Allergic diseases of the skin and drug allergies – 2006. Cord blood 25-hydroxyvitamin D3 and allergic disease during infancy

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From 2nd WAO International Scientific Conference (WISC 2012)
Hyderabad, India. 6-9 December 2012

Background
There has been growing interest in vitamin D insufficiency as a predisposing factor for allergy development based on immunoregulatory properties and epidemiological studies. The aim of this study was to investigate the association between vitamin D exposure in utero and allergic outcomes in the first year of life.

Methods
Cord blood (CB) vitamin D was measured in 231 high risk infants from an Australian prospective birth cohort. CB 25(OH)D3 concentration was analysed in relation to maternal vitamin D intake and the development of infant eczema, allergen sensitization and IgE-mediated food allergy.

Results
Maternal intake of supplemental vitamin D was significantly correlated with CB 25(OH)D3 concentration (rho = 0.244, p = 0.003) while dietary vitamin D did not influence CB levels. There was significant seasonal variation in CB 25(OH)D3 concentration suggesting that sunlight exposure was an important determinant. Lower CB vitamin D status was observed in infants that developed eczema (p = 0.018), and eczema was significantly more likely in those with concentrations < 50 nmol/L compared with >75 nmol/L (OR 2.66; 95% CI 1.24 – 5.72; p = 0.012). This association remained significant after adjustment for multiple confounding factors. The associations between CB 25(OH)D3 concentration and allergen sensitization, IgE-mediated food allergy and eczema severity (SCORAD) were not significant.

Conclusions
Reduced vitamin D status in pregnancy may be a risk factor for the development of eczema in the first year of life, reinforcing the need to explore the role of vitamin D exposure during development for disease prevention.

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Published: 23 April 2013

doi:10.1186/1939-4551-6-S1-P96