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Low serum vitamin D is associated with axial length and risk of myopia in young children.

Tideman JW^{1,2}, Polling JR^{1,3}, Voortman T², Jaddoe VW^{2,4}, Uitterlinden AG^{2,5}, Hofman A², Vingerling JR¹, Franco OH², Klaver CC^{6,7}.

Author information

Abstract

The aim of the study was to investigate the relationship between serum 25(OH)D levels and axial length (AL) and **myopia** in 6-year-old children. A total of 2666 children aged 6 years participating in the birth-cohort study Generation R underwent a stepwise eye examination. First, presenting visual acuity (VA) and AL were performed. Second, automated cycloplegic refraction was measured if LogMAR VA > 0.1. Serum 25-hydroxyvitamin D [25(OH)D] was determined from blood using liquid chromatography/tandem mass spectrometry. **Vitamin D** related SNPs were determined with a SNP array; outdoor exposure was assessed by questionnaire. The relationships between 25(OH)D and AL or **myopia** were investigated using linear and logistic regression analysis. Average 25(OH)D concentration was 68.8 nmol/L (SD \pm 27.5; range 4-211); average AL 22.35 mm (SD \pm 0.7; range 19.2-25.3); and prevalence of **myopia** 2.3 % (n = 62). After adjustment for covariates, 25(OH)D concentration (per 25 nmol/L) was inversely associated with AL (β -0.043; P < 0.01), and after additional adjusting for time spent outdoors (β -0.038; P < 0.01). Associations were not different between European and non-European children (β -0.037 and β -0.039 respectively). Risk of **myopia** (per 25 nmol/L) was OR 0.65 (95 % CI 0.46-0.92). None of the 25(OH)D related SNPs showed an association with AL or **myopia**. Lower 25(OH)D concentration in serum was associated with longer AL and a higher risk of **myopia** in these young children. This effect appeared independent of outdoor exposure and may suggest a more direct role for 25(OH)D in **myopia** pathogenesis.

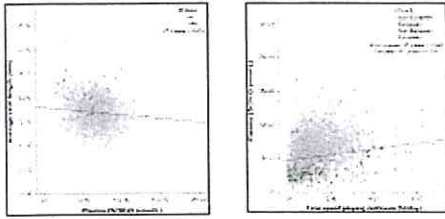
KEYWORDS: Axial length; Children; **Myopia**; **Vitamin D**

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