

RESEARCH

CONNECTING THE DOTS: VITAMIN D AND MS

BY DR. LINDA BUCHWALD

Exciting new research is beginning to identify both genetic and environmental factors involving vitamin D that could increase one's risk for developing MS and could influence disease progression. Research is also targeting vitamin D as a potential therapy, with clinical trials being planned or already underway to determine whether it can prevent or treat MS.



JOHN, DIAGNOSED IN 2001

THE LATITUDE EFFECT

There's a long-standing observation that population rates of MS increase the farther away one is from the equator and from the sun, exposure to which is our major source of vitamin D. Could the two be connected? Researchers have been exploring that very question.

Studies of who gets MS have confirmed that higher levels of sun exposure and higher blood levels of vitamin D were both associated with decreased risk of a first demyelinating event—often the first indicator of developing MS. In addition, there is evidence that high levels of vitamin D in utero and during adolescence and adulthood also have a positive effect on reducing the risk of developing MS.

Other research suggests that vitamin D may have an effect on the inflammatory processes that occur during MS flares. In a small safety study at St. Michael's hospital in Toronto, researchers found that immune T cells involved in MS attacks were suppressed in people who had higher blood levels of vitamin D.

GENES, VITAMIN D AND MS

Studies done in families where multiple individuals have MS have resulted in new information that potentially links genetic factors related to vitamin D activation.

In December, Canadian and British researchers published the results of a study that set out to look for rare genetic changes that could explain

strong clusters of MS in some families. They studied DNA in 43 individuals selected from families with four or more members with MS.

The team compared the DNA changes they found against existing databases, and identified a change in the gene CYP27B1 as being of interest. The CYP27B1 gene plays an important role in converting Vitamin D to a biologically active form. The researchers then looked for the same rare gene variant in over 3,000 families of unaffected parents with a child with MS. They found 35 parents who carried one copy of this variant along with one normal copy. In every one of these 35 cases, the child with MS had inherited the mutated version of the gene.

THE ROAD FORWARD

Further research now underway will determine if vitamin D may have preventative as well as disease-modifying effects. In EAE, the animal model of MS, vitamin D supplementation prevents and slows the progression of the disease, while vitamin D deficiency worsens the disease. We also know that high vitamin D levels in people with MS have been associated with decreased risk of exacerbations and less severe disability.

To what extent vitamin D can influence the course of MS once someone's been diagnosed is still unclear; however, research is being planned to clearly define the role of vitamin D in the prevention, progression and treatment of MS. For instance, researchers at Johns Hopkins University are leading a multicenter controlled clinical trial funded by the Society to determine whether

high-dose vitamin D added to standard therapy with Copaxone further reduces disease activity in people with MS. (To learn more about this trial, which is still recruiting participants, visit www.clinicaltrials.gov/ct2/show/NCT01490502.)

What is clear is that vitamin D deficiency is extremely common in many parts of the country. The optimal approaches for vitamin D supplementation in the general population and in those with MS have not been established, yet it is important that everyone take a minimum daily amount of vitamin D supplement. I recommend at least 2,000 IU and no more than 4,000 IU per day for my own patients with MS; however, official recommendations are lower (see www.ods.od.nih.gov/factsheets/VitaminD-QuickFacts), so ask your healthcare providers what they recommend for you. Due to the inherited risk of MS and the possible preventative effect of vitamin D supplementation, also discuss the possible implications of vitamin D deficiency and supplementation for your children. ■



Dr. Linda Buchwald is chief of Neurology at Mount Auburn Hospital in Cambridge, Mass., and the medical director of the Mount Auburn Hospital Multiple Sclerosis Care Center. She is a trustee of the Society's Greater New England Chapter and Clinical Advisory Committee member.

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