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Beyond bone health: The impact of vitamin D status on lung function in lean versus overweight/obese child asthmatic patients.

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Each year WHO declares the high prevalence of obesity and asthma in children to be global health emergencies. Low vitamin D levels are common in overweight children and vitamin D functioning as an immune regulator might play a pivotal role in asthma pathogenesis. Therefore, we conducted a cross-sectional study of 61 school children (50.8% girls $n=31$) to explore the impact of plasma vitamin D levels on lung function in lean ($n=35$) versus overweight/obese ($n=26$) mild-asthmatic patients. Lung function was assessed using spirometry and Fractional exhaled Nitric Oxide (FeNO). Plasma 25(OH)D levels < 20 ng/mL were considered 'deficient', 20-30 ng/mL 'insufficient' and ≥ 30 ng/mL 'sufficient' based on bone health. We found 90% ($n=55$) of children had 25(OH)D < 30 ng/mL and 29% ($n=18$) < 20 ng/mL. In linear regression models stratification by BMI group revealed significant positive relationships between Vitamin D (continuous), % FVC ($\beta = 0.49$, $P_{adj} = 0.03$) and % FEV1 ($\beta = 0.48$, $P_{adj} = 0.04$) in the lean group only, after adjusting for age, sex, regular exercise and medication. FEV1 was 10% higher in the lean group D-sufficient than in those D-deficient ($\beta = 10.43$, 95%CI: 0.54, 20.32; $P_{adj} = 0.040$). Null associations were observed for the overweight/obese group or FeNO. These findings emphasize the importance of maintaining a healthy body weight and sufficient vitamin D concentrations for optimum lung function in children of the mild-asthma phenotype. Thus, early interventions focusing on children that are showing signs of being overweight may be prudent. Correction of vitamin-D insufficiency through dietary intervention/ or supplementation and increased sun-exposure via daily exercise and outdoor play may be an effective adjunct to standard asthma treatment in children.

Keywords: Vitamin D, asthma, children, overweight, obese, lung function.

Biography:

Dr. Maria Michelle Papamichael is a registered dietician and sports/exercise nutritionist with the British Dietetic Association (UK), who has dedicated her life in educating people especially children and adolescents the importance of good nutrition and exercise in the prevention and management of disease as well as in improving health and well-being. She is a specialist on the Mediterranean diet and pediatric asthma. As part of her research at La Trobe University (Australia), she conducted a randomized controlled trial investigating the prophylactic potential of a Mediterranean diet enriched with fatty fish in childhood asthma. She has published a number of journal articles and a book chapter on the relationship between diet, obesity and childhood asthma, the application of metabolomics in paediatric asthma patients and participated in a variety of international conferences.