Antibodies to glycolipid and glycolipid complexes in GBS and related diseases

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Antibodies to gangliosides, glycolipids containing sialic acid, are present in about 60% of the acute-phase sera from patients with Guillain-Barré syndrome (GBS). Some of the anti-ganglioside antibodies in GBS and its variants may be directly involved in the pathogenetic mechanisms by biding to the regions where the target gangliosides are densely localized. Recently we found that serum antibodies from some GBS patients strongly react with ganglioside complexes (GSCs) consisting of two different gangliosides, but not with each constituent ganglioside. They may specifically recognize a conformational epitope formed by two species of gangliosides. The antibodies against GSC consisting of GD1a and GD1b (GD1a/GD1b complex) and/or GD1b/GT1b complex are associated with severe GBS requiring artificial ventilation. The antibodies to GM1/GalNAc-GD1a complex are associated with pure motor GBS and those to GSCs containing GQ1b or GT1a are with Fisher syndrome and related disorders. In contrast to GBS, anti-ganglioside antibodies are infrequently detected in sera from patients with chronic inflammatory demyelinating polyneuropathy (CIDP). LM1 is a glycolipid specifically localized in myelin of human peripheral nervous system. We recently reported that some patients with CIDP have antibodies against LM1, LM1/GM1 complex or LM1/GD1b complex. Future investigation on the antibody activities against other glycoconjugates, such as glycoproteins and proteoglycans, may be necessary to reveal the pathogenesis of the sero-negative autoimmune neuropathies.