ORIGINAL RESEARCH PAPER

General Medicine

A CASE OF SERONEGATIVE AUTOIMMUNE ENCEPHALITIS PRESENTING AS NEW ONSET SEIZURES AND AMNESIA IN A YOUNG MALE

KEY WORDS:

Dr. G. Prathyusha Postgraduate, General Medicine Sriramachandra Medical College

Dr. Senthil Narayanasamy Professor, General Medicine, Sriramachandra Medical College

Dr. Nanthakumar Logithasan Senior Resident, Sriramachandra Medical College

Dr. Mahavir Vasireddy Post Graduate, General Medicine, Sriramachandra Medical College

INTRODUCTION

Autoimmune encephalitis is a rare but potentially severe inflammatory disorder of the central nervous system, characterized by an aberrant immune response targeting neuronal antigens. It has a wide range of neurological and psychiatric manifestations, including cognitive and memory impairment, seizures, movement disorders, and psychiatric symptoms such as psychosis or hallucinations.

It is frequently associated with specific autoantibodies against neuronal surface or intracellular antigens, such as N-methyl-D-aspartate (NMDA) receptors or leucine-rich glioma-inactivated 1 (LGI1). The condition may be idiopathic or associated with underlying malignancies, infections, or systemic autoimmune diseases.

Early recognition and prompt initiation of immunotherapy are critical in improving patient outcomes and preventing long-term neurological sequelae.

This case report highlights a unique presentation of seronegative autoimmune encephalitis in a young, previously healthy male emphasizing on the diagnostic challenges, treatment response, and clinical course.

Case Report

A 26-year old male, working as a computer operator with no prior comorbidities was brought to the emergency room with complaints of involuntary movements involving all four limbs associated with up rolling of eyes, tongue bite and fall to the ground with a laceration to the forehead. The episode was not associated with urinary or faecal incontinence. Postictal headache and confusion were present. There was a brief loss of consciousness following the episode. History of a dental procedure was given by family member. Post dental procedure patient had a low-grade fever for two days which subsided spontaneously. Patient was assessed post regaining consciousness. He was vitally stable. Neurological examination revealed an impairment in immediate and recent memory with preserved remote memory. Motor, sensory system examination was unremarkable. Cranial nerve examination was normal. There were no signs of cerebellar disease. Meningeal signs were negative.

Baseline investigations showed

Hemoglobin	15.7
WBC	6990
Platelets	1,45,000
BUN	12
Creatinine	0.9
SGOT	140
SGPT	145
Sodium	138
Potassium	4.0
Chloride	100
Bicarbonate	22
Calcium	8.7
Magnesium	2.0
Phosphorus	4.6
Urine routine	Within normal limits
Scrub typhus IgM	Negative
Leptospira IgM	Negative
Dengue IgM, IgG	Negative
Bood and urine cultures	Sterile

In view of new onset seizures with fever and history of dental procedure, meningoencephalitis was suspected and patient was started on was started on Inj. Ceftriaxone, Inj. Acyclovir, Inj. Levetiracetam, Inj. Dexamethasone.
Lumbar puncture was done.

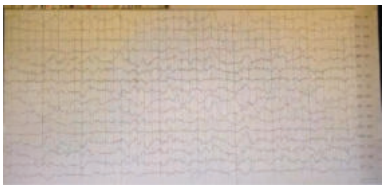
CSF Analysis Showed

Glucose	82
Protein	50
Chloride	112
WBC	0
RBC	0
CSF CBNAAT	Negative
CSF BIOFIRE	Negative
CSF CULTURE	No Growth

Magnetic resonance imaging (MRI) Brain plain and contrast was done which was reported to be normal.

Initial EEG showed normal drowsy pattern. Patient had an episode of GTCS the following day during course of hospital, ABG done showed elevated lactates. Serum prolactin was elevated. MRI rediscussed with radiologist and was opined to be normal. Neurology opinion was obtained and patient was started on Lacosamide and clobazam. Psychiatry opinion was obtained, Mini mental state examination (MMSE) was done and he scored 24/30. Psychiatry opined in favour of an organic cause.

