One Month Is Sufficient for Urinary Iodine to Return to its Baseline Value after the Use of Water-Soluble Iodinated Contrast Agents in Patients Who Have Undergone Thyroidectomy

Padovani R, Kasamatsu TS, Nakabashi CC, Camacho CP, Andreoni DM, Malouf EZ, Marone MM, Maciel RM, Biscolla RP. One month is sufficient for urinary iodine to return to its baseline value after the use of water soluble iodinated contrast agents in post-thyroidectomy patients requiring radioiodine therapy. Thyroid. July 24, 2012 [Epub ahead of print].

SUMMARY • •

Background

After exposure to an iodinated contrast agent, the plasma concentration of free iodide remains elevated for a long period because the iodine stores are expanded in interstitial fluids and in the colloid within the thyroid. The large iodine load of intravenous contrast studies, such as CT, can interfere with the uptake of radioiodine by thyroid tissue. There is a paucity of data on how long it takes for the iodine to be cleared from the body after this load, especially in patients who have undergone thyroidectomy and who are candidates for radioiodine therapy. The current study measures urinary iodine after a contrast load in patients who have undergone thyroidectomy for differentiated thyroid cancer.

Methods

Twenty-five patients with papillary thyroid carcinoma (PTC) treated with total thyroidectomy and radioiodine therapy were advised to receive chest and neck CT with intravenous contrast material to investigate the possibility of metastasis during their followup. The patients received 1 ml/kg of body weight of iobitridol (300 mg of iodine/ml), a water-soluble, low-osmolarity contrast agent, intravenously for the CT, equivalent to an iodine load of 15,000 to 30,000 mg. The patients collected 24-hour urine and spot urine samples before the CT and 1 week, 1 month, 2 months and 3 months afterward. Values were expressed in micrograms per deciliter. To be included in the study, the patients had to have a baseline urine iodine level of <100 μ g/dl.

Results

The median 24-hour urine iodine at baseline, 1 week, and 1, 2, and 3 months after the CT were 21.8, 800, 19, 17.5, and 19.2 μ g/dl. The median values on the spot urine samples were almost identical. The data show that by 1 month, the urine iodine was back to baseline and no individual values exceeded 57 μ g/dl.

Conclusions

Only 1 month is required for urinary iodine to return to its baseline value after the use of water-soluble iodinated contrast agents used for CT in patients who have had thyroidectomy and radioiodine ablation.

ANALYSIS AND COMMENTARY • • • • • •

The authors have provided valuable data for follow-up of patients with recurrent thyroid cancer. My PubMed search yielded no papers that provided similar data. The authors are appropriately careful to qualify that their data are applicable only to patients without

thyroid glands because uptake of some of the iodide from the large iodine load (after deiodination of the contrast agent) could provide a reservoir of iodine that could last much longer than 1 month. Although I have heard that it is safe to do radioiodine scans in the follow-up of patients with differentiated thyroid cancer as early as 1 month after the procedure,

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many "authorities" recommend waiting 2 or even 3 months (1). The current data show that 1 month is sufficient to excrete the iodine load and, by inference, to perform radioiodine studies. In addition, the data

show that iodine measurement in spot urine samples correlates tightly with 24-hour urine iodine.

- Jerome M. Hershman, MD

Reference

1. Van der Molen AJ, Thomsen HS, Morcos SK. Contrast Media Safety Committee, European Society of Urogenital Radiology (ESUR). Effects of iodinated contrast media on thyroid function in adults. Eur Radiol 2004;14:902-9. Epub February 28, 2004.

