New evidence shows low vitamin D levels lead to Parkinson's disease

July 12 2010

A new study on vitamin D levels and Parkinson's disease risk points to the need for further research on whether vitamin D supplements can protect against the movement disorder, according to an editorial in the July 2010 issue of *Archives of Neurology*.

The author of the editorial is Marian Evatt, MD, assistant professor of neurology at Emory University School of Medicine and director of the Atlanta Veterans Affairs Medical Center's Movement Disorders Clinic.

The study, also reported in Archives of Neurology, is the first to show that low vitamin D levels can help predict whether someone will later develop Parkinson's disease. Researchers at Finland's National Institute for Health and Welfare measured vitamin D levels from more than 3000 people, using blood samples taken between 1978 and 1980, and then followed those people to see whether they developed Parkinson's. People with the lowest levels of vitamin D were three times more likely to develop Parkinson's, compared to the group with the highest levels.

Previous research had suggested a link between low vitamin D and Parkinson's, but whether this is a cause-and-effect relationship is unknown. Vitamin D may help protect the population of neurons gradually lost by people with Parkinson's disease, Evatt writes in her editorial.

Parkinson's disease affects nerve cells in several parts of the brain, particularly those that use the chemical messenger dopamine to control

movement. The most common symptoms are tremor, stiffness and slowness of movement. These can be treated with oral replacement of dopamine.

Research on animals suggests that vitamin D may protect neurons that produce dopamine from toxins. Besides vitamin D levels, factors such as genetics and exposure to pesticides also are associated with the risk for developing Parkinson's disease.

Doctors have known for decades that vitamin D promotes calcium uptake and bone formation, but evidence is accumulating for additional roles regulating the immune system and the development of the nervous system. Humans can get vitamin D from exposure to sunlight or eating foods such as fatty fish or fortified foods such as milk and packaged cereals. People living at high latitudes tend to have less exposure to the sun; in the Finnish study, the average vitamin D level was about half of the currently recommended level.

Vitamin D levels are usually measured by looking at the stable, 25-hydroxy form; the current recommended level is 30-40 nanograms per milliliter of blood.

Evatt writes that public health authorities should consider raising the target vitamin D level above the current recommended target because of known benefits for bone health as well as potential benefits for the nervous system. Still, animal data suggests that too much vitamin D can also be harmful for the nervous system, and megadoses of vitamin D can induce hypercalcemia, or an excess of calcium in the blood.

"At this point, 30 ng/ml or more appears optimal for bone health in humans. However, researchers don't yet know what level is optimal for brain health or at what point vitamin D becomes toxic for humans, and this is a topic that deserves close examination," she says.

More information: www.clinicaltrials.gov/ct2/show/NCT00571285

Provided by Emory University