Cord 25-hydroxy-vitamin D is not associated with cranial anthropometrics in infants

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Aim

To investigate the impact of cord 25-hydroxyvitamin D (25OHD) levels on cranial anthropometrics in infants.

Introduction

Vitamin D deficiency can cause rickets and impaired bone growth in infants. Randomization to higher vitamin D doses in pregnancy has been shown to decrease anterior fontanelle size and increase the head circumference (1). However, the impact of vitamin D on the intramembranous ossification of the flat bones of the skull is controversial.

Materials and methods

Inclusions: Infants from Odense Child Cohort, a prospective cohort of 2549 mother/children pairs. 1773 infants were included. Median (IQR) age at examination was 3.70 (2.50-5.93) months.

Outcomes: Anterior fontanel was measured in mm using an ArcRoyal ruler, fontanel area was calculated by transverse and longitudinal diameters. Head circumference was measured in cm using SECA measuring tape. Head shape was visually inspected by trained staff.

Exposure: Blood samples were drawn for 25OHD2 or 3 analysis from cord blood, as well as from early (GA <20 weeks) and late pregnancy (GA ≥20 weeks). Analysis was performed using liquid chromatography mass spectrometry.

Exclusions: Multiple births, gestational age <34 weeks, unavailable cord 25OHD and missing measures of cranial anthropometrics.

Statistics: Multiple linear, quantile and logistic regressions to test the association between 25OHD and cranial anthropometrics.

Results

Mean (SD) early, late pregnancy and cord 25OHD were 65.97 (21.33), 78.60 (27.18) and 47 (21.66) nmol/L respectively. Mean (SD) fontanel area and median (IQR) head circumference were 225 (1578) mm2 and 41.48 (1.46) cm respectively. 55% had asymmetric head shape (Table 1).

Figure 1: Adjusted associations of 25OHD with fontanel area SD-score and head circumference SD-score at 3.7 months follow up, β (95 % CI); 25OHD in blue. Consistent associations with outcomes are marked in bold blue and outline.

A: ANTERIOR FONTANEL

B: HEAD CIRCUMFERENCE

Figure 2: Adjusted associations of 25OHD with Head shape (reference: Symmetric head shape) at 3.7 months follow up, odds ratio (95 % CI); 25OHD in blue. Consistent associations with head shape are marked in bold blue and outline.

Conclusion

Associations between pregnancy and cord 25-hydroxyvitamin D levels and:

• anterior fontanel area
• head circumference
• head shape

were not detected in infants in a well-off, European country.

Contact Information

Disclosure Statement: All authors have nothing to disclose.