Case Report

Multiple cerebellar abscess and pneumonia caused by Cryptococcus in an immunocompetent adult patient

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ABSTRACT

Cryptococcus brain abscess was uncommon and cryptococcal cerebellar abscess and pneumonia were rarely in immunocompetent patients. We report a case of an immunocompetent adult with multiple cerebellar abscess and pneumonia caused by cryptococcus. She gave a history of headache, vomiting, chest pain and bilateral cerebellar signs. Multiple Cerebellar abscess and pneumonia were detected on magnetic resonance imaging (MRI). Our patient underwent lung biopsy, resection of the lesion and the cryptococcoma was subsequently diagnosed by histopathologic examination. The patient was treated successfully with debridements and prolonged antifungal medicine therapy.

KEY WORDS: Multiple cerebellar Abscess, Pneumonia, Cryptococcus, Immunocompetent.

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INTRODUCTION

The bacteriology of a brain abscess is diverse and usually consists of a complex mixture of aerobes and anaerobes. Cryptococcus neoformans is an opportunistic pathogen, and it is widely distributed in nature, has been isolated from many fruits, soil, milk, plants, feces and manure of pigeon and other birds. It was a rare cause of brain abscesses and meningitis and was found mainly in compromised patients with cell mediated immune defects, particularly in acquired immunodeficiency syndrome or in patients receiving corticosteroid and immunopressive therapy.[1]

Only three cases of isolated cryptococcus cerebellar abscess in an immunocompetent patient have been reported previously in the literature. We describe such a case of multiple cerebellar abscess and pneumonia caused by cryptococcus which was diagnosed by magnetic resonance imaging (MRI) and histopathologic examination. The patient was treated successfully with debridements and prolonged antifungal medicine therapy.

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CASE REPORT

An afebrile 53-year-old immunocompetent female patient was admitted to our clinic. Medical history included chronic progressive headaches for six month previously diagnosed as vascular headache before this visit, without history of fever and any congenital or acquired immune deficiency. The patient was a farmer woman, exposed to poultry markets and without diabetes and hypertension. She still gave a previous history of several non-bilious vomiting episodes. Two weeks prior to admission, she developed ataxic gait, chest pain and worsening headaches. On the day of admission, her vital signs were normal and she had no fever or clinical signs of localized infection in her body. Neurological evaluation showed signs of cerebellar dysfunction, including ataxia, wide-based gait and dysmetria.

The blood level of glucose, liver function and renal function tests were all normal. Quantitative C-reactive protein was 9mg/L (0.0-5.0mg/L). HIV serology

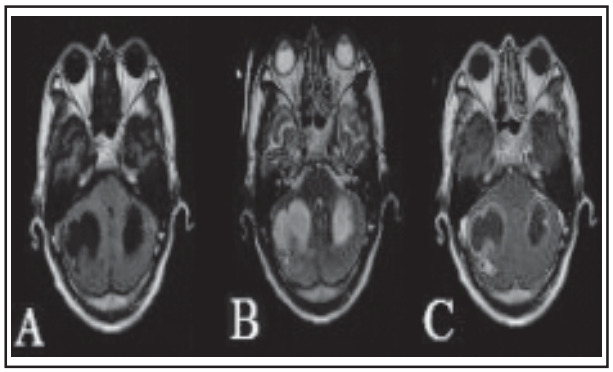

Fig-1: MRI scan of the cranial: T1 (A), T2 (B) and enhancement (C).

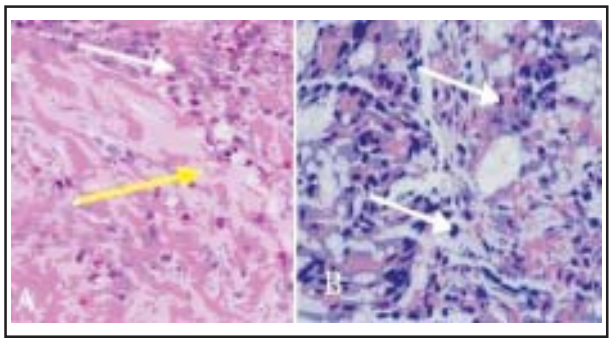

Fig-3: Histopathological picture of lung tissue (A) and cerebellar necrotic tissue (B) (Hematoxylin-eosin stain, magnification x 40).

was negative. Her peripheral red blood cell count was 3.05×10^{12}/L (3.5-5.0×10^{12}/L) and the rest of the blood count findings and serum chemistry were normal. Viral serology and blood cultures were unremarkable. In lumbar puncture, cerebrospinal ûuid (CSF) pressure was 280cmH_2O, and CSF was clear. In the evaluation of CSF, white blood count, protein and glucose were within reference values. Third sputum culture revealed fungal infection.

The patient was investigated using MRI of the cranial which revealed multiple well-demarcated brain lesion in the posterior fossa region, low signal on T_1-weighted, high signal T_2-weighted and associated oedema in the surrounding parenchyma. After contrast matter administration, the lesion showed ring-type enhancement and mass effect on the fourth ventricle without hydrocephalus (Fig-1). CT scan of the brain showed multiple low signal brain lesion and high signal surrounding abscesses in the posterior fossa region, causing surrounding edema with effacement of the 4th ventricle. CT scan of the chest showed empty shadow in the uper lobe and lower lobe of right lung (Fig-2).

