Case Report

Pulmonary cryptococcosis in immunocompetent patient: a case report

Bin Zhang*, Wei Cao*, Xiu Wu, Shengyu Wang

Department of Pulmonary and Critical Care Medicine, The First Affiliated Hospital of Xi’an Medical University, Xi’an 710077, Shaanxi, PR China. *Equal contributors.

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Abstract: Pulmonary cryptococcosis (PC) is an opportunistic and conditional disease. It commonly occurs in immunocompromised patients. We presented a case of PC in an immunocompetent patient. This patient had the complaints of irritating cough and shortness of breath. A variety of antibiotic treatment was ineffective. The patient eventually received percutaneous transcutaneous biopsy and PC was diagnosed. Patient was treated by intravenous fluconazole for two weeks. The patient’s follow-up was performed by Pulmonary Department, and we learned that the patient was well.

Keywords: Pulmonary cryptococcosis, immunocompetent, percutaneous transcutaneous biopsy

Background

Pulmonary cryptococcosis (PC) is an opportunistic and conditional disease. The lungs and central nervous system in human are common organs invaded by cryptococcus, rarely in the bones, skin, mucous membranes and other organs [1]. Most patients with PC are immunocompromised, such as acquired immune deficiency syndrome (AIDS), subjects with immunosuppressive drugs and hematological malignancies [2]. Therefore, it is usual for immunocompetent subjects with PC to be ignored. Here, we describe a healthy subject of cough as the main symptom and final diagnosis of pulmonary cryptococcosis.

Case report

A 58-year-old male healthy subject was admitted to Pulmonary Department of the First Affiliated Hospital of Xi’an Medical University because of cough and shortness of breath for one month. One month before admission, he coughed and was short of breath. Levoﬂoxacin and other antibiotics have no effect on his symptoms. Two days before admission, his cough was more severe and shortness of breath was progressive. The patient’s physical examination was normal. His temperature was 36.6°C, heart rate was 84 beats per minute, respiratory rate was 20 beats per minute and blood pressure was 130/90 mmHg. The results of chest wall examination revealed low breath sounds bilaterally. The findings of heart, abdominal and central nervous system examinations were unremarkable. Routine blood tests including white blood cell (WBC), hemoglobin (HGB) and blood platelet (PLT) were normal. Erythrocyte sedimentation rate (ESR) 60 mm/h. Serum 1,3-beta-glucan-D test (G test) 75 (normal range: 0-60 pg/ml). Tumor markers and autoantibody are normal. Tuberculosis antibody, peripheral blood T-spot, ANCA, Hepatitis B, Hepatitis C, syphilis and AIDS antibody were normal. A chest computed tomography (CT) scan revealed lower lobes of the bilateral lungs were patchy consolidation shadow (Figure 1).

The patient was admitted into the ward, and cefoperazone sulbactam was dispensed. However, his symptoms were not improved. The patient was examined by bronchoscopy. Bronchoscopies showed bilateral bronchial mucosa were normal, and bronchial alveolar lavage cultures were negative. The second chest CT scan showed patchy consolidation shadows in bilat-
Figure 1. Chest CT scan at the first time revealed lower lobes of the bilateral lungs were patchy consolidation shadow.

Figure 2. Chest CT scan at the second time showed lower lobes of the bilateral lungs were still patchy consolidation shadow.

Figure 3. Histochemical staining in lung biopsy pathology revealed PAS was positive (black arrow) and anti-acid was negative.
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lung showed granulomatous inflammation associated with necrosis. Further histochemical staining revealed Periodic Acid-Schiff (PSA) was positive and anti-acid was negative (Figure 3). Thus, pulmonary cryptococcal was diagnosed. After the treatment of intravenous fluconazole for two weeks, the patient’s symptoms were relieved. The patient’s follow-up was performed by Pulmonary Department, and we learned that the patient was well.

Discussion

Pulmonary cryptococcosis is caused by Cryptococcus neoformans, which has been discovered from soil contaminated with avian excreta, specifically pigeon droppings [3]. Cryptococcus can invade the numerous parts of human body, such as the lung, central nervous system, skin, gastrointestinal tract, skeletal system and so on [1, 2, 4]. Cryptococcal diseases are usual in the immunodeficiency subjects, and immunocompetent patients with cryptococcal infection are common to be neglected. Study shows that the incidence of pulmonary cryptococcosis is increasing in immunocompetent patients [5]. Besides, approximately one-third of immunoreactivity patients with pulmonary cryptococcosis were asymptomatic [6].

In this case, the subject has coughed for one month and his symptoms were not relieved by the repeated treatments. His lung lesions presented with scattered nodules in the chest CT, which was suspected to be either malignant neoplasms or another infectious disease such as tuberculosis. Finally, the diagnosis was confirmed by the histopathology with CT guided percutaneous lung biopsy. Thus, it is suggested percutaneous lung biopsy is performed as soon as possible for subjects with long-term cough and patchy shadows in the pulmonary imaging.

Clinical symptoms and signs of pulmonary cryptococcosis were uncertainty, even sometimes were not compatible with the imaging performance of the lung in pulmonary cryptococcosis patients [7, 8]. The symptoms and signs were not constantly typical, even non-existent, but CT scan of lung lesions was often obvious. The mainly feature of the imaging was nodules and lumps damage, a few manifestations were parenchymal infiltrates, cavitary lesions, pleural effusion, hilar lymph nodes [6, 9, 10]. Therefore, combination of clinical and iconography should be thoughtful consideration for diagnosis [11-13]. The therapy of PC includes systemic use for antifungal drugs, surgical resection of the lesions, and support therapy [14-18]. For patients with an immune deficiency, rectification of the underlying disease is very significant [14]. If the lung inflammation could not be absorbed after anti-inflammatory treatment or anti-tuberculosis treatment, or cannot be diagnosed with any other unclearly disease, we should consider the probability of pulmonary cryptococcosis, especially in immunocompetent patient [3, 19]. It is basic to acquire all types of invasive biopsy specimens at the early phase of diagnosis [4]. Some noninvasive laboratory tests, such as the PCR test is also considered as convenient and effective diagnostic tool [20]. The histological certificate is a golden standard to diagnose pulmonary cryptococcosis [21-23]. It is significant to get an early lung specimen biopsy through bronchoscope or transbronchial lung biopsy (TBLB), even surgical resection of the lesion and all kinds of invasive techniques [3, 23, 24].

Conclusions

In conclusion, this case report indicates that pulmonary cryptococcosis in immunocompetent patients is a common disease to be ignored. The enormous variations and protean representations of its clinical aspect and image manifestation character often led to misdiagnosis. Recognition and invasive examination of immunocompetent patient’s pulmonary cryptococcosis in the early period may assistance with improvement of diagnosis and prognosis.

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Disclosure of conflict of interest

None.

Abbreviations

PC, pulmonary cryptococcosis; AIDS, acquired immunodeficiency syndrome; CT, Computed Tomography; ANCA, Anti-Neutrophil Cytoplasmic Antibodies; TBLB, transbronchial lung biopsy; CAP, Community Acquired Pneumonia.
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Address correspondence to: Dr. Shengyu Wang, Department of Pulmonary and Critical Care Medicine, The First Affiliated Hospital of Xi’an Medical University, Xi’an 710077, Shaanxi, PR China. E-mail: wang-shengyu@yeah.net

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