

Cerebellum Cryptococcosis in HIV Patient

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Abstract: We report a cerebellum cryptococcosis male 56 years old, patient also infected with HIV virus. Cryptococcosis HIV patient is a rare case. Cryptococcus Infection with manifestation in central nervous system about 86%. Diagnosis of cryptococcosis is difficult because much differential diagnosis should be excluded. Histopathology Examination will confirm the cryptococcosis diagnosis. Definite therapy on this patient is provided antiretroviral and antifungal simultaneously. The prognosis is bad

Keywords: cryptococcosis, HIV, anti-fungal

1. Background

Cryptococcus is the fourth cause of opportunistic infections (after Pneumocystis jiroveci, cytomegalovirus, and mycobacteria, and CNS manifestations (66-89%) are more frequent than in other organs. In HIV infected patients in the United States, the incidence of cryptococcosis is about 2-7 cases per 1000 per year, and 89% manifestation in the CNS.¹ The incidence has declined recently due to widespread antifungal and antiretroviral use. Cryptococcosis central nervous system is subacute or chronic deep mycosis caused by Cryptococcus neoformans. Cryptococcus neoformans spread through respiratory and infect central nervous system hematogenously. The Cryptococcus infected the patient with immuno compromised problem such as in AIDS patients, as well as patients given immuno suppressants or given therapy broad spectrum antibiotics for a long periode.^{2,3} We reported cryptococcosiscerebellum in HIV patient.

2. Case Presentation

A man, 56 years olds, Balinese, came to the hospital, conscious, complain headache since one month ago before admission to hospital. Pulsating headache, all around the head, accompanied with difficulty to sleep. Patient also complaint feel imbalance while walking. Patient previous diagnosed with tumor cerebellum with differential diagnosis metastase. Previous hospitalization history with decreased of consciousness. There is paresis right nerve VII, supranuclear, spastic hemiparesis dextra, Hoffman tromnerdextra and cefalgia chronic progressive. Plan to do tumor resection. Physical examination found: GCS E4V5M6, blood pressure 100/70 mmHg, temperature 36.7 degrees celsius. Laboratory results: WBC 11.6; Hb 13.00; PLT 201



Figure 1. Hypointense lesions multiple in right hemisphere cerebellum on T1W1, lesions hiperintense on T2W1 and restricted on DW1, which on giving contrast looks rim contrast enhancement, push ventricle IV, impression : lesion hypointense multiple in the right hemisphere of the cerebellum, suspect abscess differential diagnosis with metastase process .

Patient diagnosed with SOL cerebellum et causa suspect astrocytoma, differential diagnosed with metastastatic process. Neurosurgery plan to do tumor resection. After resection of tumors in the cerebellum area, the biopsy samples send to pathology anatomy department to confirm the diagnosis. Pathology anatomy examination results showed an existence dense inflammation with multiple rounded capsules yeast. The spherical basophilic cel, the organism is surrounded by pale capsules to eosinophilic. Patients were diagnosed as cryptococcosis of cerebellum.

3. Discussion

Cryptococcus is encapsulated yeast that is found worldwide especially where it is contaminated with bird droppings, especially pigeons. Cryptococcus neoformans is the cryptococcosis causing agent, can cause life threatening infections with predilection of the brain and meninges, sometimes the lungs and skin. Although it very rare, it can also involve other organs such as heart, liver, spleen, kidney, thyroid, adrenal gland, eye, genitourinaria, gastrointestinal, bone, stomach and joints.^{4, 5, 6}

Although effective treatment for HIV disease has led to

significant declines in the incidence of cryptococcus meningitis in western countries, it remains a common cause of infectious morbidity and mortality especially among HIV positive patients living in Sub-Saharan Africa and Southeast Asia. In the United States, the prevalence of cryptococcus antigen is 2.9% in HIV-infected patients with CD4 counts <100 and 4.3% in those with CD4 counts <50 cells / μ L. Worldwide, approximately 1 million cases of HIV-associated cryptococcus meningitis occur every year and the disease accounts for more than 600,000 deaths. In developed countries, the widespread use of antiretroviral therapy has decreased the incidence of cryptococcosis, but the incidence and mortality of these diseases remains very high in areas with uncontrolled HIV disease and limited access to antiretroviral or health care.^{1,7}

