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Suboptimal plasma folate concentrations reduced spirometric indices in children of the mild asthma phenotype**M M Papamichael^{1,4}, Ch Katsardis³, D Tsoukalas⁴, K Lambert², C Itsiopoulos¹, B Erbas²**¹ La Trobe University, School of Allied Health, Human Services and Sport, Department of Dietetics, Nutrition & Sport, Melbourne, Australia.² La Trobe University, School of Psychology & Public Health, Department of Public Health, Melbourne, Australia³ National & Kapodistrian University of Athens, Department of Experimental Physiology, Athens, Greece⁴ European Institute of Nutritional Medicine, Rome, Italy⁵ RMIT University, School of Health and Biomedical Sciences, Melbourne, Australia⁶ Universitas Airlangga, Faculty of Public Health, Surabaya, Indonesia

Bronchial asthma, a chronic inflammatory disorder of the lungs characterized by variability in expiratory airflow limitation and bronchial hyperresponsiveness, is the most common allergic disease in children that is associated with increased hospitalization, emergency visits, school absenteeism and societal financial burden. It is believed that asthma is caused by genes – environment interaction including diet. Folate abundant in fresh green leafy vegetables, is a critical co-factor participating in one-carbon methylation reactions including DNA modification and gene expression regulation involving inflammation and immune-modulation. Therefore interruptions in the folate cycle due to folate deficiency could trigger asthma progression via epigenetic alterations.

The objective of this cross-sectional study was to investigate the relation between plasma folate concentrations and spirometric indices in 64 mild-asthmatic children (5-12 years) attending an outpatients clinic in Athens, Greece. High Performance Liquid Chromatography was used to determine plasma folate concentrations (as measured by 5-Methyltetrahydrofolate) and stratified into quartiles (Q), low folate Q1: 6.20-8.44; Q2: 8.45-10.29; Q3: 10.30-12.54; and high folate Q4: 12.50-22.90 nmol/L).

Data analysis showed that 48.4% (31 /64) were girls, median age 7 years of which 45.2% were folate deficient (5-MTHF <10 nmol/L). In the adjusted regression analysis girls with low plasma folate concentrations in Q1, had 8.64% lower FVC [$\beta = -8.64$, 95%CI: -16.18, -1.09, P adj = 0.03], 10.35% FEV₁ [$\beta = -10.35$, 95% CI: -18.82, -1.89, P adj = 0.02], and 18.72% PEF [$\beta = -18.72$, 95%CI: -36.30, -1.14, P adj = 0.04] than those with high plasma folate in Q4, adjusting for BMI and physical activity.

In conclusion, the findings of this study suggest that folate deficiency could adversely affect lung function in mild-asthmatic girls. Future studies are warranted to elucidate the utility of folate assessment in pediatric asthma patients as part of usual asthma care.

Biography

Dr M M Papamichael is a registered dietician/sports nutritionist with the British Dietetic Association and HCPC (UK), a specialist on the Mediterranean diet and paediatric asthma as well as a post-doctorate research fellow at La Trobe University (Australia). She has dedicated her life in educating people the importance of good nutrition and exercise in the prevention and management of disease as well as in improving overall health and well-being. She has published a number of scientific journal articles on the relationship between diet and childhood asthma as well as the application of metabolomics in pediatric asthma patients and participated in a variety of international conferences.