



IODINE DEFICIENCY

Patients on long-term parenteral nutrition are at risk for iodine deficiency and hypothyroidism

BACKGROUND

Iodine is essential to make thyroid hormone. Individuals living in regions of the world that do not have enough iodine in the diet suffer from an increased risk for hypothyroidism. In some patients with severe gastrointestinal problems, the gut either does not well enough to absorb enough nutrition from eating or the patient cannot eat. These patients must get their nutrition intravenously by a method known as long-term parenteral nutrition. One side effect of long-term parenteral nutrition is the risk of nutritional deficiencies, in particular iodine deficiency. Some patients on long-term parenteral nutrition are able to eat and drink in limited quantities and may receive some iodine in their diet. Some individuals receiving parenteral nutrition may be exposed to iodine through the use of topical iodinated skin cleansers. While the recommended dietary allowance for iodine is 150 µg daily in adults, recommendations for the iodine content of parenteral nutrition are highly variable across different regions. This study was done to examine the risk of iodine deficiency in patients on long term parenteral nutrition.

THE FULL ARTICLE TITLE

Guidetti M et al. Iodine nutrition in adults on long-term home parenteral nutrition. *Nutrition* 2014;30(9):1050-4. Epub April 3, 2014.

SUMMARY OF THE STUDY

Participants were adults on home parenteral nutrition who received care at the Chronic Intestinal Failure Center in Bologna, Italy. Participants were required to have been receiving home parenteral nutrition for fewer than 6 months, to have had a minimum of three parenteral infusions weekly and to have had an unchanged feeding regimen for 4 months prior to evaluation. Individuals with known thyroid disease were excluded. Spot urinary iodine concentrations and serum TSH levels were measured in all participants. In individuals with elevated serum TSH levels, free T₄ and thyroid antibody measurements were obtained. Information about the iodine content of parenteral nutrition was derived from labeling.

A total of 31 patients were included (13 men; mean age, 54.5 years. None of the patients were using iodinated skin cleansers for routine central line care. Only 8 (26%) patients had iodine levels in their parenteral nutrition that were consistent with European guidelines, 17 (55%) received no iodine in their parenteral nutrition and 6 (19%) of the patients' parenteral nutrition contained less than recommended levels. The median urinary iodine concentration was 63 µg/L and did not correlate with the iodine content of parenteral nutrition. Serum TSH levels were elevated in 7 patients (22%) and low in 1 patient. None of the patients with increased serum TSH were positive for thyroid antibodies or had low free T₄ levels.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that patients on long-term parenteral nutrition are at high risk for iodine deficiency and mild hypothyroidism due to the iodine deficiency. The majority were receiving parenteral nutrition with iodine content lower than that recommended by European guidelines. Studies in the United States are urgently needed determine if the same risk for iodine deficiency exists in this country. However, in the absence of such studies, it seems reasonable to recommend iodine supplementation and monitoring of thyroid function in patients receiving long-term parenteral nutrition.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Iodine Deficiency: <http://www.thyroid.org/iodine-deficiency>

Hypothyroidism: <http://www.thyroid.org/what-is-hypothyroidism>

Thyroid Function Tests: <http://www.thyroid.org/blood-test-for-thyroid>



IODINE DEFICIENCY, continued

ABBREVIATIONS & DEFINITIONS

Hypothyroidism: a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

Iodine: an element found naturally in various foods that is important for making thyroid hormones and for normal thyroid function. Common foods high in iodine include iodized salt, dairy products, seafood and some breads.

TSH: Thyroid Stimulating Hormone — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

Thyroglobulin antibodies: these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States.

Thyroxine (T₄): the major hormone produced by the thyroid gland. T₄ gets converted to the active hormone T₃ in various tissues in the body.

Parenteral Nutrition: liquid nutrition that is administered intravenously.