Iodine deficiency in those most at risk: pregnant women and very young children

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Iodine is essential for normal development of the brain and central nervous system. It is not surprising, therefore, that the dietary requirements for iodine are highest during pregnancy, lactation, and early childhood. Despite the importance of an adequate intake of iodine at these stages in the life cycle, there is increasing evidence that pregnant women and very young children in Australia and NZ are iodine deficient.

Recent studies in Australia have reported mild iodine deficiency in pregnant women with a median urinary iodine concentration (MUIC) of 52-85 µg/L\(^1,2\); a MUIC ≥100 µg/L indicates adequate iodine status. The one recent published report assessing iodine status in NZ pregnant women reported a MUIC of 38-44 µg/L, indicative of moderate iodine deficiency, however, the sample size used in this study was relatively small (n<50) and only included women living in Dunedin.\(^3\) In October and November 2005, the ThyroMobil and Iodine in Pregnancy (TRIP) survey assessed the iodine status of 174 pregnant women living throughout NZ. The MUIC of these women was 38 µg/L and 7% of the women had goitre (i.e. thyroid volume >18 mL).

ICCID/UNICEF/WHO have suggested that neonatal TSH levels be used as index of iodine status with no more than 5% of neonates having a TSH value >5 mU/L.\(^4\) Both Australia and New Zealand routinely screen newborns using a heel-prick blood sample. A study by McElduff reported elevated TSH concentration in 5.4% and 8.1% of two samples of newborns born in Sydney\(^5\) compared to only 2.2% of the newborns in the more recent study of Travers et al.\(^2\) The use of neonatal TSH concentrations to assess iodine status in NZ has not been fully investigated.

There is a dearth of information about the iodine status of lactating mothers in Australia and NZ. A randomised, double-blind, placebo-controlled, intervention trial of breast-feeding mothers in Dunedin was recently carried out to determine the effect of two levels of iodine supplementation (75 µg I/day and 150 µg I/day) during the first six months postpartum. Supplementation resulted in a UIIC 2.1-2.4 times higher compared to placebo women (P<0.001). Breast milk iodine concentration (BMIC) in supplemented mothers was 1.3-1.7 times higher compared to placebo (P<0.0001). Despite these increases, supplementation of 75 µg I/day or 150 µg I/day was insufficient to increase maternal iodine status to levels considered adequate by ICCIDD/UNICEF/WHO.

There are also limited data that the iodine status of NZ children <2 years of age is sub-optimal\(^6\); unfortunately there are no comparable Australian studies in this age group. Inadequate intakes of iodine in this age group are not surprising given recommendations that salt should not be added to foods prepared for infants, iodised salt is not used in manufactured infant foods, and only a small number of children at this age eat fish and seafood.

Together, the results of these studies strongly suggest that pregnant and lactating women, and very young children living in Australia and, in particular NZ, are at increased risk of iodine deficiency. The recent proposal by FSANZ for mandatory iodine fortification of breakfast cereals, bread and biscuits will need to supply sufficient additional iodine to meet the requirements of these vulnerable groups.

References