THE MEDIAN URINARY IODINE IS LOW IN AMERICAN PREGNANT WOMEN. WHY HAVE WE NOT IMPROVED IODINE INTAKE IN THIS VULNERABLE POPULATION?

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SUMMARY • • • • • • • • • • • • • • • • • •

BACKGROUND

Urinary Iodine (UI) for the general population is examined in this report for the periods 2005–2006 and 2007–2008. Two National Health and Nutrition Examination Surveys (NHANES), NHANES III (1988– 1994) and NHANES I (1971–1974) that demonstrated a significant reduction in the median UI concentration, raising the fear that the United States was heading toward becoming an iodine-deficient population.

METHODS

During 2005–2006 and 2007–2008, participants were selected to participate in the NHANES that reflected the general U.S. population by age, sex, and race/ ethnicity. Approximately one third of the 2005–2006 participants, 6 years of age or older, were selected to provide a UI sample, while all the participants in 2007–2008 were tested.

RESULTS

The median UI for the general U.S. population in 2005–2006 and 2007–2008 was 164 μ g/L, which is

The WHO defines adult iodine nutrition as excessive iodine intake, >300 µg/L; more than adequate intake, 200–299 µg/L; adequate intake, 100–199 µg/L; mild iodine deficiency, 50–99 µg/L; moderate iodine deficiency, 20–49 µg/L and severe iodine deficiency, <20 µg/L (2). Recommended iodine intake for pregnant women is higher, with a suggested median UI concentration of 150–249 µg/L. The Recommended Daily Allowance (RDA) for iodine of the Institute of Medicine (IOM) Food and Nutrition Board is 90 mg/ day for children, 150 mg/day for adults, and 220 mg/ day for pregnant women (3). At the level of the general stable and similar to NHANES III in 1988–1994 (1). Similar to prior NHANES, the urinary iodine intake was highest in the children and in persons >70 years of age. In both surveys in this report, children 6 to 11 years of age had median UI concentrations >200 μ g/L, but about 5% had severe iodine sufficiency, with a UI of <50 μ g/L. All pregnant women (sample size, 184) surveyed during 2005–2008 had a median UI of 125 μ g/L (95% confidence interval, 86 to 198) with 56.9% having a UI <150 μ g/L. UI concentrations were lower among non-Hispanic black participants and non-Hispanic white and Mexican-American subjects.

Clinical

THYROIDOLOGY

CONCLUSIONS

These findings confirm the stabilization of UI concentration and adequate iodine nutrition in the general U.S. population since 2000. However, certain groups, such as pregnant women, most likely do not have a sufficient dietary iodine intake according to the World Health Organization (WHO). The clinical impact of this insufficiency is not clear and further study is recommended.

U.S. population, it is a relief that the decrease in iodine intake that occurred between NHANES I and NHANES III did not continue to decline and has stayed stable, currently at 164 mg/L. The epidemiologists would say that that is adequate, since it means that as a population, the U.S. getting sufficient iodine. But the high iodine intake is in the very young and the elderly, which means there are segments of the population who have, on average, an insufficient iodine intake. U.S. pregnant women (median UI, 125 μ g/L) as a population do not have an adequate intake according to the WHO (recommended, 150-249 mg/L), and they most likely have an insufficient intake as an *continued on next page*

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individual as compared to the IOM recommended RDA of 220 μ g/day. Of concern is that more than half of the women surveyed had a urinary iodine less than 150 μ g/L, which is clearly lower than the RDA. I am concerned that despite the widely publicized need for adequate iodine intake in vulnerable populations such as pregnant women, we have not made much headway in eradicating inadequate iodine intake in this group. For your patients who are planning to become or are pregnant, it is important that their prenatal vitamin contain iodine. The vast majority of prenatal vitamins that contain iodine will have 150 μ g

per daily dose, which combined with a dietary sources is likely to be adequate. But note that only 51% of prenatal vitamins contain iodine (4), and it is critical that you or your patient check the nutrition label to confirm that her prenatal vitamin contains iodine. This recommendation concurs with the 2006 statement from the American Thyroid Association that women receive 150-µg iodine supplements daily during pregnancy and lactation and that all prenatal vitamin/ mineral preparations contain 150 µg of iodine (5).

- Stephanie L. Lee, MD, PhD

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