

Maternal Thyroid Function during Early Pregnancy and Cognitive Functioning in Early Childhood: The Generation R study.

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J. Clin. Endocrin Metab. First published ahead of print June 9 2010 as doi: 10.1210/jc.2010-0415.

Context: Thyroid hormones are essential for neurodevelopment from early pregnancy onward. Yet population-based data on the association between maternal thyroid function in early pregnancy and children’s cognitive development are sparse.

Objective: Our objective was to study associations of maternal hypothyroxinemia and of early pregnancy maternal TSH and free T4 (FT4) levels across the entire range with cognitive functioning in early childhood.

Design and Setting: We conducted a population-based cohort in The Netherlands.

Participants: Participants included 3659 children and their mothers.

Main Measures: In pregnant women with normal TSH levels at 13 wk gestation (SD \pm 1.7), mild and severe maternal hypothyroxinemia were defined as FT4 concentrations below the 10th and 5th percentile, respectively. Children’s expressive vocabulary at 18 months was reported by mothers using the MacArthur Communicative Development Inventory. At 30 months, mothers completed the Language Development Survey and the Parent Report of Children’s Abilities measuring verbal and nonverbal cognitive functioning.

Results: Maternal TSH was not related to the cognitive outcomes. An increase in maternal FT4 predicted a lower risk of expressive language delay at 30 months only. However, both mild and severe maternal hypothyroxinemia was associated with a higher risk of expressive language delay across all ages [odds ratio (OR) \pm 1.44; 95%confidence interval (CI) \pm 1.09-1.91; *P* \pm 0.010 and OR \pm 1.80; 95% CI \pm 1.24-2.61; *P* \pm 0.002, respectively]. Severe maternal hypothyroxinemia also predicted a higher risk of nonverbal cognitive delay (OR \pm 2.03; 95% CI \pm 1.22-3.39; *P* \pm 0.007).

Conclusions: Maternal hypothyroxinemia is a risk factor for cognitive delay in early childhood.