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## Commentary

Sen *et al*. describe an interesting case that drives our attention towards the diversity of magnetic resonance imaging (MRI) lesions that can be seen in a cryptococcal central nervous system (CNS) infection. The article named: The Enigma of Transient Splenial Hyperintensity – in Cryptococcal Meningitis focus on a temporary lesion on the corpus callosum as an only lesion on the MRI (also known as the boomerang sign).[1]

*Cryptococcus neoformans* is an encapsulated yeast found in dust and bird droppings. Infection is acquired through inhalation of spores. The most common neurologic presentation in patients with acquired immunodeficiency syndrome (AIDS) and cryptococcosis is meningitis.

Although MRI has been reported as normal in some patients with cryptococcosis and CNS involvement; characteristic brain lesions have been described as pathognomonic for this entity. Some examples are dilated Virchow–Robin spaces and cryptococcoma.[2,3] Transient hyperintensity of corpus callosum due to cryptococcosis, as the authors point out, has not been described previously in the literature.

Some of the MRI findings of a patient with meningitis and cryptococcosis are due to the mucoid material produce by the cryptococcal organism (derived from the capsule of *C. neoformans*) that explains the hyperintensity in T2 images and hypointensity in T1 sequence.[2,3] No gadolinium enhancement is seen. The localization of most lesions follows the pattern of cryptococcal spread; it begins on the basal cisterns, through the Virchow–Robin spaces, and continues to the basal ganglia, thalamus and brainstem. Finally, the cryptococcoma localizes in the brain parenchyma. This lesion represents a collection of organisms, inflammatory cells and mucoid material. Furthermore, the mucoid material from the cryptococcoma dilates the perivascular spaces (Virchow–Robin), which gives the characteristic MRI image.[2,3]

In the moment of choosing the right imaging modality (MRI vs CT scan) for patients with cryptococcosis and

CNS infection, authors have found that MRI detected more cryptococcal-related lesions than CT scan. In a study, cryptococcal-related lesions were found in 24% of patients with CT scan compared with 79% of patients that underwent MRI.[2] It is important to keep in mind that other associated pathologies (AIDS or other type of neurological infection) might also show abnormalities in both imaging modalities. Some examples are cerebral atrophy, edema, hydrocephalus and/or mass effect.[2,3]

The value of MRI in patients with cryptococcosis is highlighted by Charlier *et al*. that found an association between the presence of MRI neurologic lesions (due to cryptococcosis) and CSF antigen titers, high serum antigen titers and finally neurological abnormalities. These findings are relevant since the antigen titers have prognostic value.[2] On the other hand, transient hyperintensity of splenial corpus callosum can be due to a number of factors, such as epilepsy and antiepileptic drugs, vitamin $B_{12}$ deficiency, mild encephalitis, disseminated encephalitis, Marchiafava–Bignami disease, multiple sclerosis, trauma, and not to overlook are influenza-associated encephalitis and herpes simplex infection, as well as brain radiation therapy and aging.[4-7]

The corpus callosum is the largest commissural white bundle in the brain; the splenium irrigation derives, in contrast to the rest of the corpus callosum, from the vertebro-basilar system.[8] The main proposed mechanism of a transient splenial lesion is edema, although this case could be theorized to be caused by the cryptococcal load.

As the authors point out, transient splenial corpus callosum hyperintensity is due mainly by the use of epileptic drugs or epilepsy; if the patient has neither, the clinician has to discard other diagnosis. Clinical history, examination and laboratory tests can rule out other diseases. This patient was known to be immunosuppressed and develop frank neurological disease with fever. In this scenario a cryptococcal infection must be sought through specific tests.

As more MRI tests are prescribed for different neurological diseases, it is possible that an increasing number of pathologies are associated with a reversible lesion at the corpus callosum. This study is an example of that phenomenon.

It is also interesting to notice the temporality of the MRI lesion. In our experience, we reported one case with meningeal cryptococcosis that also developed a transient sign in the physical exploration: reversible hearing loss; hearing improvement developed only after the specific treatment (amphotericin, fluconazole and steroids) was prescribed; in this particular case, areas of hyperintensity in T2 sequence were found on caudate and lenticular nucleus on the MRI image.[9] Probably, the reduction in cryptococcal overload after therapy may explain the transient features of this disease.

Sen *et al*. describe a case that highlights the transient splenial hyperintensity that can result from a cryptococcal neurologic infection. A brief review of cryptococcal CNS imaging is made.

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