

Medication may improve thinking skills in advanced multiple sclerosis: study

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People with the advanced form of multiple sclerosis (MS) called secondary progressive MS who took the drug siponimod for one to two years had improved cognitive processing speed compared to those who did not take the drug, according to a new study published in the December 16, 2020, online issue of *Neurology*, the medical journal of the American Academy of Neurology.

Cognitive processing speed is the amount of time it takes someone to take in information, process it and then react to solve a problem or complete a task. It can affect many aspects of a person's [daily life](#) including employment, driving skills and social activities.

While most people with MS are initially diagnosed with relapsing-remitting MS, marked by symptom flare-ups followed by periods of remission, most

eventually transition to secondary progressive MS, which does not have wide swings in symptoms but instead a slow, steady, worsening of the disease.

"Multiple sclerosis is a neurodegenerative disease, meaning neurons in the brain can break down or die, and this can greatly affect a person's thinking skills," said study author Ralph H. B. Benedict, Ph.D., of the University of Buffalo in New York, and a member of the American Academy of Neurology. "While there are currently no drugs on the market in the United States approved for the treatment of cognitive impairment in MS, our study found that siponimod, which is prescribed to slow the progression of physical disability in MS, may also help improve cognitive processing speed in people with advanced MS."

For the study, 1,651 people with secondary progressive MS with an average age of 48 were followed for up to two years. Two-thirds of the group was prescribed two milligrams a day of siponimod. One-third of the group was prescribed a placebo. All people in the study were given [cognitive tests](#) at the start of the study and again every six months.

One of those tests, the Symbol Digit Modalities Test, measures cognitive processing speed. It is widely recognized as a particularly sensitive and reliable [test](#) in MS studies. The person taking the test is given a key of symbols matched to numbers. They are then shown a series of symbols and must say the corresponding number for each symbol as quickly as possible. The test result is the number of items correctly answered in 90 seconds.

Researchers found that on average the group of people taking siponimod improved their scores on this test after one year, 18 months and again at two years, compared to the group of people taking placebo, in whom the score stayed the same.

People taking siponimod had a 28% higher chance

of having a sustained improvement of four or more points compared to those taking a placebo. An increase or decrease of four or more points is considered clinically meaningful and is associated with quality of life outcomes and disability progression. People taking siponimod also had a 21% lower chance of having a four-point or lower decrease in score.

Among all participants, 35% of people taking siponimod improved their scores by four or more points compared to 27% of people taking a placebo, 41% taking siponimod had no change compared to 42% taking a placebo, and 25% taking siponimod had lower scores by four or more points compared to 32% of people taking a placebo.

Scores on two other thinking and memory tests did not differ between the two groups.

"We are impressed to see that siponimod may improve cognitive processing speed in people with MS, however more research is needed to confirm our results," said Benedict.

He cautioned, "Because we did not see changes on two other cognitive tests, more research should further examine how siponimod affects scores on a broader array of thinking and memory tests. This research is needed before prescribing siponimod for cognition can be considered."

Side effects that occurred more frequently in people taking siponimod versus [placebo](#) included [high blood pressure](#), higher levels of liver enzymes, eye swelling, shingles and convulsions.

A limitation of the study was that researchers did not systematically collect information on education or MS symptoms such as fatigue and depression, which possibly could affect the impact of siponimod on cognition. Education and depression have been shown to influence scores on the Symbol Digit Modalities Test.

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