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NEURO-IMAGES

Cerebellar cryptococcomas

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A 72-year-old man, trader, from Central America was admitted to the neurologic unit in Grosseto after 2 weeks onset of balance disturbances and headache. Two days before, a low-grade fever developed, and his wife brought him to the hospital. Neurological examination showed dysarthria, bilateral nystagmus, and ataxia. Brain CT showed multiple low-density non-enhancing cerebellar lesions and diffuse cerebellar edema (Fig. 1). Brain MRI revealed multiple hyperintense areas in T2-weighted sequences in the whole cerebellum, with diffusion restriction in DWI, no enhancement post-gadolinium infusion (Figs. 1 and 2).

Virological tests and HIV screening were negative. Chest-RX was unremarkable. CSF analysis documented hypoglycorrachia, hyperproteinorrachia, pleomorphic pleocytosis, and yeast cells. Film-array detected *Cryptococcus neoformans/gattii*. CSF culture and serum antigen (titer 1: 1024) were positive for *Cryptococcus neoformans*. Hematological investigations revealed idiopathic CD4 lymphocytopenia. The patient received therapy with high doses of amphotericin B and fluconazole for 2 weeks, followed by fluconazole for 6 months.

Cryptococcosis is an important infection recognized for its ability to cause meningoencephalitis, especially in immunocompromised hosts, although it can occur in immunocompetent hosts [1].

Risk factors for cryptococcosis are HIV infection, diabetes, and idiopathic CD4 lymphocytopenia; in many cases, infection occurs through inhalation of the microorganism [1, 2]. A focal parenchymal mass known as a cerebral cryptococcoma may follow disseminated infection with Cryptococcus spp; in 73% of cases, it is associated with edema and is most frequently localized in the basal ganglia, thalamus, and cerebellum [2]. Symptoms such as headache, fever, or mental status changes may appear initially and be sneaky but should warrant diagnostic testing [1]. Brain CT can help detect cryptococcomas although its sensitivity is lower than that of brain MRI [1]. Cerebral cryptococcomas can be a diagnostic challenge and are often confused at neuroimaging with dilated perivascular spaces, embolic stroke, and inflammatory or malignant processes [2]. DWI abnormalities likely reflect cellular infiltration and the presence of high protein fluid and have been described in fungal cerebritis [3]. The lesions' little or no contrast enhancement in MRI can be a valid aid in the differential diagnosis of tumors or inflammatory processes, which are usually associated with uptake contrast lesions.

The right neuroradiological framework can point to appropriate diagnostic tests, favoring a timely antifungal therapy.

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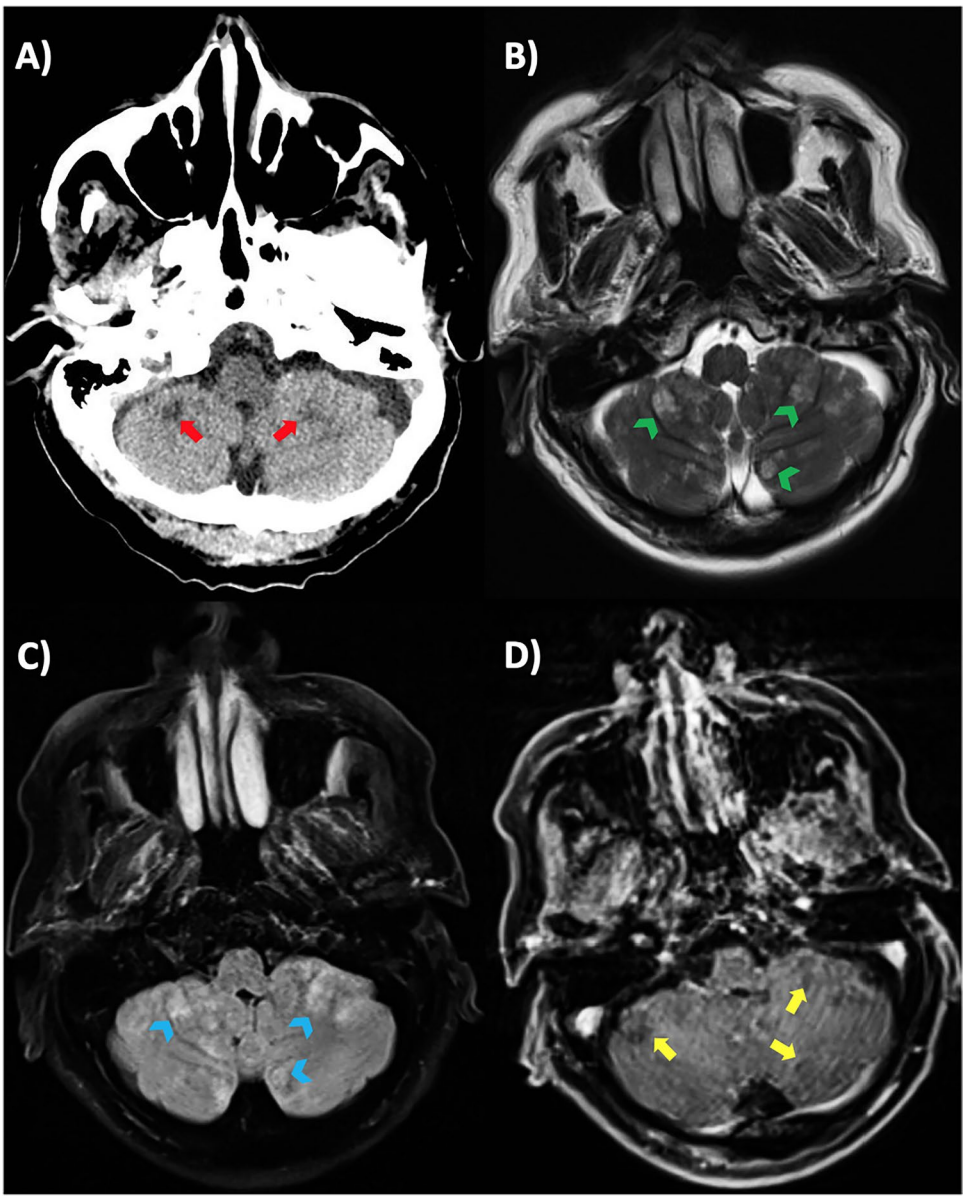

