

Knowing your own mind



How to distinguish multiple sclerosis cognitive issues from dementia or Alzheimer's disease.

by Vicky Uhland

If you've had MS for a while, you might have undergone a cognitive evaluation. While statistics vary, researchers tend to agree that about 65% of people with MS have some type of cognitive impairment. So, for neurologists or neuropsychologists who work with MS patients, cognitive tests are simply par for the course.

But for the people who take those tests, they're anything but routine. Even a relatively benign diagnosis of "mild cognitive deficits" can cause someone with MS to wonder if, when or how that impairment will proceed. And that can leapfrog to fears of developing dementia or Alzheimer's disease.



Meghan Beier, assistant professor at Johns Hopkins University

“People don’t know if their cognitive changes are associated with MS, normal aging or Alzheimer’s,” says Meghan Beier, PhD, an assistant professor at Johns Hopkins University School of Medicine’s Division of Rehabilitation Psychology and Neuropsychology.

Beier gives the example of a patient with MS who was having trouble thinking of certain words. Her husband and kids told her she was repeating herself. “She said she saw this happen with her mom, who was diagnosed with dementia,” Beier remembers. “She asked, ‘Will this happen to me?’”

“The resounding message I would like to send is that there is no evidence the cognitive impairment seen with MS is on a continuum with dementia,” says Vicky Leavitt, PhD. Leavitt is an assistant professor of neuropsychology at Columbia University’s Irving Medical Center and cofounder of eSupport Health, a digital mental-health platform for people with MS. “The type of cognitive patterns we see in people with MS are different than those with dementia or Alzheimer’s.”

Most researchers and neuropsychologists agree that even if your MS causes changes in your cognitive skills, you can substantially lower your risk that those changes will worsen through a handful of simple health and wellness strategies.

Defining the diseases

Beier believes people with MS can “over-pathologize” their cognitive symptoms, like her patient who made the leap from not being able to remember certain words to being diagnosed with dementia.

“There’s a lot of misinformation about dementia, and a lot of stigma and fear associated with the word dementia,” Beier says. “That can cause people to overinterpret their cognitive symptoms.”

But while there are some similarities between MS-related cognitive issues, dementia and Alzheimer’s disease, the conditions are caused by different physiological changes in the brain. To understand these differences, it’s helpful to know how the diseases are defined.



**Vicky Leavitt, PhD,
assistant professor at
Columbia University**

Multiple sclerosis occurs when an abnormal response of the body's immune system is directed against the central nervous system, which is made up of the brain, spinal cord and optic nerves. This can lead to cognitive symptoms, particularly memory issues, slower processing of incoming information, or difficulty in decision-making and organization.

Dementia is a catch-all term for cognitive impairment that encompasses a variety of diseases. Alzheimer's disease is the most common, but people with Parkinson's disease and amyotrophic lateral sclerosis (ALS) can be classified as having dementia. People can also develop dementia as a result of traumatic brain injuries, strokes or cerebrovascular disease. And people with MS can be diagnosed with dementia, as well.

Dementia symptoms include cognitive deficits that interfere with a person's ability to manage their daily affairs, like paying bills or taking medications correctly.

Alzheimer's disease leads to progressive atrophy of and cognitive change within the brain. It's thought to be caused by the abnormal buildup of two proteins in and around brain cells: amyloid, or plaque; and tau, or tangles. Alzheimer's disease has a specific set of symptoms: impairment in memory and some other cognitive domains, like language, decision-making or the ability to quickly switch from one task to another. These symptoms result in people being unable to do everyday activities to take care of themselves, like getting dressed, eating, showering or doing chores.

Unlike MS, Alzheimer's disease is usually initially diagnosed in people over the age of 65. "People can develop early-onset Alzheimer's before age 65, but that's usually due to high genetic risk for the disease," Beier says.

Understanding the symptoms

Although the source may be different, MS and Alzheimer's disease have cognitive symptoms that recent research suggests can sometimes be the same.



**Laura Hancock, PhD,
assistant professor at the
University of Wisconsin**

“There is a lot of research that demonstrates clear differences between the cognitive impairment people with MS experience and the cognitive impairment people with Alzheimer’s disease experience. However, more recent research has shown us that the cognitive issues between these two groups may not be as different as we thought,” says Laura Hancock, PhD, assistant professor in the Department of Neurology at the University of Wisconsin School of Medicine. “Some studies suggest that people with MS may experience memory difficulties that are similar to people with Alzheimer’s disease. More research on this subject is needed and ongoing.”

