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CASE REPORT

Autoimmune Encephalitis Unveiled: A Case Report in a 50-year Old Female

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ABSTRACT

Autoimmune encephalitis (AE) is a potentially reversible but often missed cause of acute neuropsychiatric deterioration. It presents a diagnostic challenge for emergency physicians due to its nonspecific early symptoms that resemble infectious, metabolic, or psychiatric disorders. We report the case of a 50-year-old woman who presented to the Emergency Department with acute confusion, aggressive behavior, and memory loss without fever or focal neurological signs. MRI revealed bilateral medial temporal lobe hyperintensities consistent with limbic encephalitis, and cerebrospinal fluid analysis confirmed the presence of anti-NMDA receptor antibodies. Based on these findings, a diagnosis of autoimmune encephalitis was established. The patient was managed with high-dose intravenous corticosteroids followed by intravenous immunoglobulins, resulting in rapid clinical recovery and discharge within 10 days. This case highlights the pivotal role of emergency physicians in recognizing autoimmune encephalitis early, initiating prompt immunotherapy, and coordinating multidisciplinary care. Early treatment can prevent irreversible neurological damage, seizures, or progression to coma. Awareness of AE as a differential diagnosis in adults presenting with acute behavioral changes or unexplained altered mental status is essential for improving patient outcomes, especially in resource-limited settings where antibody testing may be delayed.

KEYWORDS

• Autoimmune encephalitis • Anti-NMDA receptor encephalitis • Limbic encephalitis • Acute confusion in adults • Autoimmune brain inflammation • Encephalitis treatment India

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INTRODUCTION

Autoimmune encephalitis (AE) is a rare but treatable cause of encephalopathy that often mimics infectious, metabolic, or psychiatric disorders. Prompt diagnosis and immunotherapy can significantly alter disease progression.[1]

BACKGROUND ON AUTOIMMUNE ENCEPHALITIS

AE refers to acute to subacute, progressive inflammation of the brain associated with antibodies against neuronal cell-surface and synaptic proteins, most commonly anti-N-methyl-D-aspartate receptor (anti-NMDA) encephalitis.[2] It is frequently associated with underlying malignancy and requires appropriate screening.[3] Common presentations include new-onset memory loss, psychosis, altered mental status, or seizures, typically evolving over weeks to three months.

EPIDEMIOLOGY

Epidemiological data on autoimmune encephalitis are under-reported due to its variable presentation and numerous responsible antibodies. The incidence of encephalitis reported in adults varies between 0.7 and 12.6 per 100,000.[6]

CASE REPORT

A 50-year-old female with no significant past medical history presented to the Emergency Department (ED) with complaints of confusion, aggressive behavior, and short-term memory loss for one week. There was no history of fever, trauma, or substance abuse. Her vital signs were stable. Neurological examination revealed altered mental status but no focal deficits.

Routine blood investigations, including complete blood count, renal, hepatic, and thyroid panels, were within normal limits.

DIAGNOSTIC WORKUP

Imaging: MRI brain revealed T2 hyperintensities in the medial temporal lobes, suggesting limbic encephalitis.[7]

Cerebrospinal Fluid Analysis: Lymphocytic pleocytosis and elevated protein were noted. Autoimmune and infectious panels were ordered. Anti-NMDA receptor antibodies were positive in CSF, confirming the diagnosis of autoimmune encephalitis.[2]

DIFFERENTIAL DIAGNOSIS

- Toxic or metabolic encephalopathy
- Cerebrovascular accident (CVA)
- Demyelinating disorders (e.g., multiple sclerosis)
- Autoimmune disorders (e.g., lupus, neurosarcoidosis)
- Neurodegenerative diseases such as Alzheimer's dementia

Physical examination, blood tests, and neuroimaging helped rule out these differential causes.

MANAGEMENT AND OUTCOME

Early initiation of treatment was done with high-dose intravenous methylprednisolone followed by intravenous immunoglobulins. Clinical improvement was observed within one week.[8] The patient was discharged on a tapering dose of oral steroids and advised regular follow-up with neurology. Cognitive rehabilitation and psychiatric support were arranged.

Complications and Outcomes: If not treated promptly, autoimmune encephalitis can lead to cognitive impairment, sleep disorders, hyperkinesia, autonomic dysfunction, persistent amnesia, coma, and status epilepticus.[9]

DISCUSSION

Autoimmune encephalitis encompasses a spectrum of disorders with distinct autoantibodies targeting neuronal cell surface or intracellular antigens. Early clinical suspicion, supported by MRI and CSF findings, is critical. Antibody testing aids in confirming the diagnosis.[9] This case underscores the importance of considering autoimmune encephalitis in middle-aged patients with unexplained neuropsychiatric symptoms. Limbic encephalitis, particularly anti-NMDA receptor encephalitis, should be included in differential diagnoses, especially when imaging supports temporal lobe involvement. Awareness, multidisciplinary coordination, and early initiation of immunotherapy remain

the cornerstones for improving survival and neurological outcomes in autoimmune encephalitis.[10]

CONCLUSION

Autoimmune encephalitis, although rare, is a reversible cause of encephalopathy. Emergency physicians must maintain a high index of suspicion to initiate prompt therapy and prevent long-term sequelae. This case demonstrates that awareness and early immunomodulatory treatment can lead to excellent outcomes in autoimmune encephalitis.

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