Neonatal vitamin D and childhood brain tumor risk.

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Abstract
Vitamin D deficiency among pregnant women is common. Compelling animal evidence suggests carcinogenic effects of vitamin D deficiency on the brains of offspring; however, the impact of circulating vitamin D [25(OH)D] on childhood brain tumor (CBT) risk has not been previously evaluated. Using linked birth-cancer registry data in Washington State, 247 CBT cases (<15 years at diagnosis; born 1991 or later) were identified. A total of 247 birth year-, sex- and race-matched controls were selected from the remaining birth certificates. Liquid chromatography-tandem mass spectrometry was used to measure circulating levels of vitamin D₃ [25(OH)D₃] in neonatal dried blood spots. Overall, no significant associations were observed. However, when stratified by median birth weight (3,458 g), there was evidence of increasing risk of CBT with increasing 25(OH)D₃ among children in the higher birth weight category. Compared to the lowest quartile (2.8-7.7 ng/mL), odds ratios (ORs) and 95% confidence intervals (CIs) for the second (7.7-<11.0 ng/mL), third (11.0-<14.7 ng/mL) and fourth (14.7-37.0) quartiles of 25(OH)D₃ were 1.7 (1.0-3.3), 2.4 (1.2-4.8) and 2.6 (1.2-5.6), respectively. Among children in the lower birth weight category, there was suggestive evidence of a protective effect: ORs and 95% CIs for the second, third and fourth quartiles were 0.9 (0.4-1.9), 0.7 (0.3-1.4) and 0.6 (0.3-1.3), respectively. Any associations of neonatal vitamin D with CBT may be birth weight-specific, suggesting the possible involvement of insulin-like growth factor 1, circulating levels of which have been associated with vitamin D and accelerated fetal growth.

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