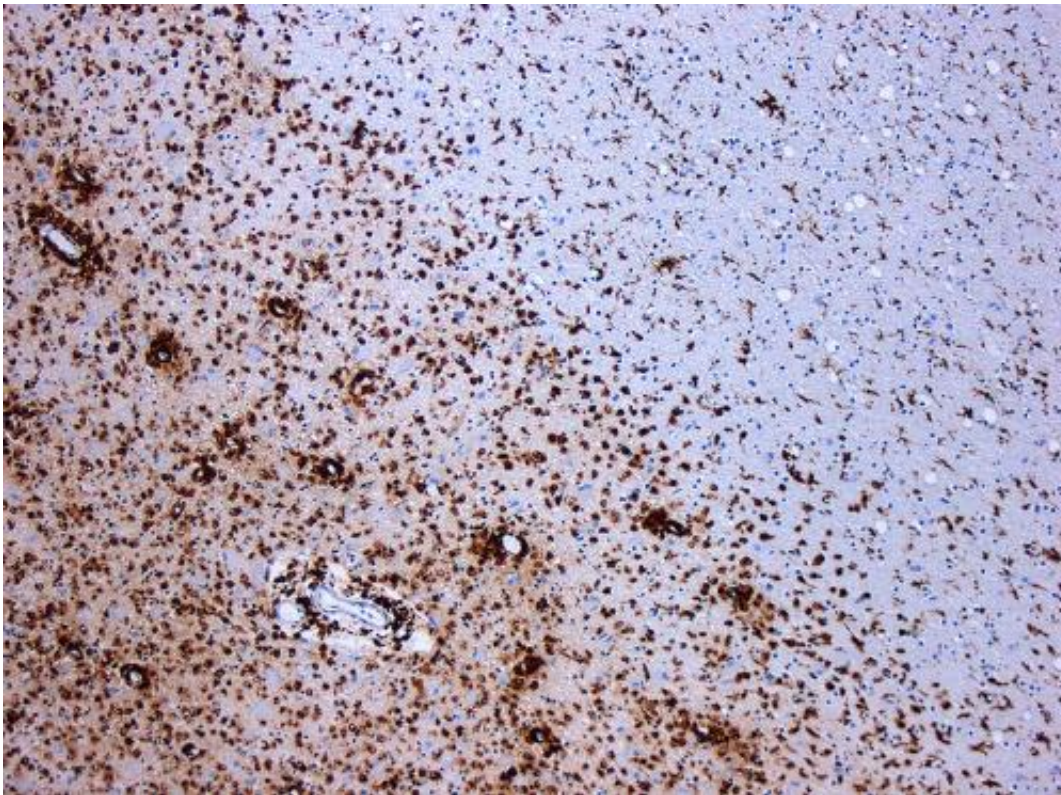


Multiple sclerosis misdiagnosis study supports improved education of clinicians

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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](https://creativecommons.org/licenses/by-sa/3.0/) Marvin 101/Wikipedia

A number of common conditions are mistaken for multiple sclerosis (MS), a disabling central nervous system disease, say researchers at four academic medical centers across the U.S in a study published online

August 31, 2016 in the journal *Neurology*.

While it has been known for decades that MS misdiagnosis is a problem, this study defines the current problems that lead [patients](#) to be misdiagnosed with MS and the possible reasons why they are misdiagnosed. The research involved 24 MS specialist neurologists at the University of Vermont, Mayo Clinic, Washington University, and Oregon Health & Science University, who identified an incorrect diagnosis of MS in 110 patients.

An abnormal response of the immune system, MS causes repeated attacks on the covering around nerve fibers and disrupts communication between the brain and the body, ultimately causing deterioration or permanent nerve damage to areas of the brain, spinal cord and optic nerves.

But diagnosing MS can be a challenge. Unlike some other illnesses, there is no specific biomarker or blood test for the disease, which is caused by a combination of genes and environmental triggers that predispose to MS. In addition, the related nerve damage can cause a wide range of symptoms, many of which are often also associated with different ailments.

"Although many rare disorders are known to mimic MS, it appears that presently, a number of common disorders are most frequently mistaken for MS and not rare conditions," says Andrew Solomon, M.D., the study's lead author and an assistant professor of neurological sciences and division chief of multiple sclerosis at the University of Vermont College of Medicine. In the study, five primary diagnoses or syndromes were identified in two thirds of participants as the actual causes of symptoms misidentified as MS: migraine, either alone or in combination with other problems; fibromyalgia; an abnormal MRI with unexplained symptoms; a psychological condition; and neuromyelitis optica spectrum

disorder (NMOSD) - a disease similar to MS that affects the optic nerves and spinal cord.

According to the study findings, 72 percent of the misdiagnosed patients took medication to treat a disease they didn't have, some took these medications for many years, and 33 percent had remained misdiagnosed for a decade or longer before being evaluated by the physicians participating in the study who had informed them of an incorrect misdiagnosis. Four of the patients misdiagnosed with MS had participated in clinical trials for experimental MS therapies.

"This study suggests significant and long-term unnecessary risk for these patients," Solomon says.

Some of the treatments for MS carry serious side effects. One drug, taken by 13 percent of the misdiagnosed patients, can cause a potentially fatal brain infection, Solomon says. Other patients suffered from the discomfort and inconvenience of daily injections, others experienced side effects from medications, and finally, they lacked treatment for their actual correct diagnoses.

"Strict adherence to our diagnostic criteria for MS can help physicians make the correct diagnosis in many patients," says Solomon.

However, these criteria rely on the accurate interpretation of symptoms, physical exam findings, and testing results, such as MRI, to make the diagnosis. The study examined the possible causes for misdiagnosis in the 110 patients in the study and found that the initial clinicians may not have used MS diagnostic criteria appropriately.

"MS can be challenging to diagnose correctly" says Solomon. "Our study suggests that the misinterpretation and misapplication of MS diagnostic criteria are important contemporary contributors to misdiagnosis."

A proper clinical diagnosis relies on a rigorous evaluation that includes careful interpretation of radiological data from an MRI (magnetic resonance imaging). However, MRI misinterpretation can complicate misdiagnosis. Abnormalities that resemble those of MS show up on a scan for reasons other than MS, and nonspecific abnormalities may lead to a faulty diagnosis. An overreliance on MRI abnormalities "without thoughtful consideration of history, symptoms, and neurological exam" may contribute to misdiagnosis, explains Solomon.

In patients diagnosed with MS, prompt initiation of treatment with immune modulating therapies is often appropriate, so, notes Solomon, "There is pressure to make the diagnosis of MS early, and to start patients on MS therapies quickly. But in some patients who do not meet rigorous standards for diagnosis, waiting longer and close follow-up may determine the correct diagnosis."

The study identified patients misdiagnosed by both MS specialist neurologists, as well as non-specialists.

"While there may be different reasons for misdiagnoses by subspecialists and non-specialists, this study suggests that we all make mistakes, and I think we can all do better," says Solomon, who hopes the study will encourage better education of clinicians on the proper use of MS [diagnostic criteria](#) and on the problem of MS misdiagnosis, and further study of how to recognize patients incorrectly diagnosed with MS.

Provided by University of Vermont

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