

MULTICENTRIC GLIOMA MIMICKING TUBERCULOMA: CASE REPORT

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Dr. Yusra Khattri

Liaquat National Hospital and
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While comparing with the rest of the organs of the body, brain is less commonly involved organ in tuberculosis. Features of cerebral tuberculosis include meningitis, encephalopathy, arteriopathy, abscess, infarct or Tuberculoma. Intracranial Tuberculoma is an uncommon but an important finding. However, in patients with no previous history of tuberculosis, these Tuberculoma when solitary can be confused as primary brain lesion. Multiple case reports have been published in literature where Tuberculoma were reported as malignant brain lesions. Here we present a strangely similar but radiologically different case scenario, in which 40 years old patient, initially diagnosed with tuberculoma, came out to as multicentric glioma on follow up imaging and histopathology.

- **Background:** According to WHO, at least one-third of the world's population is infected with *M. tuberculosis*. Radiological imaging of tuberculomas can be non-specific and differentiating them from other intracranial brain lesions
- **Case presentation:** 40 years old patient, initially diagnosed as tuberculoma, proved to be multicentric glioma on histopathology.
- **Conclusions:** In an endemic country, tuberculoma is one of the top differential diagnosis of ICSOL. Definite diagnosis can be made by excisional biopsy, or by treating the patient with a complete course of anti-tubercular chemotherapy and monitoring the tumor response.

KEYWORDS: Glioma multicentric, tuberculoma, intracranial lesions, case repor.**BACKGROUND**

The World Health Organization (WHO) estimated that at least one-third of the world's population is infected with *M. tuberculosis*.^[1] Different control Programs have been organized to provide bacterium sensitive antibiotics, still tuberculosis (TB) remains a major cause of mortality worldwide and a public health challenge for all countries.^[1] TB of the CNS is an important differential diagnosis in many neurologic conditions.^[1-3] There are different ways in which tuberculosis bacillus affects the central nervous system (CNS), and cause meningitis, tuberculoma, brain abscesses, and leptomeninx, and infarcts.^[1-5] The mass effect of tuberculomas can cause a variety of neurological manifestations depending on the location of the brain lesions.^[1] Also, radiological imaging of tuberculomas can be non-specific and differentiating them from other intracranial brain lesions such as metastases, cysticercosis, abscesses and glioma is important.^[1, 2, 6]

Tuberculomas mimicking gliomas is not unfamiliar. The typical features of tuberculomas are small, round, or oval-shaped nodules, ranging from 2 to 12 mm in size.^[1, 3, 4] Only a few case reports describing giant cerebral tuberculomas have been published in the literature. It is very rare to find cerebral tuberculomas that are large

enough to produce compressive features. Giant cerebral tuberculomas can be easily misdiagnosed intracranial tumors.^[5] However, MRI findings alone are nonspecific for tuberculomas, and diagnosis should include histological confirmation.^[1, 2, 5, 7]

CASE PRESENTATION

The patient is a 48 years old female who was referred to Radiology through Out Patient Department (OPD) on 26-July-2022. She was a known case of epilepsy and the reason for consultation stemmed from her complains of fits began with an episode of loss of consciousness for 30 minutes. There was no history of previous intra or extra-pulmonary Tuberculosis and on physical examination, she was found in generally good condition, hemodynamically stable, and afebrile, and normal in the remaining aspects of the physical examination.

MRI brain screening was requested which showed multiple abnormal T2 and FLAIR high signals involving left lentiform nucleus, internal capsule, bilateral thalami and left hemi mid brain. These appeared swollen and causing mass effect and midline shift of 0.5cm towards right side. (Fig:1)

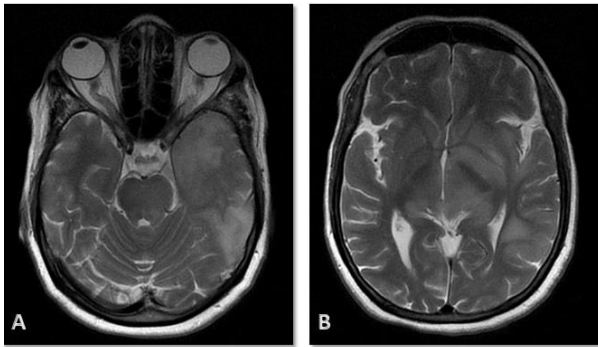


Figure 1 A and B Abnormal T2 high signals involving L Lentiform nucleus, bilateral thalami, L hemi-mid brain and L temporal lobe.

On post contrast study, there were patchy nodular areas of enhancement in left temporal lobe, suggestive of granuloma. (Fig: 2)

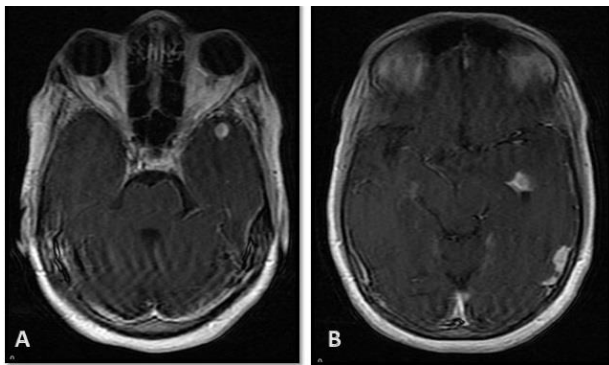


Figure 2 A and B Patchy nodular areas of enhancement are seen in L temporal lobe.

