e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(10); 640-642

Original Research Article

Rare Case Report of Isomorphic Astrocytoma, A Radiological Mimic of Medial Temporal Sclerosis

Madhugandha Wahane[1], Ajay Goenka[2], Kalra Vidita[3]

[1]Department of Neurology, Mahatma Gandhi Medical College, Jaipur, Rajasthan
[2]Department of Pediatric Neurology, Mahatma Gandhi Medical College, Jaipur, Rajasthan
[3]Department of Medicine, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan

Received: 01-08-2025 / Revised: 16-09-2025 / Accepted: 11-10-2025
Corresponding Author: Dr. Ajay Goenka
Conflict of interest: Nil

Abstract: Epilepsy is one of the most common neurological diseases worldwide. Among people with epilepsy, 30% have medically intractable epilepsy. Temporal lobe epilepsy (TLE) is the most frequently operated focal epilepsy with favourable surgical outcome. The most common causes of temporal lobe epilepsy are hippocampal sclerosis (HS), malformations like focal cortical dysplasia (FCD), tumors, ischemic lesions, and old traumatic and inflammatory lesions. Among tumors, astrocytomas are rare and mostly pharmacoresistant. Although patient's clinical history can help distinguish glioma from other causes. LGG may mimic Medial temporal lobe sclerosis radiologically (MRI as well as PET) and are often misdiagnosed. Thus, histopathology plays a very imperative role for predicting a good outcome after epilepsy surgery. The present case is a similar rare phenotype of Low-grade glioma, which was clinical-radiological indistinguishable but histological positive for isomorphic astrocytoma.

Key words: Astrocytoma, Medial Temporal sclerosis, Epilepsy

Introduction

In 2015, the World Health Organization (WHO) recognized epilepsy as a serious health problem. Approximately 50 million people worldwide suffer from epilepsy, among whom 30% have medically intractable epilepsy. [1, 2] Temporal lobe epilepsy (TLE) is the most frequently operated focal epilepsy with favourable surgical outcome.

The most common causes of temporal lobe epilepsy are hippocampal sclerosis (HS) (36.4%), malformations like focal cortical dysplasia (FCD) (19.8%), tumors (23.6%), ischemic lesions, and old traumatic and inflammatory lesions. [2] Among tumors, gangliogliomas are most frequent (23.6%), followed by Dysembryoplastic Neuro-epithelial tumor (DNET) (5.9 %) while astrocytomas are rare. Among pediatrictumors associated with TLE, pilocytic astrocytoma (41%) is identified more commonly than ganglioglioma (25%). [1] One-third of patients with brain tumor-related seizures are pharmaco-resistant.[3] A patient diagnosed with low-grade glioma presents with seizures in 83% of cases.[1] Low-grade glioma (LGG) complicated by seizures has a deleterious impact on a patient's quality of life (QOL). 90% of patients complain of long-term cognitive abnormality, which can be due to the tumor, surgery, radiotherapy, chemotherapy, or anti-seizure medication.[3] Among LGG, pilocytic astrocytoma, diffuse astrocytoma, oligodendroglioma, and ependymoma are associated with focal epilepsy. [1]

Case Description

The present case was a 14-year-old, right-handed boy with a pertinent past medical history of febrile status epilepticus at 3 years of age who presented with focal seizure with impaired awareness. The semiology of these episodes included behavioral arrest and oroalimentary automatism with right-hand distal automatism. This was followed by right upper limb paucity of movement and rocking movement of the whole body. The clinical event lasted for 1.5-2 minutes and was followed by postictal confusion. The clinical events preceded electroencephalographic (EEG) changes. His video-EEG showed ictal localization to the left anterior temporal quadrant. He had a concurrent structural lesion in the MRI-HARNESS protocol. [Figure 1].

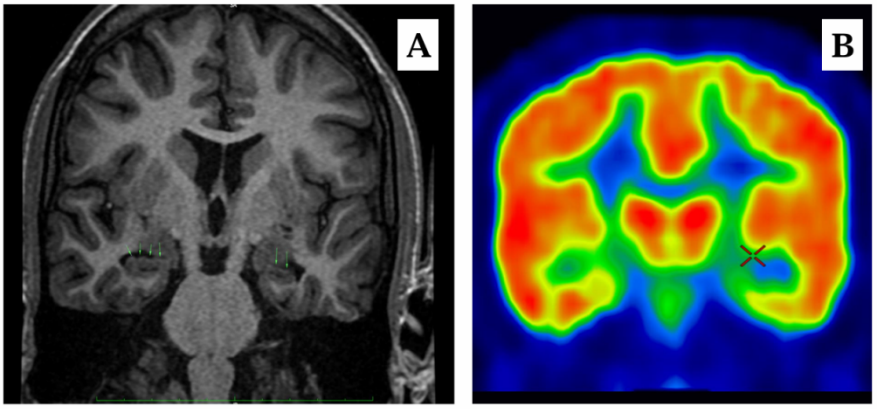

Figure 1: MRI and PET Scan

A- MRI T1W Coronal section showing Left mesial temporal pathology.

