

## Complete Binocular Blindness as the First Manifestation of HIV-Related Cryptococcal Meningitis - Case Report of 2 Cases

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### Abstract

Ocular complications of HIV-related cryptococcal meningitis are reasonably common, but complete binocular blindness as the first manifestation of HIV is extremely rare. A 45-year-old man presented with binocular blindness, headache and fever for last 1 month with diplopia since 10 days with blurring of vision for 3 days similarly one 45 years old female presented with headache for last 2 months, diplopia since 15 days and 5 days history of blurred vision that progressed to blindness in preceding 3 hours. Cerebrospinal fluid in both cases showed pleocytosis and on CSF culture *Cryptococcus neoformans* was cultured. Later in both the cases serology revealed positivity for HIV antibody. Both were treated with antifungal and antiretroviral therapy. These cases indicate that HIV-related cryptococcal meningitis should be taken into consideration when determining the cause of unexpected sudden binocular blindness in retropositive patients.

### I. Introduction

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 2 patient with complete binocular blindness who had not been previously diagnosed with HIV infection.

### CASE-1

A 45 year-old man presented with history of intermittent headache since last 1 month which was not relieved by taking analgesics, He had a 10 day history of diplopia and a 3 day history of blurred vision that progressed to blindness during the preceding 24 hours. There was history of mild fever since last 1 month but no history nausea, vomiting. There was no history of hypertension in past, no other significant past medical history. On admission his blood pressure was 130/70 mmHg, pulse rate was 82/min, respiratory rate was 20/min, and body temperature was 37.4°C.

On neurologic examination the patient was alert and had neck rigidity and Kernig's sign was positive. Both of his pupils were slightly dilated and reactive to light, but no other neurological abnormality were noted.

Lumbar puncture showed the opening pressure of 160 mm water with clear cerebrospinal (CSF) fluid. CSF evaluation showed 10 red blood cells/mm<sup>3</sup>, 50 white blood cells/mm<sup>3</sup>, 80% lymphocytes, 64 mg/dl glucose, and 82mg/dl protein. An India ink smear of the CSF demonstrated encapsulated yeast, CALLA antigen was positive and later *Cryptococcus neoformans* was cultured from CSF. He was found to be seropositive for HIV. CD4 cells count was 45. CBC, liver, kidney functions tests were normal. Hbs antigen, Hbc antibody and VDRL were negative.

Brain MRI showed no meningeal enhancement, parenchymal lesion, or intracranial vascular abnormality supplying the optic nerve, optic chiasm, or optic tract. The fundoscopic examination was normal, and visual evoked potential showed no wave formation on bilateral pathways. We started intravenous

amphotericin B treatment. 2 weeks later repeat CSF india ink showed no Cryptococcus . he was put on antiretroviral and his visual acuity was improved upon discharge .

## CASE-2

A 45 year-old female presented with history of intermittent headache since last 2 month which was not relieved by taking analgesics , He had a 15 day history of diplopia and a 5 day history of blurred vision that progressed to blindness during the preceding 3 hours . There was history of mild fever since last 2 month but no history nausea , vomiting . There was also history of decrease hearing in both the sides since last 15 days . There was no history of trauma , earache or ear discharge. She was known to be HIV positive and had been on antiretroviral therapy for 6 months(Tenofovir, Lamivudine, Efavirenz). On admission her Blood pressure was 120/70 mmHg, pulse rate was 72/min, respiratory rate was 18/min, and body temperature was 37.6°C.

On neurologic examination the patient was conscious ,responding to commands, had neck rigidity and kernigs sign positive . Both of his pupils were dilated and non reacting to light . Ear examination showed hearing loss but no other neurological abnormality was noted.

Lumbar puncture showed the opening pressure of 120 mm H<sub>2</sub>O with clear cerebrospinal (CSF) fluid. CSF evaluation showed 5 red blood cells/mm<sup>3</sup>, 56 white blood cells/mm<sup>3</sup>,

80% lymphocytes, 74 mg/dl glucose, and 62 mg/dl protein. . An India ink smear of the CSF demonstrated encapsulated yeast , CALLA antigen was positive and later *Cryptococcus neoformans* was cultured from CSF . He was diagnosed to have HIV 6 months back (CD4 count was 78) to be seropositive for HIV. Ltest CD4 cells count was 77 .

CBC , liver , kidney functions tests were normal Hbs antigen , Hbc antibody and VDRL were negative Brain MRI showed no meningeal enhancement, parenchymal lesion, or intracranial vascular abnormality supplying the optic nerve, optic chiasm, or optic tract. The results of fundoscopic examinations were unremarkable, and visual evoked potential showed no wave formation on bilateral pathways. Ear Brain evoked response audiometry showed sensorineural hearing loss. We started intravenous amphotericin B treatment. 2 weeks later repeat CSF india ink showed no Cryptococcus . he was put on antiretroviral but his visual acuity and hearing did not improve improved upon discharge .

## II. 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 case -1 presented with acute blindness with headache at the time of admission while case-2 presented with acute blindness , hearing loss and headache .

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> Possible mechanism of hearing loss in case -2 either by direct infiltration,<sup>8</sup> or compression of the vestibulocochlear nerve by raised intracranial pressure.

A CSF opening pressure exceeding 200 mmH<sub>2</sub>O and papilledema reflect intracranial hypertension, but our patients showed a normal CSF opening pressure and unremarkable fundoscopic examination findings. Moreover , visual symptoms developed very early in the course of the disease. Thus, the sudden visual loss might have been due to retrobulbar fungal infiltration. Similarly there was sudden hearing loss possibly due to direct infiltration of cochlear nerve by fungal itself 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 and hearing loss should be considered as a possible initial manifestation of cryptococcal meningitis related to HIV infection.

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