Team develops neuro test that distinguishes demyelinating diseases from multiple sclerosis

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Credit: Mayo Clinic

Mayo Clinic has launched a first-in-the-U.S. clinical test that will help patients who recently have been diagnosed with an inflammatory demyelinating disease (IDD) but may be unsure of the exact disorder. Neurologic-related diseases commonly affect the brain, optic nerves and

the spinal cord, and this new test can distinguish other IDDs such as neuromyelitis optica, acute disseminated encephalomyelitis, optic neuritis, and transverse myelitis from multiple sclerosis (MS).

The test uses live cells to identify patients who are positive for an antibody to myelin oligodendrocyte glycoprotein (or "MOG," for short). But why is this sticky protein so important?

"From our years of research, we have learned that if patients test positive for MOG antibodies, it generally indicates that it's not classical MS," says Sean Pittock, M.D., a Mayo Clinic neurologist and director of the Mayo Clinic Neuroimmunology Laboratory. "And, more important, some MS treatments have been reported to worsen the disease of patients diagnosed with an IDD that is not classical MS."

Treatment options

"While many IDDs that mimic multiple sclerosis are rare, correct and early diagnosis allows for early immunotherapy with immunosuppressants, rather than disease-modifying agents that are commonly used in treating MS," Dr. Pittock says.

The researchers also found that persistence of the MOG antibody is associated with disease relapses, thus warranting relapse-preventing immunotherapy.

"We've learned that if patients are positive for MOG antibodies, and they have an attack (such as optic neuritis), and they persistently remain positive [for the MOG antibodies] when tested six to 12 months later, they have a higher likelihood for a relapse," says Andrew McKeon, M.B., B.Ch., M.D., a clinical biochemist and co-director of Mayo's Neuroimmunology Laboratory. "Certain drugs will prevent disease relapses and may reduce disability progression, so this diagnostic

information will help health care providers and their patients with treatment options."

Who should be tested?

Dr. Pittock says that any patients suddenly presenting with vision loss, significant disc edema, or recurrent optic neuritis should consider testing for both MOG and AQP4 antibodies.

Discovered at Mayo Clinic in 2004, the aquaporin-4 (AQP4) antibody was the first biomarker associated with inflammatory demyelinating diseases. "The AQP4 test is a standard test in the evaluation of any patient undergoing an MS workup," says Dr. Pittock. "And now, this second antibody—MOG—will be helpful because the presence of MOG antibodies indicates that a patient doesn't have MS."

Dr. McKeon agrees and adds, "The combination of these two tests—the AQP4 and MOG antibodies—allows for the most comprehensive evaluation for patients recently diagnosed with demyelinating diseases."

Also, one might think that because the spinal cord can be affected with certain IDDs that the test is performed with spinal fluid, but it is not. "Only serum—blood—is necessary," says Dr. McKeon. Why? "Testing for either AQP4 or MOG antibodies in cerebrospinal fluid (CSF) alone will miss positive patients; therefore, MOG antibody testing is not offered on CSF."

Collaboration with the University of Oxford

The Mayo researchers worked extensively with Patrick Waters, Ph.D., co-director of the University of Oxford Autoimmune Neurology Diagnostic Laboratory.

"The Mayo Clinic Neuroimmunology Laboratory has been developing this test in the U.S. for three years," says Dr. Pittock. "We've collaborated with experts at Oxford University in MOG antibody testing to optimize our assay."

Both the MOG and AQP4 tests are available to Mayo Clinic patients and health care providers worldwide through Mayo Medical Laboratories, the global reference laboratory of Mayo Clinic.

Provided by Mayo Clinic

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