B- PET Scan showing Left mesial temporal hypometabolism.

The neuroimaging showed loss of hippocampal formation and enlargement of temporal horn. His positron emission tomography (PET) scan showed a hypometabolic lesion in the concordant area. These findings were concurrent to medial temporal lobe sclerosis.

With concordant clinico-imaging correlation, he underwent "Standard Anterior Temporal Lobectomy (ATL)" [Anterior temporal neocortex + Mesial temporal structures (Amygdala, Hippocampus, Fusiform gyrus, parahippocampal gyrus, Uncus)] and the sample was sent for histopathological examination.

The histopathology was suggestive of isomorphic astrocytoma -CNS WHO Grade II with IDH 1 immunoreactivity. [Figure 2]

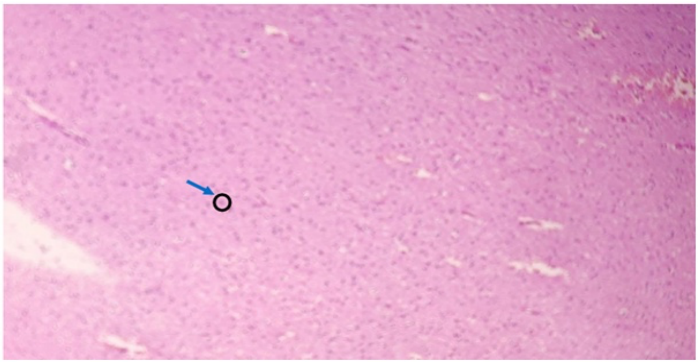

Figure 2: Histopathology

Histology (H & E stain) showing isomorphic astrocytes (blue arrow) at 10X magnification.

Low-grade gliomas require surgery and radiation, but a gross total resection significantly improves surgery freedom. Unfortunately, a gross resection is not always feasible, so the addition of radiation or the alkylating agent temozolomide can improve seizure control.

However, in our patient, ATL was done, with which the patient had good seizure control, and his follow-up GASE score improved from 10 (presurgical) to 3 (postsurgical). [Table 1]

Table 1: Global assessment of the severity of epilepsy (GASE scale)

	Pre Surgical	**3 months after the Surgery**	**6 months after the Surgery**
Frequency of Seizures	7	1	1
Intensity of Seizures	5	1	1
Side Effects of the AEDs	6	1	1
Impact on daily living	5	1	1
Falls or Injuries from seizure	5	1	1
Severity of the Post Ictal Period	5	1	1
Amount of AED	6	2	2
Total Score	39	8	8

MTS is the most common etiology of temporal lobe epilepsy. [4] In most of the cases, an MRI of the brain was substantial to localize and see the extent of the lesion, but it is difficult to determine the histopathological cause. [4] Among the poorly identified causes, ganglioglioma or low-grade glioma is the major part. Isomorphic astrocytoma is a rare variant of diffuse astrocytoma, and its exact incidence is not known. It although behaves similar to a WHO Grade I tumor, but it is a CNS 5 WHO Grade II tumor. [1] It presents with refractory seizures and shows good responsiveness to treatment; it is associated with good surgical outcome and Engel class in the postoperative period.[5]

Conclusion

We hereby present a rare case of isomorphic astrocytoma, a radiological mimic of MTS. It is imperative for its recognition because the patient may need postoperative radiation or chemotherapy for seizure freedom.

References

1. Al Sufiani F, Ang LC. Neuropathology of temporal lobe epilepsy. Epilepsy Res Treat. 2012;2012:624519. doi: 10.1155/2012/624519. Epub 2012 Apr 12. PMID: 22957233; PMCID: PMC3420738.
2. Blumcke I, Spreafico R, Haaker G, et al. Histopathological Findings in Brain Tissue Obtained during Epilepsy Surgery. N Engl J Med. 2017 Oct 26;377(17):1648-1656. doi: 10.1056/NEJMoa1703784. PMID: 29069555.
3. Piotrowski A., Blakeley J. Clinical Management of Seizures in Patients with Low-Grade Glioma. Seminars in Radiation Oncology. 2015; Volume 25, Issue 3 :219-224. doi.org/10.1016/j.semradonc.2015.02.009.
4. Kumar A., Singh S., et al. Lesional Temporal Lobe Epilepsy: Does the “Uncommon” Differ from the Common? Indian Journal of Neurosurgery.2022.; 11: 159-167 11. 10.1055/s-0041-1730128.
5. Rudà R, Bello L, Duffau H, Soffietti R. Seizures in low-grade gliomas: natural history, pathogenesis, and outcome after treatments. Neuro Oncol. 2012 Sep;14Suppl 4(Suppl 4):iv55-64. doi: 10.1093/neuonc/nos199. PMID: 23095831; PMCID: PMC3480244.