Vitamin D improves exercise outcomes in patients with COPD

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Vitamin D supplements may help patients with chronic obstructive pulmonary disease (COPD) get more from their pulmonary rehabilitation programs, according to a study conducted by researchers from Belgium.

The study results will be presented at the ATS 2011 International Conference in Denver.

"Our study shows that high doses of vitamin D supplementation on top of a standard rehabilitation program improve the outcome in terms of exercise capacity and respiratory muscle strength," said Miek Hornikx, physiotherapist and doctoral student in the department of pneumology at the Katholieke Universiteit Leuven in Leuven, Belgium.

Vitamin D deficiency is common among patients with COPD, and is often associated with lack of exposure to sunlight and diet. COPD patients also often have limited physical activity as a result of breathing difficulties associated with the disease, which also may result in less exposure to sunlight, Ms. Hornikx explained.

"COPD can be considered as a respiratory disease with important non-respiratory consequences, such as osteoporosis, cardiovascular disease and muscle weakness," she said. "These consequences eventually will be negatively influenced by physical inactivity which, along with exercise intolerance, is a common feature among patients with COPD and is proven to be related to mortality.

"Low levels of vitamin D in the blood have been related with muscle weakness, a major target for respiratory rehabilitation and increased risk of falls," she added "Since vitamin D is often depleted in patients with COPD, we wanted to see if vitamin D supplementation would have a beneficial effect on rehabilitation among these patients, perhaps by increasing muscle strength."

The researchers enrolled 50 COPD patients with a history of exacerbations who had been referred for rehabilitation and randomly assigned them to receive either a monthly dose of vitamin D or placebo. Patients in the vitamin D group were given 100,000 IUs (international units) of vitamin D in their monthly dose; the U.S. recommended daily allowance of vitamin D is 600 IUs daily for adults up to age 70 and 800 IUs daily for adults over age 70.

All patients participated in a pulmonary rehabilitation program for three months. At the beginning of the study and again at the completion of the rehabilitation program, peripheral and respiratory muscle strength, exercise capacity and vitamin D levels were measured. Patients were also asked to complete a quality of life survey both before and after rehabilitation.

At the end of the study, researchers found that patients treated with vitamin D had a significant improvement in exercise capacity and respiratory muscle strength compared to those in the placebo group.

"These results support the idea that correcting vitamin D deficiency by adding vitamin D supplements to training programs allows COPD patients to achieve better results from rehabilitation, including improvements in muscle strength and exercise capacity," Ms. Hornikx said.

Interestingly, despite significant improvements in exercise capacity in patients treated with vitamin D, those patients did not report a significant increase in health-related quality of life.

"This could be due to the fact that we had a relatively small number of patients included in this study, as well as to the relatively brief duration of the study," Ms. Hornikx said. Future studies should focus on the specific mechanisms by which vitamin D affects patients with COPD, she added.

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