Do pregnant women in iodine-sufficient areas need iodine supplements?


Stine Linding Andersen and Peter Laurberg Department of Endocrinology, Aalborg University Hospital, Aalborg, Denmark

A guideline dilemma

Iodine requirements increase during pregnancy because of increased renal excretion of iodine and increased production of the thyroid hormone. The guideline on the assessment of iodine status advises that a median urinary iodine concentration (UIC) in the range between 100 and 199 µg/L measured in school-age children indicates adequate iodine nutrition in the population (1). However, pregnant women, in order to be iodine sufficient, should have a median between 150 and 249 µg/L (2). This leads to an important question: if the general population has a median UIC ≥100 µg/L but below 150 µg/L, should all pregnant women in this population be advised to take an iodine-containing supplement?

The Technical Consultation between WHO, UNICEF and ICCIDD (2) concluded that pregnant women do not need to take an iodine supplement if iodine intakes in the general population have been adequate and stable (i.e., a median UIC ≥100 µg/L for at least two years). In this scenario, it is expected that the iodine stores in the thyroid gland will be sufficient to cover the extra needs during pregnancy.

When does low maternal iodine intake lead to fetal brain damage?

Brain damage due to iodine deficiency is caused by insufficient thyroid hormone production in the mother in combination with late pregnancy fetal hypothyroidism, and is compounded by hypothyroidism during infancy. However, it is difficult to study the effect of maternal iodine intake in pregnancy on long-term subtle neurocognitive and behavioral abnormalities in the children. A simpler way to evaluate the risk of brain damage is to study the association between iodine intake and thyroid function in the mother and the offspring. In a study performed in Chile, thyroid function and urinary iodine excretion were measured in groups of pregnant women with different levels of iodine intake (3). The study found that a steep increase in the prevalence of maternal hypothyroidism occurred when urinary iodine excretion fell below 50 µg/day. A number of similar studies now suggest that the critical level of urinary iodine excretion at which thyroid dysfunction may start to develop in pregnancy is around 50 µg/L.

At the time of the study, the included women were by definition iodine deficient. Although this study did not investigate iodine supplementation, levothyroxine contains iodine (about 100 µg per dose in this study), which enters the body iodine pool. When the pregnant women’s children were studied at the age of three years, they did not have higher IQ than the children of women who did not receive LT4.

Conclusion

On balance of the available evidence, the current WHO recommendations remain a valid guide on individual use of iodine supplementation in pregnancy. As a rule, pregnant women living in populations with a median UIC ≥100 µg/L do not need iodine supplements if the population has been iodine sufficient for at least two years through high coverage of universal salt iodization.

References