The main pathological CNS cryptococcosis meningitis, meningoencephalitis, vasculitis, granuloma. Cryptococcal granuloma intracranial more often occurs in the cerebrum than in the cerebellum. There are two types of cryptococcus neoformans, i.e. *Cryptococcus neoformans* var. *neoformans* and *Cryptococcus neoformans* var. *Gattii*, which frequently infect immunocompromised patients. Progressive intracranial hypertension can be the beginning symptoms, marked with headache, nausea, and vomiting, then followed with other symptoms, such as nerve cranial damage and focal neurological signs. Immuno-competent patients marked with meningitis and cryptococcus focal.^{2,4,8}

Cryptococcus neoformans is a round or oval yeast, 4-6 μ m in diameter, surrounded by 30 nm capsules. Based on the polysaccharide wall serology, DNA sequence, these subclasses are categorized into *Cryptococcus neoformans* and *Cryptococcus neoformans gattii*. Most HIV-related cryptococcus infections are caused by *Cryptococcus neoformans*, serotype A (found worldwide), but sometimes *Cryptococcus gattii* is the cause (found in Australia, subtropics).^{9,10}

Cerebrospinal fluid (CSF) analysis is very important. CSF pressure increases more than 25 cm H₂O there are about 60-80% of patients. CSF analysis can be normal in 25% of patients and may be abnormal at 50%. Therefore, identifying organisms via India Ink and serology is very important. The CSF fluid can be clear or cloudy. The protein level exceeds 45 mg / dL in one third to two thirds of cases, ranging from normal to 300 mg / 100 dL. Glucose levels are usually normal. Mononuclear pleocytosis (> 20 cells / μ L) occurs in 13-31% of cases. The amount varied in several studies. 55% of patients had fewer than 10 mononuclear cells / μ L. Almost 100% of positive CSF culture results for *Cryptococcus neoformans*, while 55% were positive blood cultures.

CSF examination and serum cryptococcal antigen (CrAg) have 94.1% sensitivity. Negativity should not be an indication for discontinuing the treatment. CrAg will be positive starting from 1 week to 1 month before onset of symptoms. Antigen is detected by latex agglutination, enzyme immunoassay, and lateral flow test. The serum CrAg test is a preliminary screening tool in HIV-infected patients. The positive titer is sufficient to initiate therapy. In general, a CSF examination should be performed including

measurement of CSF pressure, routine tests, and biochemical indicators are essential to establish the diagnosis. CSF cryptococcus antigen tests and blood tests are important for diagnosis, but the definitive diagnosis of cryptococcosis should be confirmed by histopathologic examination. In our patients, the diagnosis of cerebellum cryptococcus is confirmed by histopathologic examination. *Cryptococcus* may appear to be a local tumor mass when the fungus has been located within the brain parenchyma. *Cryptococcus* tumor usually shows T1 length and long T2 signal on MRI. Although some of the specific findings of imaging tests to cryptococcosis have been described, the differential diagnosis of granulomatous tumors and abscesses, especially granuloma tuberculosis, has an overlapping or similar imaging.⁹

Early diagnosis and prompt treatment have a good prognosis. *Cryptococcus* of the central nervous system can cause mortality if untreated. The prognosis depends on the accompanying illness and the type of fungus. The main therapy in this case is to provide antiretroviral drugs for their HIV infection and antifungal treatment. The goal of therapy is to control early infections and lifelong antifungal therapy for HIV coinfected patients and to cure completely cryptococcus infection. CSF should be re-examined to assess therapeutic effects after initial therapy for 2 weeks.^{11,12}

4. Conclusion

Cryptococcosis is an infection caused by fungus. It becomes the most common cause of opportunistic infections in HIV-infected patients. The incidence of cryptococcosis is about 2-7 cases per 1000 per year, with 89% of the manifestations in the central nervous system. To make a cryptococcosis diagnosis is quite difficult, the diagnosis confirmed by histopathologic examination. The treatment is combined between antiretroviral and antifungal given simultaneously. Prognosis depends on comorbidities diseases.

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