THYROID FUNCTION DURING PREGNANCY AND NEURODEVELOPMENT AT 1-2 YEARS: THE INMA PROJECT AND THE RHEA STUDY.

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Background and aims: The fetus is dependent on maternal thyroid hormones during pregnancy and an adequate thyroid function is essential for the normal brain development. The effects of subclinical hypothyroidism and mild hypothyroxinemia during pregnancy are poorly known. We aimed to assess the association between thyroid function in healthy pregnant women from the general population and the neurodevelopment of their children, and the role of the iodine status in this relationship.
Methods: We conducted a population-based cohort in Spain and Greece. Participants included 1638 and 318 children and their mothers from Spain and Greece, respectively. Levels of free thyroxine (free T4) and thyrotropin (TSH) in serum were measured during pregnancy. Urinary iodine concentrations (UIC) were measured in a subsample of 1386 women from Spain. Mental and motor development of their offspring was assessed using Bayley's Scales at 14 (Spain) and 18 (Greece) months of age.
Results: In participants from Spain, low free T4 levels were associated with a decrease in the mental score. When stratifying by urinary iodine level, the highest decrease was observed in those children from mothers with free T4 levels below the 2.5th percentile and UIC above 150µg/L (coefficient (SE): -10.1 (3.6)). No effect of low free thyroxine was observed when UIC were below 150µg/L. In participants from Greece, low free T4 and high thyrotropin levels were also associated with a decrease in some Bayley's scales.
Conclusions: Low free T4 and high TSH levels in healthy pregnant women had an adverse effect on offspring's neurodevelopment. High UIC exacerbate the adverse effect of low free T4 on mental score. This study reinforces the need to screen thyroid function in pregnant women, even in iodine sufficient areas.