Based on these findings patient was started on anti-tuberculosis treatment.

After a month, on 27-August-2022 patient again presented through Emergency with complain of right upper and lower limb weakness, aphasia and confusion. Contrast enhanced MRI was requested which revealed significant inhomogeneous signal intensity in left fronto-temporo-parietal lobes, bilateral thalami, mid brain and upper pons. (Fig:3)

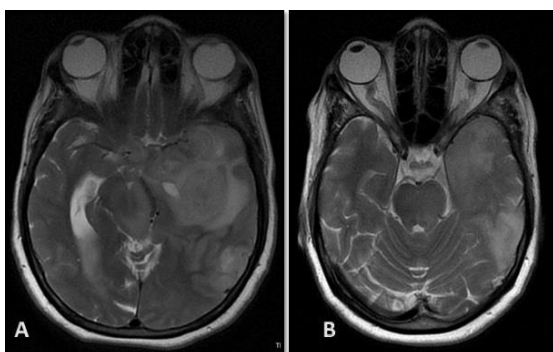


Figure 3 A and B High T2 signals with cortical and subcortical swelling is seen in bilateral temporal, L pariet-occipital region both thalami, L lentiform nucleus and mid-brain.

On post contrast study multiple lobulated inhomogenously enhancing lesions were seen in left fronto-temporo-parietal lobes. Few of the lesions were seen adherent to dura matter (Fig:4).

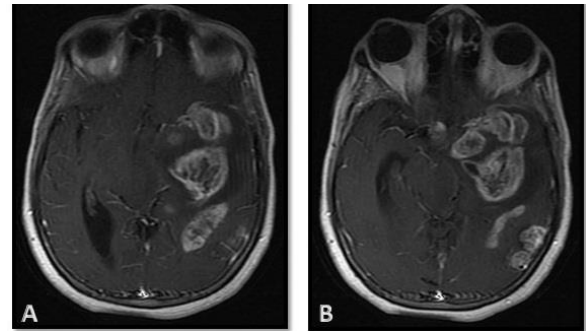


Figure 4 A and B multiple lobulated inhomogenously enhancing lesions were seen in left fronto-temporo-parietal lobes. There is significant edema and mass effect noted.

Largest lesion in temporal lobe measured approximately 2.9x2, 9x3.0cm (APxTSxLS).

On comparison to previous imaging, significant increase in edema and mass effect was noted causing midline shift of 1.1cm contralaterally. Based on these findings the possibility of multicentric glioma was raised besides granulomas and histopathology was advised.

DISCUSSION

Tubercular meningitis and tuberculomas are the two most important clinical manifestations Mycobacterium¹. Some studies contend that imaging findings of brain tuberculomas may be non-specific and differentiating them from other ICSOLs such as metastases, cysticercosis, abscesses and gliomas is important.^[1-3] A single, large tuberculoma is often confused with a brain tumor in patients who do not have overt clinical features of tuberculosis infection. Fever and other constitutional symptoms are often absent in patients with cerebral tuberculomas.^[1-2]

In this case, patient had no known history of Tuberculosis, both intra and extra-pulmonary, and no single episode of fever was reported. On MRI, there are multiple lesions, largest one with a size of more than 3cm causing mass effect.

On MRI, tuberculoma shows variation depending on the type of granulomatous lesion. Non-caseating granulomas are hyperintense on T2-weighted MR-images that was appreciated in the initial imaging of our patient and caseating granulomas typically have a solid center that is isointense on T2-weighted imaging.^[3] A central region of T2-hypointensity can be seen because of gliosis and monocyte infiltration. This is not usually appreciated in other brain lesion. Some reports have described the ‘target sign,’ which is a ring-enhancing lesion with an additional central area of enhancement or calcification, as characteristic of cerebral tuberculomas.^[3,4,5]

MRI characteristics overlapping with glioma included intra-axial location of the lesion, heterogeneity, T2-hyperintense lesions with contrast-enhancement. Perifocal edema and mass effect are the two most important characteristics reported for glioma.^[4-5] The only unusual finding for glioma is its dural attachment. In our patient also, the follow up imaging showed increase in size, edema and inhomogeneity within the lesion. On the basis of these findings, histopathology was advised and the possibility of glioma was confirmed. Therefore, in many cases, In an endemic country, tuberculoma is one of the top differential diagnosis of ICSOL. Definite diagnosis can be made by excisional biopsy.^[5,6]

CONCLUSIONS

In an endemic country, tuberculoma is one of the top differential diagnosis of ICSOL. Definite diagnosis can be made by excisional biopsy, or by treating the patient with a complete course of anti-tubercular chemotherapy and monitoring the tumor response.

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