

CEREBRAL CRYPTOCOCCOSIS IN AN APPARENTLY IMMUNOCOMPETENT PATIENT

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ABSTRACT

Cryptococcus neoformans is ubiquitous encapsulated yeast found throughout the world. It predominantly causes significant infections in immunocompromised individuals, of which 80–90% occur in people with human immunodeficiency virus (HIV) infection. Disseminated cryptococcal infection is uncommon and almost always occurs in HIV-infected patients. We report the case of a cryptococcal meningoencephalitis in a 71-year-old patient, who is presumably immunocompetent.

Key words:

Cryptococcus neoformans, Meningitis, Treatment.

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INTRODUCTION

Cryptococcus Neoformans is an opportunistic fungal infection that affects the central nervous system (CNS). It occurs in patients with profound immune deficiency, especially those infected with the Human Immunodeficiency Virus (HIV). It can also be seen in immunocompetent patients but more rarely. Among more than 30 Cryptococcus species, Cryptococcus neoformans and cryptococcusgattii are the only pathogenic species for humans. This is because of their growth capacity at 37° and the presence of other virulence factors such as the production of melanin and a protective capsule.

Patient and observation

A 71-year-old man presented to the emergency department in an array of diffuse headaches, progressively worsening; evolving for 45 days associated with vomiting and photophobia. In addition, his wife reported that he became lethargic, confused at times and that he slept most of the time. His antecedents are marked by migraines with aura. There was no personal or family history of infection. At the admission, there was no vital distress. The neurological examination found a patient slightly confused. There was no sensory or motor deficit. The examination of the cranial nerves was normal. The cerebral scanner had objectified a spontaneous hyperdensity of the dura mater with a thickened appearance interesting the false brain and the tent of the cerebellum with evoking a pachymeningitis. Biologically, we had found leukocytosis at 12500, CRP at 319 g/l, pro calcitonin <0.05

ng/ml and hyponatremia at 122 mmol/l. The lumbar puncture performed showed lymphocytic meningitis with 180 elements/mm³, glucurachieat 0.08g/l and CSF protein at 1.17 g / l with an opening pressure was more than 50 cm of water. Cryptococci neoformans were visible on direct examination of the CSF. Culture on specific medium will isolate the germ in the blood and CSF. Daily lumbar punctures were performed. Thyroid status, AAN, complement, B12 vitamin, folic acid and HIV serology were normal.

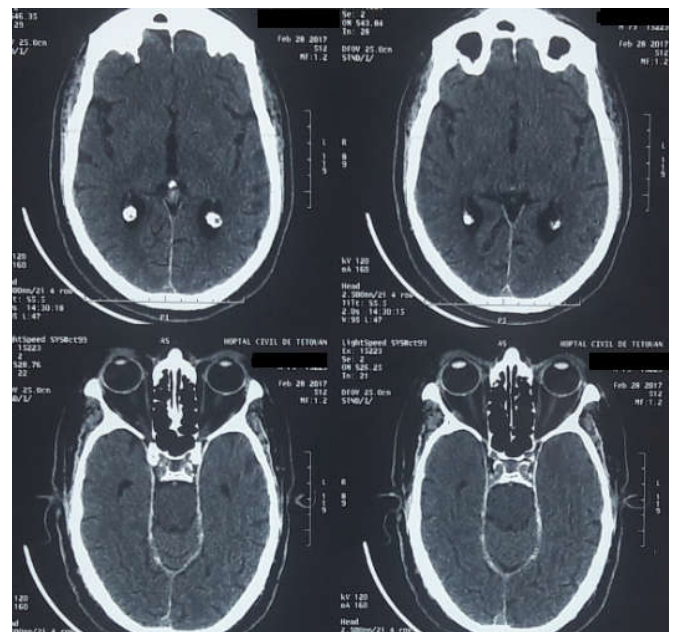


Figure 1 brain scanner showing spontaneous hyperdensity of the hard mother with a thickened appearance interesting the false brain and the tent of the cerebellum

