



Commentary

Cerebral tuberculoma are commonly accompanied by other imaging abnormalities

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Letter to the Editor

We read with interest the article by Ibrahim et al. about a retrospective evaluation of multimodal cerebral magnetic resonance imaging (MRI) in 73 patients with cerebral tuberculoma [1]. It was found that tuberculoma predominantly occur in young aged females and are more commonly located supra-tentorially than infra-tentorially [1]. Twenty-eight patients had concomitant meningitis, two hydrocephalus, and one ischemic stroke [1]. The study is promising but raises concerns that should be discussed.

According to the methods section, diffusion weighted (DWI) images were evaluated for the included patients [1]. However, neither DWI nor apparent diffusion coefficient (ADC) maps are mentioned in the results part [1]. We should know if no anomalies were detected on DWI or ADC images or if it was forgotten to mention the DWI/ADC results. At least in the one patient with ischemic stroke, a DWI lesion can be expected on the MRI. DWI images from patients with cerebral tuberculosis would be interesting, as they may show inflammation or ischemia.

Since also T1-weighted images with contrast medium were evaluated [1], we should know whether structures other than the tuberculoma enhanced. It is to be expected that at least in the 28 patients with meningitis an enhancement of the meninges could be seen. We should know if there was evidence for encephalitis, thrombosis, or abscess formation in any of the patients receiving gadolinium. Since cerebral tuberculosis can also be complicated by venous sinus thrombosis (VST) [2], we should know if magnetic resonance venography (MRV) was indicative of VST in any of the 73 patients.

Tuberculoma can also occur intraventricularly [3]. Surprisingly, not a single patient of the index cohort presented with a tuberculoma in the ventricles. We should know whether the MRI images were also evaluated for tuberculoma in a non-parenchymatous location. There is also pituitary tuberculosis [4]. We should know how many of the 73 included patients had involvement of the pituitary gland. Was there evidence of ventriculitis or rhombencephalitis in the two patients with hydrocephalus?

Abbreviations: CSF, cerebrospinal fluid; ADC, apparent diffusion coefficient; DWI, diffusion-weighted imaging; MRA, magnetic resonance angiography; MRI, magnetic resonance imaging; VST, venous sinus thrombosis.

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Tuberculoma can be complicated by ischemic stroke [5]. This may be either due to progressive expansion of tuberculoma with consecutive compression of cerebral arteries or due to vasculitis [5]. We should know the pathophysiological mechanism of stroke in the one of the included patients with stroke.

Tuberculosis of the cerebrum can be complicated by vasculitis of the intracranial arteries [6]. Interestingly, in none of the patients was vasculitis reported [1]. We should know how many of the included patients had undergone MR angiography (MRA) or black blood sequences to document inflammation of the cerebral vessels.

Tuberculoma may be complicated by leptomenigitis, pachymeningitis encephalitis, ventriculitis, rhombencephalitis, hypophysitis, or vasculitis [7]. The cerebro-spinal fluid (CSF) investigations are missing in this respect [1]. It would be interesting to know how many of the 28 patients with meningitis had pleocytosis, or evidence of *Mycobacterium tuberculosis* in the CSF by Löwenstein culture or the polymerase chain reaction (PCR).

Tuberculoma of the brain may be associated with headache [8]. In a study of 28 patients with cerebral tuberculoma, headache was the most common presenting symptom occurring in 52% of patients [8]. We should be told how many of the included patients reported headache either at onset or during the disease course.

The treatment of the included patients and their outcome are missing. We should know how many underwent neurosurgical extraction and how many conservative tuberculostatic treatment, how many received both, and how many received no treatment at all.

Overall, the interesting study has limitations that call the results and their interpretation into question. Clarifying these weaknesses would strengthen the conclusions and could improve the study. Tuberculoma of the brain can be associated with a number of other imaging abnormalities on MRI.

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Author contribution

JF: data collection, literature search, discussion, first draft, final approval.

Registration of research studies

1. Name of the registry:
2. Unique Identifying number or registration ID:
3. Hyperlink to your specific registration (must be publicly accessible and will be checked):

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Nothing to declare.

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