Anti-MOG IgG antibodies in patients with MS

Gaertner et al. report that IgG antibodies against native glycosylated myelin-oligodendrocyte-glycoprotein (MOG) were elevated during relapses of multiple sclerosis (MS) and secondary progressive MS. This suggests that studies of posttranslationally modified proteins are important for detection of autoantibodies.

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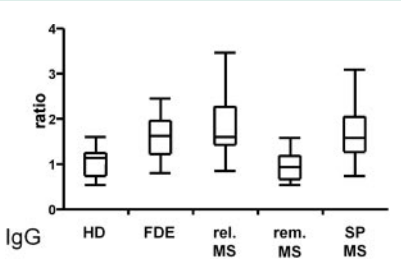
Making sense of anti-MOG antibodies in MS: Assay differences may explain conflicting results

Commentary by Anthony T. Reder, MD

In MS, there are elevated serum and CSF antibodies to viruses, to self-proteins, and perhaps to certain brain proteins. These autoantibodies could amplify inflammation in the brain or interfere with brain cell function. A reliable assay for these antibodies might help predict the course of MS and be useful in identifying subsets of patients for treatment. Reactivity to MOG has been reported as high or as non-existent, possibly because of variations in the target proteins used in the assays. An initial study by Berger et al. found that 90% of early MS patients had IgM antibodies to MOG and myelin basic protein (MBP), using Western blots of the first 125 amino acids of denatured, non-glycosylated MOG protein.[1] IgM binds complement and could be important in damage to myelin. Subsequently, Lampasona et al.[2] found no antibodies using a suspension assay with full-length, normal conformation, but non-glycosylated MOG. The Gaertner et al. study found antibodies in serum, using an ELISA with full-length, glycosylated mouse MOG. Their results suggest that sugar groups and the native protein conformation are needed for binding by antibodies in MS. They find that serum IgM and IgG antibodies to mouse MOG are slightly, but significantly, elevated in MS, and that levels are highest during clinically active disease. Further studies with various forms of the human protein in different subpopulations of MS are needed to determine if these antibodies are significantly elevated in MS and if they are related to disease activity and course. Although it is still unclear whether these antibodies participate in the disease process or if they are simply a marker for disease activity, this study is another step on the way to perfect an assay to detect who might develop MS, and to predict responses to treatment.



IgG antibodies against native glycosylated MOG. Box plots indicate IgG serum levels in MS and control sera. HD = healthy donors; FDE = first demyelinating event; rel. MS = relapsing MS; rem. MS = remitting MS; SP MS = secondary progressive MS.

References

1. Berger T, Rubner P, Schautzer F, et al. Antimyelin antibodies as a predictor of clinically definite multiple sclerosis after a first demelinating event. N Engl J Med 349:139–45, 2003.
2. Lampasona V, Franciotta D, Furlan R, et al. Similar low frequency of anti-MOG IgG and IgM in MS patients and healthy subjects. Neurology 62:2092–4, 2004.

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