

Lack of vitamin D linked to Parkinson's disease

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A majority of Parkinson's disease patients had insufficient levels of vitamin D in a new study from Emory University School of Medicine.

The fraction of Parkinson's patients with vitamin D insufficiency, 55 percent, was significantly more than patients with Alzheimer's disease (41 percent) or healthy elderly people (36 percent).

The results are published in the October issue of *Archives of Neurology*.

The finding adds to evidence that low vitamin D is associated with Parkinson's, says first author Marian Evatt, MD, assistant professor of neurology at Emory.

Evatt is assistant director of the Movement Disorders Program at Wesley Woods Hospital. The senior author is endocrinologist Vin Tangpricha, MD, assistant professor of medicine at Emory and director of the Endocrine Clinical Research Unit.

Evatt says her team compared Parkinson's patients to Alzheimer's patients because they wanted to evaluate the possibility that neurodegenerative diseases in general lead to vitamin D insufficiency.

Most Americans get the majority of their vitamin D from exposure to sunlight or by dietary supplements; fortified foods such as milk and packaged cereals are a minor source. Only a few foods in nature contain

substantial amounts of vitamin D, such as salmon and tuna.

The body's ability to produce vitamin D using UV-B radiation from the sun decreases with age, making older individuals at increased risk of vitamin D deficiency.

"We found that vitamin D insufficiency may have a unique association with Parkinson's, which is intriguing and warrants further investigation," Evatt says.

The connection could come partly because patients with Parkinson's have mobility problems and are seldom exposed to the sun, or because low vitamin D levels are in some way related to the genesis or progression of the disease.

She says her team saw their results as striking because their study group came from the Southeast, not a region with long gloomy winters, where vitamin D insufficiency is thought to be more of a problem.

In addition, the study found that the fraction of patients with the lowest levels of vitamin D, described as vitamin D deficiency, was higher (23 percent) in the Parkinson's group than the Alzheimer's group (16 percent) or the healthy group (10 percent).

The retrospective study examined 100 people in each group, who were recruited between 1992 and 2007. Every fifth Parkinson's patient from Emory's clinical neurology database was selected, then healthy controls and patients with Alzheimer's disease were matched on age and state of residence.

Vitamin D insufficiency is frequently defined as less than 30 nanograms per milliliter of blood of the 25-hydroxy form (the major storage form)

of the vitamin and deficiency as less than 20 nanograms per milliliter. However, most experts agree insufficiency warrants treatment and should not be ignored.

Doctors have known for decades that vitamin D plays a role in bone formation, Evatt says. More recently, scientists have been uncovering its effects elsewhere, including producing peptides that fight microbes in the skin, regulating blood pressure and insulin levels, and maintaining the nervous system. Low vitamin D levels also appear to increase the risk of several cancers and auto-immune diseases such as multiple sclerosis and diabetes.

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.

Previous studies have shown that the part of the brain affected most by Parkinson's, the substantia nigra, has high levels of the vitamin D receptor, which suggests vitamin D may be important for normal functions of these cells, Evatt says.

Emory clinicians are conducting further research to investigate whether vitamin D insufficiency is a cause or possibly a result of having Parkinson's. In a pilot study, Parkinson's patients are receiving either standard or larger doses of vitamin D, with an eye towards possibly reducing the severity of their condition.

Source: Emory University

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