BIOMARKERS CAN BE USEFUL FOR DIAGNOSIS & PROGNOSIS IN MS

Mark Freedman
Canada

There is no proven biomarker for MS but many have been sought. A biomarker is a characteristic that can be objectively and reproducibly measured and is used as an indicator of normal biological processes, pathogenic processes or pharmacological intervention. A type “0” biomarker marks the natural history of a disease, and correlates longitudinally with known clinical indices of disease severity. A type “1” biomarker marks the effect of a therapeutic intervention in accordance with its mechanism of action. Then there is a surrogate marker of disease, which is a biomarker that is intended to serve as a substitute for a clinical endpoint, and is expected to predict the effect of a therapeutic intervention, correlates strongly with a clinical endpoint and must provide information about the prognosis. At best in MS is the use of MRI, which has been accepted as a “surrogate”, but not as a true biomarker. An ideal biomarker for MS should: arise from a biological rationale; be clinically relevant; be practically and easily measured; correlate with known clinical and MRI measures; change with treatment effect; and be sensitive enough to change in accordance with disease or treatment.

Two potential biomarkers are considered here. The first is one that has arisen from widespread glycomics screening and is called gMS classifier (IgM antibodies to glycans). This putative biomarker has been shown to be more commonly seen in the serum of MS patients and early on has predicted which patients have MS that is likely to relapse or progress. Another putative biomarker are neurofilaments, which are normally contained within neurons and axons, but whose release may indicate the extent of damage taking place (similar to troponin release during cardiac ischemia). These are easily measured in serum or CSF and can be shown to change with treatment.