

Visual Disturbance in Patients with Cryptococcal Meningitis: The Road Ahead

Sir,

Visual disturbances including visual loss have been reported in up to 40% of patients with cryptococcal meningitis (CCM).^[1,2] However, there are no clear guidelines regarding the diagnosis, follow-up, and management of visual complications of CCM. Formulation of evidence-based guidelines has been limited by the incomplete understanding of its pathogenesis. We aimed to evaluate the prevalence of visual disturbances in patients with CCM and its association with clinical and radiological features of raised intracranial pressure (ICP).

In this single-center, retrospective, observational study conducted in a tertiary care center in India, seventy patients with CCM were included over 10 years. Two investigators independently extracted data from inpatient records. Severe headache, depressed sensorium, and papilledema were considered as clinical features of raised ICP.^[3] A single radiologist assessed the radiological features of raised ICP (flattening of the posterior sclera, increased cerebrospinal fluid [CSF] in the arachnoid space around the optic nerve, tortuosity of the optic nerve, and partially empty sella).^[3] Among the 70 patients with CCM, 13 (18%) had a significant visual disturbance. Of the 13 patients, 10 (76%) had symptoms, 7 (53%) had papilledema, and 10 (76%) had radiological features of raised ICP [Table 1]. All the 13 patients had symptoms, papilledema, or radiological

evidence of raised ICP, and 6/13 patients had all the three features. Nine patients (69%) were HIV infected and three (23%) succumbed to the illness. Seven patients (53%) required either repeated therapeutic CSF drainage or ventriculoperitoneal (VP) shunt for raised ICP. However, the patients could not be followed up for the assessment of long-term visual outcomes.

As early as 1993, Rex *et al.* proposed the two major mechanisms of visual disturbances in CCM, namely raised ICP and optic neuritis.^[4] According to these authors, early onset visual disturbance (within 6 days of meningitic symptoms) was a result of optic neuropathy due to infiltration or inflammation, and late-onset visual disturbances which occurred a few weeks into the infection were the result of optic disc edema from raised ICP. More recently, Moodley *et al.* proposed optic nerve sheath compartment syndrome as another possible mechanism of visual disturbance in CCM.^[5,6] Other postulated pathophysiological mechanisms include cortical blindness secondary to cerebral vasculitis, cryptococcus-related anterior uveitis, chorioretinitis, endophthalmitis, and retinovitreal abscess.

There has been anecdotal evidence that visual loss due to raised ICP is mostly reversible and amenable to therapeutic strategies of reducing the ICP such as repeated lumbar punctures, acetazolamide, lumboperitoneal shunt, lumbar drain, VP shunt, and optic nerve sheath

Table 1: Baseline clinical, laboratory, and imaging findings and outcome of patients with cryptococcal meningitis and visual disturbance

Age/sex	Visual disturbances	Increased intracranial pressure			GCS	Therapeutic CSF drainage	CD4	Risk factors	Mortality
		Symptoms	Papilledema	Radiological evidence					
57/male	B/L	No	No	Yes	15	Yes	690	Diabetes	Yes
34/male	Right	Yes	No	No	14	Yes	12	HIV	No
43/female	B/L	Yes	Yes	Yes	15	Yes	288	None	No
42/female	B/L	No	No	Yes	15	Yes	493	None	No
30/male	B/L	Yes	Yes	No	13	No	27	HIV	Yes
26/female	B/L	Yes	Yes	Yes	15	No	29	HIV	Yes
33/female	B/L	No	No	Yes	15	No	70	HIV	No
40/male	B/L	Yes	Yes	Yes	15	No	380	HIV	No
36/male	B/L	Yes	Yes	Yes	15	Yes	159	HIV	No
27/male	B/L	Yes	Yes	Yes	11	VP shunt	474	None	No
41/male	B/L	Yes	Yes	Yes	15	No	40	HIV	No
37/male	B/L	Yes	No	Yes	15	No	114	HIV	No
37/male	B/L	Yes	No	No	15	Yes	47	HIV	No

B/L: Bilateral, GCS: Glasgow Coma Scale, HIV: Human immunodeficiency virus, CSF: Cerebrospinal fluid, VP: Ventriculoperitoneal

fenestration. However, the recent CryptoDex study did not find any benefit with adjunctive dexamethasone treatment.^[7,8]

We found a significant association between visual disturbance and elevated ICP in patients with CCM. Based on our finding, we suggest formal assessment of visual acuity in patients with CCM and evaluation for raised ICP in those with visual disturbances. However, these suggestions need to be validated in a prospective study.

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Conflicts of interest

There are no conflicts of interest.

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