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Vitamin D deficiency and poorer lung function in asthmatic children treated with steroids

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Vitamin D deficiency is associated with poorer lung function in asthmatic children treated with inhaled corticosteroids, according to a new study from researchers in Boston.

"In our study of 1,024 children with mild to moderate persistent asthma, those who were deficient in vitamin D levels showed less improvement in pre-bronchodilator forced expiratory volume in 1 second (FEV1) after one year of treatment with inhaled corticosteroids than children with sufficient levels of vitamin D," said Ann Chen Wu, MD, MPH, assistant professor in the Department of Population Medicine at Harvard Medical School and Harvard Pilgrim Health Care Institute. "These results indicate that vitamin D supplementation may enhance the anti-inflammatory properties of corticosteroids in patients with asthma."

The findings were published online ahead of print publication in the American Thoracic Society's *American Journal of Respiratory and Critical Care Medicine*.

The study was conducted using data from the Childhood Asthma Management Program, a multi-center trial of asthmatic children between the ages of five and 12 years who were randomly assigned to treatment with budesonide (inhaled corticosteroid), nedocromil, or placebo. Vitamin D levels were categorized as deficient (≤ 20 ng/ml), insufficient (20-30 ng/ml), or sufficient (> 30 ng/ml).

Among children treated with inhaled corticosteroids, pre-bronchodilator FEV1 increased during 12 months of treatment by 330 ml in the vitamin D insufficiency group and 290 ml in the vitamin D sufficiency group, but only 140 ml in the vitamin D deficient group.

Compared with children who were vitamin D sufficient or insufficient, children who were vitamin D deficient were more likely to be older, be African American, and have higher BMI. Compared with being vitamin D deficient, being vitamin D sufficient or insufficient was associated with a greater change in pre-bronchodilator FEV1 over 12 months of treatment after adjustment for age, gender, race, BMI, history of emergency department visits, and season that the vitamin D specimen was drawn.

The study had some limitations, including a small sample size of 101 vitamin D deficient children, and the investigators only studied vitamin D levels at one time point.

"Our study is the first to suggest that vitamin D sufficiency in asthmatic children treated with inhaled corticosteroids is associated with improved lung function," said Dr. Wu. "Accordingly, vitamin D levels should be monitored in patients with persistent asthma being treated with inhaled corticosteroids. If vitamin D levels are low, supplementation with vitamin D should be considered."

Provided by American Thoracic Society

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