

## Complete Binocular Blindness as the First Manifestation of HIV-Related Cryptococcal Meningitis

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Ocular complications of HIV-related cryptococcal meningitis are reasonably common, but complete binocular blindness as the first manifestation of HIV is extremely rare. A 58-year-old man presented with binocular blindness. He experienced blurred vision for 3 days before the blindness. Mild pleocytosis was present in the cerebrospinal fluid, from which *Cryptococcus neoformans* was cultured. Serology revealed positivity for HIV antibody. He was treated with antifungal and antiretroviral therapy. This case indicates that HIV-related cryptococcal meningitis should be taken into consideration when determining the cause of unexpected sudden binocular blindness.

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**Key Words :** HIV-related cryptococcal meningitis, Complete binocular blindness

Acquired immunodeficiency syndrome (AIDS) has become a worldwide epidemic since its original description as a new disease characterized by opportunistic infections and unusual neoplasm in young adults in 1981.<sup>1,3</sup> The number of new cases each year continues to increase, 4,000 people were reported in South Korea, and there are now nearly 40 million people living with HIV infection in the world. Cryptococcal meningitis develops frequently as an opportunistic infection in immunocompromised patients, especially in AIDS. Immunosuppressive drugs (including steroids), liver cirrhosis, diabetes mellitus, cancer, and alcoholism can also induce cryptococcal meningitis.<sup>2</sup> Most patients have symptoms of headache, fever, or malaise. Other manifestations include nausea, vomiting, meningeal signs, seizures, and altered mentation. About 50% of the patients have accompanying ocular complications

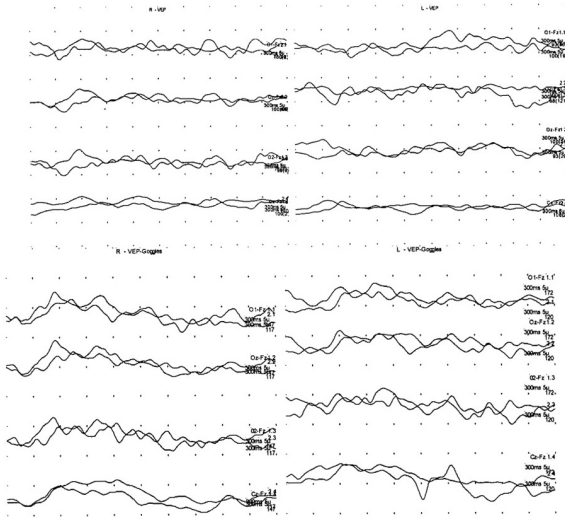
such as papilledema, cranial nerve palsies, and visual loss in the late course of the disease.<sup>7</sup> Cryptococcal meningitis is the most common and also most fatal opportunistic infection in HIV infection.<sup>5</sup> Whereas 7% of AIDS patients have cryptococcal infection diagnosed during the course of the disease, only 1.9% of cases initially present with cryptococcal infection.<sup>1,6</sup> Moreover, complete binocular blindness as the first presentation of HIV-related cryptococcal meningitis is extremely rare. We report a patient with complete binocular blindness who had not been previously diagnosed with HIV infection.

### CASE REPORT

A 58-year-old man presented with acute visual

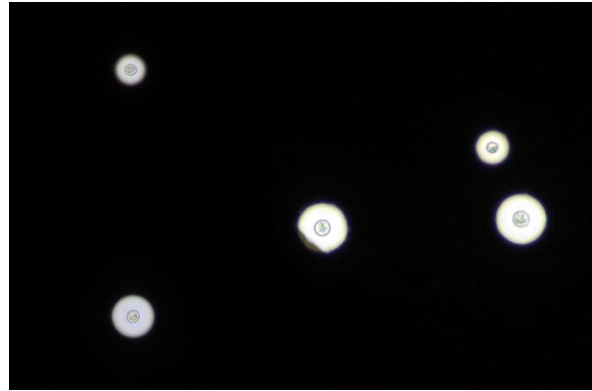
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**Figure 1.** No wave formation on visual evoked potential for half-field stimulation suggested conduction defects on bilateral pathways.

