Neuronal antibodies

Neuronal antibodies, or anti-neuronal antibody, are a class of autoantibodies that target components of neurons in the nervous system. These antibodies can bind to various neuronal structures, including cell surface receptors, ion channels, and synaptic proteins. When present in the body, they can interfere with normal neuronal function and contribute to the development of autoimmune neurological disorders.

There are several types of neuronal antibodies, each targeting specific neuronal antigens. Some examples include:

NMDA Receptor Antibodies: These antibodies target the N-methyl-D-aspartate (NMDA) receptors, which are ion channels involved in synaptic transmission and plasticity. Autoimmune encephalitis associated with NMDA receptor antibodies is characterized by psychiatric symptoms, seizures, movement disorders, and autonomic dysfunction. VGKC Complex Antibodies: These antibodies target the voltage-gated potassium channel (VGKC) complex, which regulates neuronal excitability. Autoimmune conditions associated with VGKC complex antibodies include limbic encephalitis and Morvan syndrome, which can present with seizures, cognitive impairment, and neuromuscular hyperexcitability. LGI1 and CASPR2 Antibodies: These antibodies target leucine-rich gliomainactivated protein 1 (LGI1) and contactin-associated protein-like 2 (CASPR2), which are proteins associated with synaptic function. Autoimmune encephalitis associated with LGI1 and CASPR2 antibodies often presents with seizures, cognitive impairment, and faciobrachial dystonic seizures. GABA-B Receptor Antibodies: These antibodies target the gamma-aminobutyric acid type B (GABA-B) receptors, which are involved in inhibitory neurotransmission. Autoimmune encephalitis associated with GABA-B receptor antibodies can manifest with seizures, cognitive impairment, and psychiatric symptoms. AMPA Receptor Antibodies: These antibodies target alpha-amino-3-hydroxy-5-methyl-4isoxazolepropionic acid (AMPA) receptors, which are glutamate receptors involved in synaptic transmission. Autoimmune encephalitis associated with AMPA receptor antibodies may present with seizures, cognitive impairment, and movement disorders. Testing for neuronal antibodies is typically performed using laboratory techniques such as enzyme-linked immunosorbent assay (ELISA), immunofluorescence assays, and cell-based assays. Positive results indicating the presence of specific neuronal antibodies can help clinicians in diagnosing and managing autoimmune neurological disorders. Treatment often involves immunosuppressive therapies to dampen the autoimmune response and reduce neuronal damage.

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