Fig. 1 **A** CT brain showing cerebellar hypodense lesions (arrow); **B** and **C** axial T2-weighted MRI sequences showing hyperintense focal parenchymal masses (arrowheads); **D** post-gadolinium MRI sequence showing no contrast enhancement (arrows)

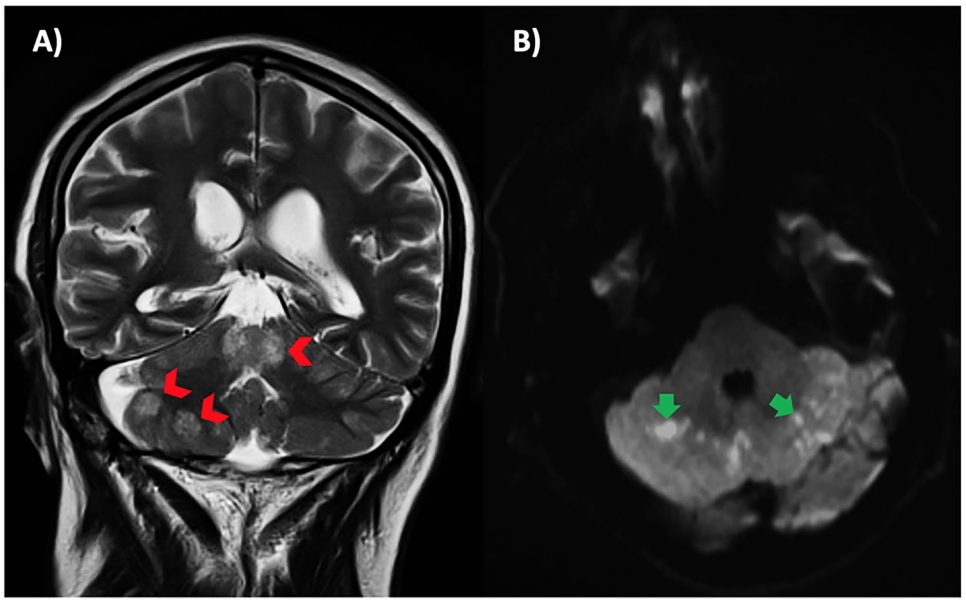

Fig. 2 **A** Coronal slice showing exclusively cerebellar involvement (arrowheads). **B** Cerebellar diffusion restriction due to parenchymal lesions (arrows)

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Declarations

Ethics approval NA.

Consent to participate Informed consent was obtained from the described patient.

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Conflict of interest The authors declare no competing interests.

References

1. Zavala S, Baddley JW (2020) Cryptococcosis. Semin Respir Crit Care Med 41(1):69–79. https://doi.org/10.1055/s-0039-3400280
2. Chastain DB, Rao A, Yaseyyedi A, Henao-Martínez AF, Borges T, Franco-Paredes C (2022) Cerebral cryptococcomas: a systematic scoping review of available evidence to facilitate diagnosis and treatment. Pathogens 11(2):205. https://doi.org/10.3390/pathogens11020205
3. Gaviani P et al (2005) Diffusion-weighted imaging of fungal cerebral infection. AJNR Am J Neuroradiol 26(5):1115–1121