Case Report

A unilateral FLAIR-hyperintense lesions in anti-MOG-associated encephalitis with seizures (FLAMES) case from a developing country: A case report

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ABSTRACT

Introduction: The new clinical and radiological entity of the myelin oligodendrocyte glycoprotein (MOG) antibody-associated disease (MOGAD) is known as the FLAMES syndrome. It will add to the literature and enhance the understanding of this disease.

Case presentation: Our case presented a 25-year-old male patient with no known comorbid presented with a generalized sudden headache of moderate intensity for 10 days who came to our hospital. A right-sided upper motor neuron facial palsy was found on the examination. The diagnosis was further confirmed utilizing the MRI scan and the presence of MOG-IgG antibodies. The patient was started on intravenous methylprednisolone which lead to improvement of his symptoms. In the follow-up contrast-enhancing MRI of the brain, the findings suggested near resolution as compared to the initial MRI.

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1. Introduction

The myelin oligodendrocyte glycoprotein (MOG) antibody-associated disease (MOGAD) is classified as an inflammatory disease of the central nervous system. Commonly it manifests as myelitis, optic neuritis, or acute disseminated encephalomyelitis however it can present with focal cortical encephalitis-like symptoms as well [1]. Ogawa et al. [2] have reported 4 similar cases in the literature with MOG antibody-positive unilateral cortical encephalitis along with features of epilepsy. Burdham et al. [3] have further studied the documented data of the 20 such patients with magnetic resonance imaging (MRI) revealing fluid-attenuated inversion recovery (FLAIR) hyperintense cortical lesions in the patients with MOG associated Encephalitis with Seizures which is termed as FLAMES, a new clinical and radiological subcategory of MOGAD disease. The occurrence of encephalitis is a significant component of the MOG antibody-associated disorder [3].

The earlier literature reported the common locations of the MOG antibody-associated disorders lesion to be cortical greyjuxtacortical white matter, midbrain, supratentorial deep white matter, pons, medulla, corpus callosum, and cerebellum [4,5]. However, the MOG antibody-associated disorder can rarely manifest as unilateral or bilateral cerebral cortical encephalitis. The unilateral variant is quite rare and Ogawa et al. first reported it when all the patients were having seizures and MRI (T2-FLAIR) sequence showed unilateral cortical hyperintensities and MOG-IgG was found positive [1]. The Ogawa further identified 3 adult patients positive for MOG-IgG by testing patients with encephalitis of unknown etiology who well responded to steroids. The significant finding among these 3 patients with MOG-IgG positive was consistent with the distinct findings of the FLAMES that include unilateral cortical T2-FLAIR hyperintensities as compared to patients with negative MOG-IgG(1). This suggests that these neuroimaging findings are characteristic of MOG-IgG-associated encephalitis. However, the literature available is very limited related to the FLAMES syndrome and the clinical and radiological features are insufficiently mentioned due to the rarity of this entity.

We report a case of a rare presentation of a unilateral cortical FLAIR-hyper intense lesion in a patient with anti-MOG-associated encephalitis in addition to the episodes of seizures. To the best of our knowledge, it is the only case of FLAMES reported from Pakistan. We believe knowing the presence of this disease will help physicians all around the world to diagnose the condition earlier and treat it appropriately.

This case report has been reported in line with SCARE Criteria 2020 [6].

2. Case Presentation

A 25-year-old male patient with no known comorbid presented at Jinnah Post Graduate Medical Centre (JPMC), Karachi with the complaint of a generalized sudden headache of moderate intensity for 10 days associated with 1–2 episodes of vomiting, 2 episodes of seizure, right-sided body weakness along with aphasia, low-grade fever, and altered level of consciousness. His past and personal family and medical history were unremarkable. The electroencephalogram (EEG) was done as part of our hospital protocol that revealed a slowing in the left hemisphere in keeping with a post-ictal state or a lesion. It was suspected that he might have infectious encephalitis. Hence, empiric antimicrobial therapy was commenced along with intravenous sodium valproate to control the seizures.

Upon CNS examination, right-sided upper motor neuron facial palsy was found. The patient had an 18cm H2O normal opening pressure on the lumbar puncture. The CSF analysis showed raised WBC and increased lymphocytes by 95% while the protein and glucose were within the normal limit. The further blood tests to rule out the malignancy, infectious and autoimmune causes of encephalitis which included the ANA profile (ANA, ASMA, and AMA) and the serology for HIV, hepatitis-B, and hepatitis-C were also negative.

On the 4th day of admission, the patient continued seizures with a left hemispheric onset that was indicated on the continuous EEG. He also reported deviating his head to the right along with aphasia, and right arm jerking due to which levetiracetam was commenced.

The next day, the patient reported having a high-pressure headache which was relieved by a therapeutic lumbar puncture. This time the opening pressure was elevated to 35 cm H2O.

