

Abstract

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Serum vitamin D levels and severe asthma exacerbations in the Childhood Asthma Management Program study.

Brehm JM, Schuemann B, Fuhlbrigge AL, Hollis BW, Strunk RC, Zeiger RS, Weiss ST, Litonjua AA; Childhood Asthma Management Program Research Group.

Channing Laboratory, Department of Medicine, Brigham and Women's Hospital, Boston, Mass, USA.

BACKGROUND: Asthma exacerbations, most often caused by respiratory tract infections, are the leading causes of asthma morbidity and comprise a significant proportion of asthma-related costs. Vitamin D status might play a role in preventing asthma exacerbations.

OBJECTIVES: We sought to assess the relationship between serum vitamin D levels and subsequent severe asthma exacerbations.

METHODS: We measured 25-hydroxyvitamin D levels in sera collected from 1024 children with mild-to-moderate persistent asthma at the time of enrollment in a multicenter clinical trial of children randomized to receive budesonide, nedocromil, or placebo (as-needed beta-agonists): the Childhood Asthma Management Program. Using multivariable modeling, we examined the relationship between baseline vitamin D levels and the odds of any hospitalization or emergency department visit over the 4 years of the trial.

RESULTS: Thirty-five percent of all subjects were vitamin D insufficient, as defined by a level of 30 ng/mL or less 25-hydroxyvitamin D. Mean vitamin D levels were lowest in African American subjects and highest in white subjects. After adjusting for age, sex, body mass index, income, and treatment group, insufficient vitamin D status was associated with a higher odds of any hospitalization or emergency department visit (odds ratio, 1.5; 95% CI, 1.1-1.9; P = .01).

CONCLUSION: Vitamin D insufficiency is common in this population of North American children with mild-to-moderate persistent asthma and is associated with higher odds of severe exacerbation over a 4-year period.

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