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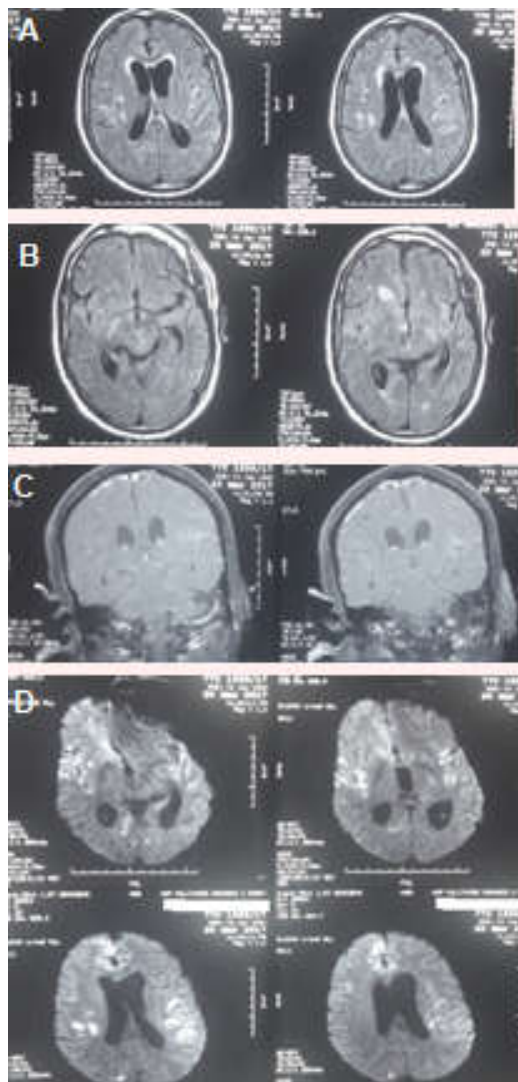


Figure 2 Cerebral MRI in FLAIR sequences (A, B), with Gado injection (C) and diffusion (D) showing multiple FLAIR hyper signals, without contrast enhancement outside a temporal hyper signal with nodular enhancement

Cerebral MRI showed the presence of multiple FLAIR hyper signals at the level of the insular periventricular white matter, bilateral frontal, right occipital, left thalamic, mesencephalic and protuberantial with restriction of diffusion without enhancement with gadolinium injection and the presence of a temporal hyper signal with nodular enhancement. In the absence of Amphotericin B, fluconazole treatment at a high dose (1200 mg / day) was initiated. Dexamethasone-based corticosteroid was added later.

DISCUSSION

Our patient was HIV negative and had no history of recurrent infection, suggesting that he had no significant undiagnosed humoral or cellular immunodeficiency. The concentration of anticryptococcal antibodies is normally found in immunocompetent individuals because of exposure. Three hypotheses have been reported in the literature to explain this fungal neurotropism. First, there appears to be specific neuronal receptors that could attract cryptococci to the CNS. (1) Secondly, it is thought that neural substrates in the basal ganglia would favor the survival and growth of the germ. Thus, the perivascular spaces (Virchow robin) could serve as a shelter for these germs. Our patient has the illustration of the involvement of these perivascular spaces including the thalamus, the perivascular substance and the middle of the

brain. (2) And finally the Cryptococcus uses neurotransmitters of dopamine or adrenaline that help in the synthesis of melanin. The latter is a component of the cell wall promoting protection against oxidative stress and phagocytosis (2)

Many reports have focused on the accumulation of CSF and HTIC in cryptococcosis. This is secondary to blockage of CSF flow at the Villosities arachnoid membranes. (4) In animal models injected with cryptococcal polysaccharides intracerebrally, interstitial edema was induced with decreased ventricle compliance rendering them unable to accommodate additional CSF. This explains the lack of enlargement of the ventricles in our patient despite the presence of high intracranial pressure. The presence of polysaccharide capsule deposits of cryptococci and the mode of installation sub acutof the clinical presentation could facilitate the pressure balance between the ventricles, the subarachnoid space and the interstitial space (5). The cerebral edema associated with cryptococcal infection is mainly interstitial whereas that of the bacterial infection is interstitial and vasogenic(6) The prevention of the consequences of HTIC is an essential prognostic factor in the management of cryptococcal meningitis. Repetitive lumbar punctures are necessary associated with the anti fungal treatment. A daily PL is currently recommended until the pressure is <25 cm of water and the clinical signs disappear. (7) In the opposite case, lumbar percutaneous drains or ventriculoperitoneal shunts are recommended.

The use of Fluconazole alone in high doses appears to have the same results as amphotericin B in cryptococcal meningitis in immunocompetent individuals. (8) Corticosteroid therapy, based on dexamethasone, is an adjunct to anti fungal treatment. His use in our patient didn't give a great contribution because of delayed initiation. (9)

CONCLUSION

Cryptococcus is an important cause of fungal meningitis with significant mortality worldwide. Germ sensitivity in humans has been associated with T-cell abnormalities in HIV-infected individuals. But little is known about possible immune deficiencies in uninfected people, including previously healthy people

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