this paper, we describe a patient with isolated *Candida* pneumonia. Our patient represents *Candida* pneumonia with an unusual manifestation. Pulmonary candidiasis is a rare entity often in immune deficient patients with the majority of cases secondary to fungemia. Because the respiratory tract is colonized with *Candida*, the presence of this agent in respiratory specimens makes the diagnosis of pneumonia problematic which represents contamination versus disease.[4] Although BAL culture is an important adjunctive method,[6] (as in our case with positive BAL culture) but the growth of *Candida* in respiratory samples represents contamination; hence, the diagnosis depends mainly on tissue biopsy with evidence of fungal invasion.[4] Predisposing factors are immunodeficiency states such as immunosuppressive diseases, malignancies and corticosteroids.[7] The patient with a history of DM was described in this paper. DM has been introduced as a predisposing factor for colonization and infection.[8,9] Hence, this might have been responsible for the increased risk of infection. In this case, multiple nodular lesions were seen and the tissue biopsy confirmed the diagnosis of *Candida*. *Candida* pneumonia originating from endobronchial inoculation of the lung is extremely rare and usually is in the form of diffuse or lobar bronchopneumonia. On the contrary, hematogenous dissemination results in multiple nodular lesions of the lung.[4] One of the interesting aspects of this case was the isolated lung infection in the form of multiple pulmonary nodules without evidence of fungemia or other systemic infections which are rare and describe in a few case

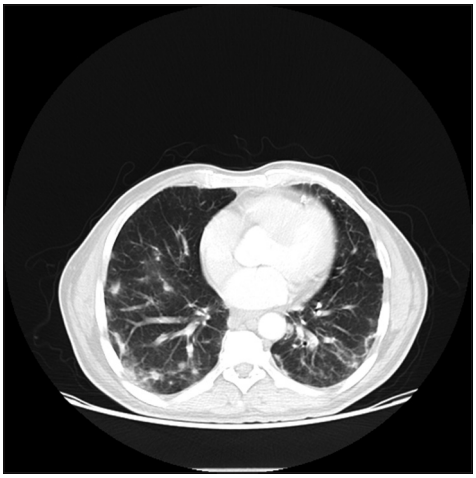

Figure 1: Multiple nodular lesions with ground glass halo

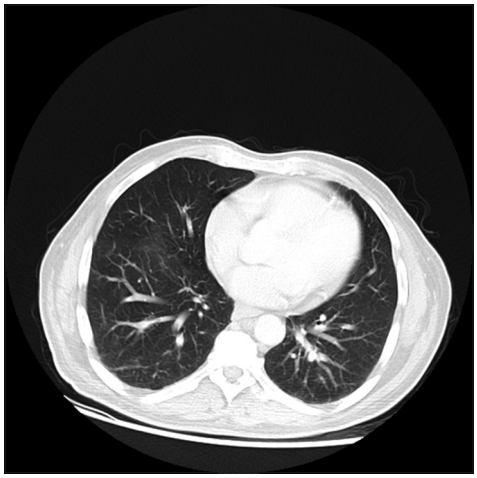

Figure 2: All of the lesions significantly were resolved after treatment

reports.[6,3] In another study by Yasuda *et al*., *Candida* pneumonia with multiple cavitary lesions and nodules was described as a case of invasive candidiasis, and the blood culture specimens yielded *C.albicans*.[10] In our case intravenous fluconazole resulted in clinical improvement and also diminished inflammatory markers.

In conclusion, although candida pneumonia is rare, it should be considered in differential diagnosis of pneumonia in the proper setting and for definitive diagnosis the tissue biopsy should be obtained.

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Conflicts of interest
There are no conflicts of interest.

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