

Vitamin D: The Missing Piece to the Multiple Sclerosis Puzzle?

“Just learning you have MS is such a devastating shock.”

-Annette Funicello

Falling. That's what Grandma did all the time. She fell at work holding a newborn baby and tore her rotator cuff. She tumbled down cement stairs at home and broke her ankle. At times she lost her balance and clung to the closest steady object. She tried to function normally, but something was terribly wrong with her body.

Eventually Grandma was diagnosed with Multiple Sclerosis (MS). MS is a debilitating disease that causes the immune system to attack the protective coating on the brain's nerve cells and form lesions. Symptoms include blurry vision, mental function difficulties, and the loss of mobility (“Animal Model”). A diagnosis of MS is devastating since there is no known cure (Mayo).

As soon as she found out she had MS, Grandma's world crumbled around her. She cried constantly, slept often and watched TV all the time. She lost her job as a labor and delivery nurse and divorced my Grandpa. In her mind, MS was a death sentence.

Eighteen years later, Grandma is still with us battling the most common form of multiple sclerosis known as relapsing-remitting (RRMS). RRMS is characterized by clearly defined attacks (relapses) of new or increasing neurological symptoms followed by periods of partial or complete recovery (remissions). During remissions, all symptoms may disappear, or some symptoms may continue and become permanent (Board). Treatment with medications, like beta interferons or Tysabril can reduce the frequency and severity of relapses thereby slowing the formation of new lesions (Mayo).

While Grandma has taken many disease-modifying therapies, such as the beta interferons prescribed by her doctors, her MS symptoms have gradually worsened over the

years . At the age of 70, she is now wheelchair-bound but still able to care for herself. The medications have helped prolong her life, but not cured the disease. Fortunately, a simple dietary supplement of vitamin D has recently given her some welcome relief.

Studies have shown that people with lower levels of vitamin D and a lack of sun exposure have a higher risk of MS (Shugart). Furthermore, people who have MS and low levels of vitamin D are more likely to have greater disability and more disease activity (“Taking Vitamin”). As a result of these correlations, animal model studies of MS and the effects of vitamin D logically became of great importance. Using mice injected with experimental autoimmune encephalomyelitis (EAE), a disease that shares similarities with human MS, researchers gave MS-exhibiting mice a single dose of an active hormone form of vitamin D, followed by ongoing vitamin D supplies through the diet (Miller). The treatment, according to the scientists led to regained neurological function and was “a runaway success, one hundred percent of the mice responded” (“Animal Model”). In another study, simultaneously injecting mice with rodent MS and vitamin D supplements were found to prevent damaging immune cells from traveling into the brain, thus protecting the mice from showing symptoms of MS (“How ‘Sunshine’”).

These promising animal studies with mice led to clinical studies in humans, where scientists have found that taking a high dose of vitamin D3 is safe for people with multiple sclerosis and helps regulate the body’s hyperactive immune response (“Taking Vitamin”). Furthermore, the study found that people who took a high dose of vitamin D had a reduction in the inflammatory cells related to MS severity (“Taking Vitamin”). With such amazing results, it’s no wonder that doctors now prescribe vitamin D to their MS patients.

The addition of high doses of vitamin D to Grandma’s daily diet over the past couple of years has had a significant effect on the progression of her MS, maybe even more so than the standard MS drugs she has taken for two decades. Though MS has confined her to a

wheelchair, she feels physically stronger and mentally brighter. More often than not, the duration of her relapses are shorter and the effects less damaging. Thanks to research using EAE mice, something as simple as vitamin D has been found to treat and possibly prevent MS in the future. Continued animal testing is essential for medical breakthroughs to solve the puzzle of MS. After seeing Grandma struggle for so long, the cure for multiple sclerosis cannot come soon enough.

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