

Urinary iodine and thyroid determinants in pregnancy: a follow up study in Sri Lanka

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Abstract

Background: Iodine deficiency and thyroid dysfunction during pregnancy is associated with number of adverse outcomes that includes mental and physical disabilities creating a huge human and economic burden in later life. Several indicators are used to assess the iodine status of a population: thyroid size by palpation and/or by ultrasonography, urinary iodine excretion and the blood thyroid hormone profile.

Methods: This prospective study was designed to assess the iodine nutrition during the course of pregnancy with reference to urine iodine concentration (UIC) and thyroid determinants among 425 pregnant women from Galle district, Sri Lanka. UIC was estimated in all three trimesters and thyroid functions were assessed in first and third trimesters.

Results: Median (inter-quartile range IQR) UIC was 170.9 (100.0–261.10) µg/L, 123.80 (73.50–189.50) µg/L and 105.95 (67.00–153.50) µg/L in the first, second and third trimesters respectively ($p < 0.001$). Median thyroid stimulating hormone (TSH) level in the first trimester was 1.30 (0.80–1.80) µIU/mL. This value significantly increased ($p < 0.001$) to 1.60 (1.20–2.10) µIU/mL at the 3rd trimester even though it was maintained within the reference range (0.3 – 5.2 µIU/mL). In the assessment of thyroid gland, 67 (16.0 %) women had palpable or visible goitres and 55 (13.1 %) had a goitre that was palpable but not visible. The median thyroid volume of the sample was 5.16 mL (4.30; 6.10 mL) as measured by ultra sound (US) scanning. In multiple regression analysis after controlling for other independent variables (anthropometric, demographic and biochemical parameters); initial body mass index (BMI), goitre size, thyroid volume and parity had significant correlations with the third trimester urinary iodine levels. The thyroid volume accounted for 4.5 % of the urinary iodine variation.

Conclusions: Even though iodine status was progressively worsening with the advancement of pregnancy and iodized salt consumption has not met with the increasing demand for iodine, it was not reflected in the serum TSH level. Therefore, it is worthwhile to assess the long term effects of rising TSH levels and inadequate iodine nutrition during pregnancy on the offspring to prevent even mild iodine deficiency.

Keywords: Urinary iodine, Iodine status in pregnancy, Thyroid stimulating hormone, Thyroid volume, Goitre in pregnancy