Early cognitive symptoms in MS often occur in particular cognitive domains, like processing speed. These symptoms are usually mild to begin with, which means they can be targeted by specific treatments and potentially improved, says Nancy Chiaravalloti, PhD, director of neuropsychology, neuroscience and traumatic brain injury research at the Kessler Foundation in New Jersey.

That type of improvement is more difficult with dementia, which affects multiple cognitive systems. And while MS cognitive symptoms and dementia symptoms progress in steps, dementia symptoms accelerate more quickly, Chiaravalloti says.

In the case of Alzheimer’s disease, Hancock says, people often can learn some new information, but they can’t recall any of it later.

In cognitive impairment related to MS, new information does get stored — but may not be stored correctly. One potential reason is that MS can create lesions in the brain that block or shrink pathways between different parts of the brain. Our brains can create new pathways, but they may not be as efficient or effective as the original route. Beier says that’s why people with MS can have problems with memory, mental-processing speed and organization.

“The brain is trying to send information through a circuitous route, so it takes longer to get

there,” Beier says. “It’s harder for the brain to process information, get words out or recall information. An example is when you’re at a party and you recognize somebody, but you can’t think of their name.”

The good news is that there are effective ways to address these symptoms for people with MS.

A research review co-authored by Chiaravalloti and published in *Lancet Neurology* in 2008 reported that while it takes more repetitions of information, recall and recognition of that information can be just as good in people with MS as in those without MS. However, people with Alzheimer’s can’t improve their long-term memory loss, Beier says.

In some people, MS-related cognitive symptoms may become so severe that they can be categorized as dementia, Hancock says. But that doesn’t necessarily mean these people are at greater risk of developing Alzheimer’s disease, she notes.

“There haven’t been enough studies on this subject for us to really know yet,” Hancock says. “It’s believed that this occurs in a minority of individuals with MS, but the exact proportion is not clear at this time. What is more important is managing fear and taking steps to modify your lifestyle to help reduce your risk of future cognitive impairment.”

Handling the fear

Beier believes that when her patients ask her if they are at higher risk of developing Alzheimer’s disease, what they are really asking is if they will lose who they are as a person.

“They worry that people won’t like them anymore or will be annoyed by them if they have cognitive difficulties,” she says. “So addressing their fears is really helpful. Cognitive change doesn’t mean you’re losing who you are as a person. It just means you’re performing differently than someone your age without MS.”



**Nancy Chiaravalloti, PhD,
director of
neuropsychology, Kessler**

Foundation

Since MS is a disease of uncertainty, it's natural to be nervous about what might happen cognitively in the future. But fear about developing dementia isn't just the domain of people with MS, Chiaravalloti points out. "It's a common concern for everyone. People are really worried about losing their memory function because it's so much more prevalent these days, as people live longer."

In particular, Chiaravalloti says, two cognitive issues common in people with MS — slower processing speed and memory loss — can have a major impact on daily life. "People feel like they're missing things, they feel cloudy and they feel things aren't clear." And because these are hallmarks of Alzheimer's, that can create fear for the future.

But that fear is neither productive nor helpful. Worrying about developing significant cognitive issues or overinterpreting existing symptoms can lead to self-isolation and decreased functioning — which could make those cognitive issues worse, Beier says.

Research shows that depression is a risk factor for Alzheimer's, and depression can increase when people are socially isolated. Plus, Beier points out that the average person can only hold about three pieces of information in their working memory at the same time. So, if one of those pieces is being upset about possibly forgetting a word, you're actually decreasing your ability to remember that word.

Ways to cope

Beier says one of the best ways to deal with fears about future cognitive issues is to confront those fears head-on.

"Go to the worst-case scenario and ask yourself how you'd prepare for that," she says. "Having a plan makes people feel more in control, even if they don't have to use it."

Being mindful and aware of your fears is also crucial, Beier says. For instance, if you're having trouble participating in a fast-paced conversation and are feeling anxious, stop, relax and reset. Take a deep breath and give yourself permission to simply follow the conversation without participating.

A psychologist or therapist — either in person or through a telehealth consultation — can help you with these strategies and suggest other solutions to help manage your fear.

"It's easy to be scared, to push into darkness," Leavitt says. "Don't be afraid to ask for help."

Vicky Uhland is a writer and editor in Lafayette, Colorado.

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