

Association between skull deformation in infants and vitamin D deficiency during pregnancy and early childhood.

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Purpose - Skull deformation due to a positional preference can occur in infants because their cranium is malleable and growing fast especially in the first months of life. Since vitamin D is known to be important for the intestinal absorption of calcium and bone mineralisation, it has been suggested that vitamin D deficiency can increase the risk of skull deformation. This case-control study investigates the relationship between vitamin D intake in the third trimester of pregnancy (mother) and in the first months of life (infant) and skull deformation in 2-4 month old infants.

Material - 275 2-4 month old cases with mild to severe skull deformation from the Helmet Therapy Assessment in Deformed Skulls (HEADS) study were compared with 548 matched controls.

Methods - A questionnaire was used to collect information on background characteristics and vitamin D intake (food, time spent outdoors and supplementation).

Results – A multivariate model showed that 2-4 month old infants of mothers with an insufficient intake of vitamin D during the last trimester of pregnancy were 1,5 times more likely to have a skull deformation (aOR 1.5; 95% CI 1.1-2.1). The effect of insufficient vitamin D intake in early childhood (aOR 3.0; CI 0.89;10.0) was approaching significance (p=0.078). Other significant (p<0.05) risk factors were male gender, shorter pregnancy, delivery in hospital for medical reasons, younger age and low level of education of the mother.

Conclusions - Insufficient vitamin D intake in the third trimester of pregnancy was observed rather frequently. Vitamin D intake in newborns appears adequate in almost all children in The Netherlands (in 97.0% of the cases and 99.1% of controls). Our findings suggest that an insufficient vitamin D intake was associated with the risk of skull deformation in 2-4 month old infants. This supports the importance to promote a lifestyle with a sufficient vitamin D intake in pregnant women.