The contrast-enhancing MRI of the brain revealed mild relative gyral thickening seen in the left temporoparietal region on FLAIR images suggestive of focal encephalitis, as shown in Fig. 1. The MRA and MRV of the brain were unremarkable. He was suspected to have the anti-MOG-associated disease. The serum testing for MOG-IgG turned out to be positive as well by EUROIMMUN cell-based assay (CBA).

The patient was started on intravenous methylprednisolone 1 g which lead to improvement of his symptoms. Prednisolone and levetiracetam were gradually tapered off upon discharge with no further clinical attacks reported.

In the follow-up contrast-enhancing MRI of the brain, the findings suggested near resolution as compared to the initial MRI.

3. Discussion

The FLAMES have been categorized as a subtype of the MOGAD. It is commonly found in males as compared to females and the mean age in which it commonly affects is 29 years with the common age group of 11–46 years [3]. In the above case report, the clinical symptoms and physical signs along with the findings of unilateral cortical FLAMES on MRI suggest the distinctive findings of the FLAMES syndrome. As described by the OGAWA et al., the seizure was quite prevalent in our patient as well [2]. Additionally, the literature related to FLAMES suggests that symptoms like fever, headache, and cortical symptoms like aphasia referable to the FLAMES location are common manifestations. Our patient had the following symptoms as well along with raised intracranial pressure and an altered level of consciousness. These findings could be commonly confused with commonly occurring CNS infections despite the MRI showing the typical characteristic features of unilateral cortical FLAMES(3).

This disease is characterized by unilateral cortical T2-FLAIR hyperintensity however contralateral hemispheric cortical sign abnormalities were documented in 4 of the 20 cases which reassure the existence of unilateral cortical FLAMES on the spectrum of presentations of the anti-MOG associated encephalitis with more fulminating bilateral cortical lesions [1]. The findings of T2-FLAIR hyperintensities observed in this disease are one of the most distinct features however not pathognomonic.
and several other diseases such as Creutzfeldt-Jakob disease involving the cortex or carcinomatous meningitis and subarachnoid hemorrhage involving the subarachnoid hemorrhage can be considered as well [7]. The reason behind it is as the leptomeningeal enhancement and the adjacent sulcal T2-FLAIR hyperintensity were noted in 6 out of the 20 cases along with the cortical T2-FLAIR hyperintensity which has led the researchers to assume it to be a primary meningeal process [8,9]. Additionally, the data related to the pathology of this disease is quite limited. However, the lymphocytic infiltration of the subarachnoid space and the brain parenchyma along with perivascular involvement is documented in multiple studies that indicate cortical and meningeal inflammation [10,11].

In our case report, no blood tests for NMDAR, LGI1, GABA-A/B, and other cell-surface/synaptic neural antibodies were done although it is routinely done in cases where FLAMES is suspected [12] because of the typical clinical presentation along with the significant radiological appearances, which were highly suggestive of this unique entity. Our patient responded well to the steroids which have been suggested as an effective treatment regimen in making the patient free from seizures and other signs and symptoms related to the FLAMES(3).

As it is quite rare, there are no standard treatment guidelines are available related to FLAMES based on the controlled clinical trials and pregnant women. The current treatment regimen recommendations come mainly from the case report and prospective and retrospective studies. There is a need for a personalized treatment regimen according to the different cases. In reports, there has been literature available about the sudden improvement in the symptoms of the patients after the administration of corticosteroids [13]. Therefore, this report directs further studies on the effectiveness of corticosteroids in (MOG) antibody-associated disease.

4. Conclusion

This report shows there is a dire need of improving the understanding of this clinic-radiographic syndrome which makes it critically important to ensure the timely diagnosis and prompt consideration of the required medications.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Figure 1. Brain magnetic resonance imaging (MRI) of a 25-year-old male showing gyral thickening (white arrows) in the left temporoparietal region on FLAIR images.
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The following information is required for submission. Please note that failure to respond to these questions/statements will mean your submission will be returned. If you have nothing to declare in any of these categories then this should be stated.

Ethical approval

This is a case report and it didn’t require ethical approval from the ethics committee according to our institution’s policy.

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This study did not receive any funding from governmental or private organizations.

Author contribution

1. The study concept or design was determined by Nazeer Ahmed, Warda Shahnawaz.
2. Collection of data and interpretation is done by Mohammad Hasan, Hafsa Sami.
3. Writing of the manuscript is done by Jaya Jumari, FNU NAINA.
4. Manuscript editing is done by Mohammad Hasan, Sheeza Erum.

Registration of research studies

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

Guarantor

Nazeer Ahmed.

Consent

The informed consent from the patient’s guardian was obtained considering.

Helsinki’s Declaration.

Declaration of competing interest

We declare that there is no conflict of interest in our case report.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsu.2022.104881.

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