disturbance. He had been treated for hypertension for 2 years. He was divorced 30 years ago and was living alone. He had suffered from intermittent headache for 2 months and had taken benzodiazepines and analgesics under the diagnosis of somatoform disorder at a local clinic. Brain MRI with gadolinium enhancement performed at that time produced normal findings. He had a 5-day history of diplopia and a 3-day history of blurred vision that progressed to blindness during the preceding 24 hours. On admission his blood pressure was 130/70 mmHg, pulse rate was 82/min, respiratory rate was 20/min, and body temperature was 36.3°C. On neurologic examination the patient was alert and exhibited no meningeal signs. Both of his pupils were slightly dilated and reactive to light. Only light perception was possible in both eyes, but no other neurological abnormality was noted. Lumbar puncture showed the opening pressure of 160 mm H<sub>2</sub>O with clear cerebrospinal (CSF) fluid. CSF evaluation showed 30 red blood cells/mm<sup>3</sup>, 80 white blood cells/mm<sup>3</sup>, 80% lymphocytes, 41 mg/dl glucose, and 114 mg/dl protein. His body temperature increased to 38.8°C 1 day after admission, but CBC revealed no leukocytosis. Brain MRI showed no meningeal enhancement, parenchymal lesion, or intra-



**Figure 2.** India ink staining showing round, thin-walled encapsulated yeast.

cranial vascular abnormality supplying the optic nerve, optic chiasm, or optic tract. He exhibited intermittent confusion on the third day after admission. The results of fundoscopic examinations were unremarkable, and visual evoked potential showed no wave formation on bilateral pathways (Fig. 1). An India ink smear of the CSF demonstrated encapsulated yeast, and *Cryptococcus neoformans* was cultured (Fig. 2). We started intravenous amphotericin B treatment. He was found to be seropositive for HIV with a high antibody titer (53.87 S/CO). CD4 cells comprised 10% of the total T lymphocytes. He was treated with both antiretroviral and antifungal agents, and his visual acuity had improved upon discharge.

## DISCUSSION

Neuro-ophthalmic lesions are present in 6% of patients with HIV infection during the course of the disease, with most of them being attributable to cryptococcal meningitis.<sup>3</sup> *Cryptococcus neoformans*, the cause of cryptococcal meningitis, is the fourth most common source of life-threatening infection in AIDS patients after infections of cytomegalovirus, *Pneumocystis carinii*, and *Mycobacterium avium intracellulare*.<sup>1</sup> It is present in pigeon droppings and infects by inhalation of contaminated soil. Cryptococcal meningitis is fatal in HIV-infected patients if not treated, and hence early diagnosis is very important.

The signs and symptoms of cryptococcal meningitis include headache (80~92% of cases), meningeal signs (50~80%), nausea/vomiting (40~80%), fever (36~67%), and visual disturbances (33~47%).<sup>1</sup> Our patient presented with acute blindness without other definite clinical symptoms at the time of admission.

Possible mechanisms for binocular blindness due to cryptococcal meningitis include direct fungal infiltration of the optic nerve, optic chiasm, or optic tracts, adhesive arachnoiditis, cerebral vasculitis, and intracranial hypertension.<sup>4</sup> It has been suggested that rapid-onset visual loss is caused by infiltration of the optic nerve or optic chiasm, while slow-onset visual loss is due to increased CSF pressure.<sup>4</sup> A CSF opening pressure exceeding 200 mmH<sub>2</sub>O and papilledema reflect intracranial hypertension, but our patient showed a normal CSF opening pressure and unremarkable fundoscopic examination findings. Moreover, his visual symptoms developed very early in the course of the disease. Thus, the sudden visual loss might have been due to retrobulbar fungal infiltration.

Whereas the prevalence of cryptococcosis is decreasing because of the widespread availability of antiretroviral therapy, cryptococcal meningitis is still a fatal complication of HIV infection. Thus, both early diagnosis of cryptococcal meningitis and detection of the underlying causes are important. In our opinion,

unexpected sudden binocular blindness should be considered as a possible initial manifestation of cryptococcal meningitis related to HIV infection.

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