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RESEARCH ARTICLE

AUTOIMMUNE ENCEPHALITIS (AE)

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ABSTRACT

Autoimmune encephalitis is a group of immune-mediated inflammatory disorders of the brain characterized by the presence of autoantibodies directed against neuronal cell surface or synaptic antigens. It commonly presents with a rapid onset of neuropsychiatric symptoms, seizures, cognitive impairment, movement disorders, and autonomic dysfunction. Early diagnosis is challenging due to its heterogeneous clinical presentation and overlap with infectious and psychiatric conditions. Advances in neuroimmunology have led to improved recognition and identification of specific autoantibodies such as anti-NMDA receptor, LGI1, CASPR2, and GABA receptor antibodies. Prompt initiation of immunotherapy, including corticosteroids, intravenous immunoglobulin, and plasma exchange, significantly improves patient outcomes. This article highlights the clinical features, diagnostic approach, and management strategies of autoimmune encephalitis, emphasizing the importance of early detection to reduce morbidity and mortality.

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INTRODUCTION

Autoimmune encephalitis has emerged as an important and potentially reversible cause of encephalitis. Unlike infectious encephalitis, AE results from autoantibodies directed against neuronal proteins. Early recognition and prompt immunotherapy significantly improve outcomes. AE affects individuals of all ages and is increasingly diagnosed due to advances in antibody testing. Epidemiology:5–10 per 100,000 populations, Anti-NMDA receptor encephalitis is more common in children and young adults and Females are more commonly affected due to tumour associations. Definition Autoimmune encephalitis is a group of inflammatory brain disorders caused by an abnormal immune response against neuronal cell surface or synaptic antigens, leading to acute or sub-acute brain dysfunction. It often presents with psychiatric symptoms, seizures, cognitive decline, and altered consciousness.

Etiology Autoantibody production against neuronal antigens Triggered by: Tumors (paraneoplastic), viral infections (post-infectious), Genetic and immune dysregulation and exact cause remains unknown in many cases Pathophysiology Autoantibodies bind to neuronal receptors and Disrupt synaptic transmission it cause neuroinflammation then Leads to neuronal dysfunction rather than neuronal death (hence reversibility). Types of Autoimmune Encephalitis1.Antibody-mediated (Common types) in that Anti-NMDA receptor encephalitis (most common),LGI1 antibody encephalitis, CASPR2 antibody encephalitis, GABA-A / GABA-B receptor encephalitis and AMPA receptor encephalitis. 2. Paraneoplastic autoimmune encephalitis in Associated with underlying malignancies (e.g., ovarian teratoma, lung cancer).

Clinical Feature susually develop over days to weeks: Neuropsychiatric observe Anxiety and depression, Psychosis, hallucinations, Behavioral changes at losts leads to Memory loss. Neurological problems are Seizures (often refractory), Altered consciousness, Movement disorders (orofacial dyskinesia), Speech disturbances and Autonomic dysfunction. Systemic features are Fever, Cardiac arrhythmias, Blood pressure instability and Hypoventilation (severe cases). Diagnosisis based on clinical presentation and investigations: in Investigations CSF analysis: lymphocytic pleocytosis, elevated protein, EEG: diffuse slowing, epileptiform activity, MRI brain: temporal lobe or limbic system involvement, Autoantibody testing (CSF/serum), Tumor screening (CT, MRI, PET), Management First-line Immunotherapy is High-dose corticosteroids, Intravenous immunoglobulin (IVIG) andPlasma exchange. In Second-line Therapy used Rituximab andCyclophosphamide.

In Supportive Care including Antiepileptic drugs, Psychiatric management, ICU care if autonomic instability, Rehabilitation (physical, cognitive, psychosocial). Complications Status epilepticus, Cognitive impairment, Relapse, Autonomic failure, Long-term disability and increased mortality if untreated. Prognosis Early treatment is having good recovery and Delayed diagnosis leads to persistent neurological deficits and Anti-NMDA receptor encephalitis has favorable outcomes with timely therapy Prevention No primary prevention, early detection and treatment of tumors and Prompt immunotherapy to prevent relapse

CONCLUSION

Autoimmune encephalitis is a serious but treatable neurological condition. Early recognition, antibody testing, and timely immunotherapy are crucial to reduce morbidity and mortality. Increased awareness among healthcare professionals is essential for improving patient outcomes.

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