In ward, the patient had an episode of vacant staring, lip smacking followed by disorientation and repeat EEG was done which showed triphasic waves with delta brush pattern, suggestive of autoimmune encephalitis.



EEG OF THE PATIENT

Repeat lumbar puncture was done and CSF autoimmune panel (consisting of NMDA, AMP type glutamate receptor antibody, GABA B, VGKC associated protein) was done which was negative. Serum autoimmune encephalitis panel was negative. Patient was planned for PET CT for further workup of paraneoplastic syndrome, which could not be done due to logistic reasons. In view of new onset seizures, memory disturbances and EEG showing the classic triphasic waves with delta brush pattern, the possibility of seronegative autoimmune encephalitis was considered. Patient was empirically started on high dose steroid pulsing with Injection Methylprednisolone 1gm/day, which was changed to oral steroids and gradually tapered.

Patient came for first review two days after completion of pulsing steroids, memory was reassessed. Remote memory was intact, immediate memory normal, Recent memory improved, with him recollecting all events from the last day of pulsing onwards but no memory of anything one month prior to that. Patient came for second review two weeks later and he showed improvement in immediate and recent memory and was able to recognise staff and hospital surroundings that he had seen in the last visit.

DISCUSSION

Autoimmune encephalitis which was once thought to be a rare disease, evidence suggests that it now occurs at a similar frequency to infectious encephalitis with an estimated incidence of 13.7/100,000 cases [1]. It is an increasingly recognized cause of new-onset seizures and cognitive dysfunction in young adults. Seronegative autoimmune encephalitis was subcategorized into antibody-negative probable autoimmune encephalitis(ANPRA), autoimmune limbic encephalitis and acute disseminated encephalo-myelitis. This case highlights the diagnostic and therapeutic considerations in a young male who presented with seizures, memory impairment, and an electroencephalogram (EEG) demonstrating a delta brush pattern, ultimately diagnosed with seronegative autoimmune encephalitis.

The presence of a delta brush pattern on EEG is strongly associated with NMDAR encephalitis but has been reported in other autoimmune encephalitides. This pattern consists of diffuse slow waves with superimposed beta frequencies and is considered a marker of severe disease. Although anti-NMDA receptor antibodies are commonly implicated, seronegative cases are well-documented and pose a diagnostic challenge. The absence of specific autoantibodies does not exclude an autoimmune etiology, particularly in patients with a compatible clinical presentation.

Seronegative AE is diagnosed based on clinical features, imaging, EEG, and cerebrospinal fluid (CSF) findings. This patient's presentation with new-onset focal seizures, cognitive impairment, and characteristic EEG abnormalities raised suspicion for an autoimmune process. Although MRI findings in autoimmune encephalitis can be nonspecific or normal in early disease, CSF studies often reveal pleocytosis or elevated protein, further supporting the diagnosis.

Given the high morbidity associated with untreated AE, early immunotherapy is crucial, even in seronegative cases. However when compared to seropositive AE frequency of seizures is lower in seronegative AE [2].First-line therapies include high-dose corticosteroids, intravenous immuno-globulin (IVIG), or plasmapheresis. Second-line agents such as rituximab or cyclophosphamide are used in refractory cases [3]. Similar case reports in literature are available for limbic encephalitis where patients presented with subacute amnesia with significant MRI findings [4]. Another case report published in cureus is of a woman presenting with super refractory status epilepticus, requiring high dose steroids and a second line immunotherapy, Rituximab.[5] Our patient presented with acute post ictal amnesia especially for recent memory, which showed near complete recovery post steroid pulsing. This case highlights the variable clinical presentation of seronegative autoimmune encephalitis and the need for high clinical suspicion and early need for immunotherapy in these patients.

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