Simple blood test may predict MRI disease activity in multiple sclerosis

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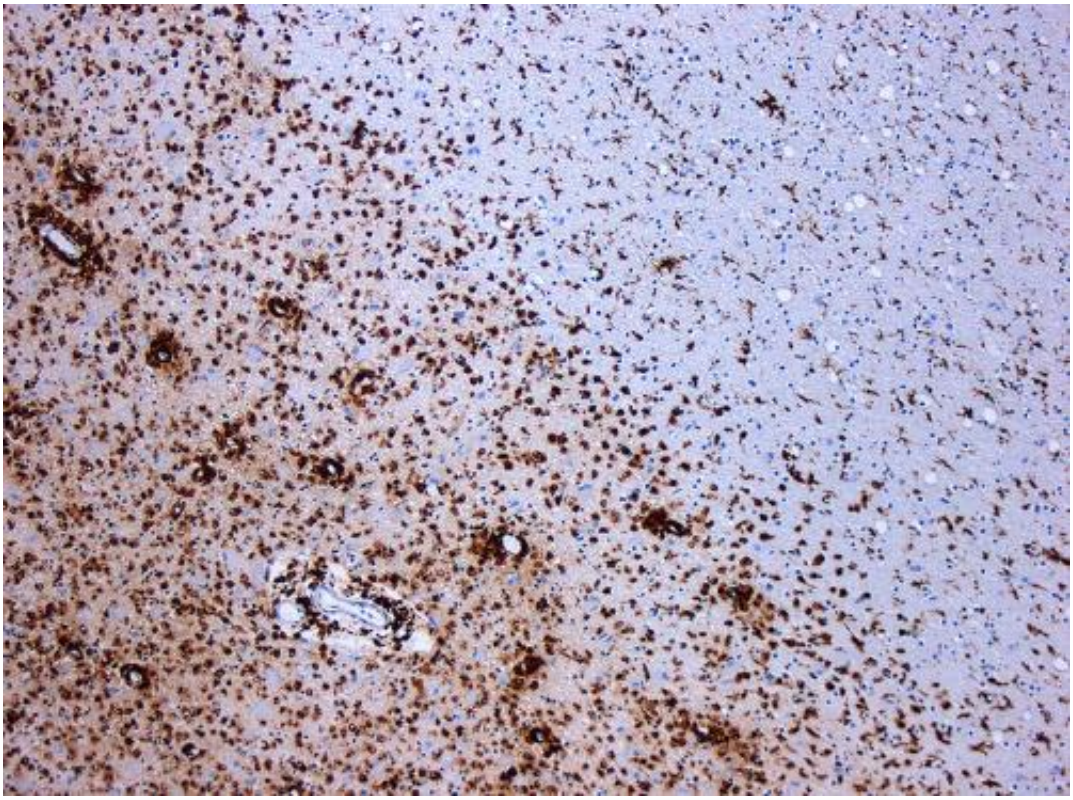

Demyelination by MS. The CD68 colored tissue shows several macrophages in the area of the lesion. Original scale 1:100. Credit: CC BY-SA 3.0 Marvin 101/Wikipedia

A blood test to monitor a nerve protein in the blood of people with multiple sclerosis (MS) may help predict whether disease activity is flaring up, according to a study published in the November 29, 2017,

online issue of *Neurology Neuroimmunology and Neuroinflammation*, an official journal of the American Academy of Neurology.

The nerve protein, called neurofilament light chain, is a component of nerve cells and can be detected in the blood stream and spinal fluid when nerve cells die.

"Since MS varies so much from person to person and is so unpredictable in how the disease will progress and how people will respond to treatment, identifying a biomarker like this that can help us make predictions would be very helpful," said study author Kristin N. Varhaug, MD, of the University of Bergen in Bergen, Norway. "These blood tests could provide a low-cost alternative to MRI for monitoring disease activity."

A blood test may also be a good alternative for those who fear the small, enclosed space required when getting an MRI scan.

"We monitored neurofilament light chain levels in the blood of people with the relapsing-remitting form of MS and found levels of this nerve protein were higher when people had new disease activity and lower when they took medication to reduce the number of symptom flare-ups," Varhaug said.

Relapsing-remitting MS is a form of the disease marked by symptom flare-ups followed by periods of remission.

For the two-year study, researchers enrolled 85 people who had relapsing-remitting MS for an average of two years. During the first six months, participants did not receive disease-modifying treatment. For the remaining 18 months, they were all treated with interferon-beta 1a, which can reduce the number of flare-ups and the accumulation of brain lesions in MS.

For the first nine months, participants had monthly magnetic resonance imaging (MRI) scans. They then had MRI scans again at year one and year two. Blood samples were also taken at the beginning of the study, at three and six months, as well as at year one and year two.

Researchers found that nerve protein levels in the blood were higher when MRI detected new T1 and T2 lesions, which are areas of damage in the brain due to MS. Those with new T1 lesions had 37.3 picograms per milliliter (pg/ml) of the nerve protein in their blood compared with 28 pg/ml for people without new T1 lesions. Those with new T2 lesions had 37.3 pg/ml of nerve protein in the blood compared with 27.7 pg/ml for those without new T2 lesions. Increased nerve protein levels were present for a three-month time period during the development of new lesions. Nerve protein levels also fell when treatment with interferon-beta 1a treatment began.

The researchers found that an increase of 10 pg/ml in a person was associated with a 48-percent increased risk of developing a new T1 lesion and 62-percent increased risk of a new T2 lesion.

"Blood tests for this nerve protein may be an effective way to monitor disease activity and how well the treatment is working," said Varhaug.

Limitations of the study include that people in the study had more frequent MRI scans than they would have during regular MS care. Also, while most patients experienced new lesions during follow-up, not all had relapses. Future studies may want to consider a longer time frame for follow-up.

Provided by American Academy of Neurology

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