After admission, the patient underwent histopathologic examination of lung puncture, neurosurgical resection of the cerebellar abscess and drainage of of the cerebellar abscess from lateral posterior. Lung histopathologic examination showed interstitial fibrosis hyperplasia (yellow arrow) and many inflammatory cells infiltration (white arrow) (Fig-3 A). Cerebellar abscess histopathologic examination showed yeast-formed fungus (white arrow) among the inflammatory and necrotic tissue. The fungus was about 5 to 10 μm in diameter and had a thick gelatinous capsule. The presence of budding yeast like organisms staining with Gomori methenamine silver, results from the mucicarmine stain were consistent with cryptococcal infection (Fig-3 B). Meanwhile, according to drug sensitivity test the patient was treated with fluconazole over 30 days. The headache and cerebellar signs gradually improved. MRI scan of the cranial showed a decrease in the size of the lesion. Her medication was changed to oral fluconazole which was continued for 12 week. The patient's condition improved, and her headache, ataxia, gait disturbance and vertigo completely resolved.

DISCUSSION

In the case, the first, we suspected she was brain metastases, and cerebral abscesses was not considered because of absence of clear indicators of infection in clinical and laboratory, the second, we considered she was tuberculous cerebral abscess because of empty shadow in CT scan of the chest. Surprisingly, histopathologic examination of lung biopsy and sputum culture result failed to confirm malignancy

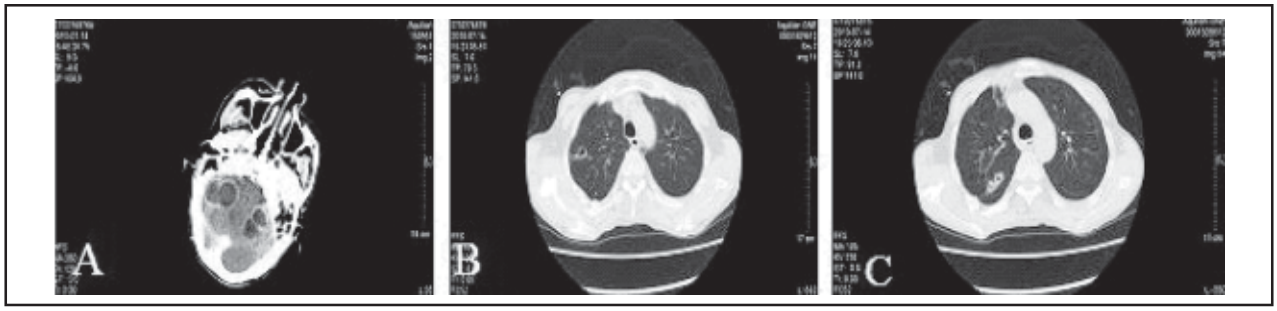

Fig.2: CT scan of the brain (A) and the chest (B, C).

or Tuberculous cerebral abscess. Nonetheless, the resection and drainage of the cerebellar abscess were done because of the high Intracranial pressure in patients and foramen magnum herniation prevention, and also histological tissue examination was necessary for definitive microorganisms. Malignancy and tuberculosis were ruled out.

Cryptococcosis was an infectious disease caused by the yeast C.neoformans.[2] This microorganism was traditionally described as a unique species: C. neoformans that included two pathogenic varieties: C. neoformansvar. neoformans and C. neoformans var. gattii. Important differences between the two varieties have recently raised C. neoformans var. gattii to species status as cryptococcus gattii.[3] The CNS was the second most common site of infection for cryptococcosis after the lungs, but was the most common site of disease manifestation because of the strong neurotropic endency of cryptococci.[4] Cryptococcosis initial infection was thought to be acquired by inhalation of an encapsulated yeast like fungus, cryptococcus neoformans, and after exposition to environmental sources.[5] Which is a ubiquitous microorganism found in mammal and bird feces, particularly pigeon droppings. Lung lesions arecharacterized by intense granulomatous inflammation, causing chest pain in 40% of patients and coughing in 20%, while cryptococcal pneumonia was frequently overlooked due to lack of speciûc signs and symptoms. Chest X-ray and CT scan often show one or more well-circumscribed lesions with possible cavitation, accompanied by pleural effusion or hilar lymphadenopathy. Central nervous system (CNS) cryptococcosis is believed to result from hematogenous dissemination from the lungs.[5]

Cryptococcus cerebellar abscess was one of the rare forms of central nervous system infections. It is usually associated with an immunocompromised state, particularly in acquired immunodeficiency syndrome or in patients receiving corticosteroid and immunopressive therapy. To our knowledge, only 3 cases of cryptococcoma cerebellar abscess have been previously reported in the immunocompetent state: two adult (Kanaly et al, Narongwit Nakwan et al,[6,7] and a child (Gologorsky et al,).[4] Moreover, multiple cerebellar abscess and pneumoniae caused by cryptococcus is first reported.

The clinical manifestations of cryptococcosis cerebellar abscess were highly variable, relating in part to underlying medical conditions (such as diabetes, sarcoidosis, or glucocorticoid use) and abscess conditions (such as number, size, location, and mass effects). Headache, vomiting, altered mental status and signs of cerebellar dysfunction were the most common presentation. Speed and Dunt reported the duration from initial presentation to diagnosis was longer in healthier host than in immunosuppressed hosts.[8] However, patients may also present with minimal or nonspecific symptoms. Fever and nuchal rigidity are characteristically absent, as was the case in our patient.

There are no definitive guidelines for the treatment of cryptococcus infections in an immunocompetent adult, but treatment for CNS cryptococcal disease was common in patients with HIV infection, according to HIV-patient regimen was recommended.[9] Treatment of cerebellar abscess required a combination of antifungal, surgical intervention and eradication of primary infected foci.[10] Surgical intervention depends on abscess of number, size, location, and mass effects. Since our patient had no evidence of immunosuppression, it seems appropriate to maintain the treatment of surgery and antifungal until symptom relief and improvement.

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