



IODINE AND THE THYROID

Women who undergo xrays that include iodinated contrast agents should be followed for thyroid dysfunction

BACKGROUND

Iodine is essential for the thyroid gland to produce its hormones. We get iodine from food and iodized salt, but there are many other sources of iodine that may not be so obvious. One of them is the contrast materials used in xray imaging in which a large amount of iodine is given. Whenever an excessive amount of iodine is given to a person, the thyroid gland temporarily decreases thyroid hormone formation. This is a protective mechanism to avoid an increased production in thyroid hormones as a result of the large iodine load given. Typically, after a few days, the thyroid resumes its normal production of thyroid hormone. There is a large amount of evidence that some thyroids may not be able to resume normal functioning after such an exposure, especially in people who have underlying thyroid problems. In these cases, a patient could develop abnormally low levels of thyroid hormone (hypothyroidism).

Hysterosalpingography (HSG) is an xray study of the uterus and is frequently done as an infertility test. A HSG involves the administration of Lipiodol which is an iodine-rich contrast material. The current study was performed in order to understand the changes in iodine and thyroid levels that happen after an HSG, and to evaluate whether Lipiodol may affect thyroid function in women who undergo this test.

THE FULL ARTICLE TITLE

Kaneshige T et al, Changes in serum iodine concentration, urinary iodine excretion and thyroid function after hysterosalpingography using an oil-soluble iodinated contrast medium (lipiodol). *J Clin Endocrinol Metab.* December 29, 2014 [Epub ahead of print].

SUMMARY OF THE STUDY

This study was done in Japan. It enrolled 22 women who had infertility and had a HSG done as part of their evaluation. They did not have any history of thyroid disease.

Other sources of iodine were not found. They had measurements of thyroid hormones, urine and serum iodine at 4, 8, 12 and 24 weeks after the HSG. In addition, 6 women were also evaluated at 9-12 months after.

Of the 22 women, none developed severe hypothyroidism or received thyroid hormone. However, at 4 weeks, 72% of the women had thyroid hormone levels that are not at goal according to current standards for pregnancy, and at 8 weeks, 52% of women still were not back at baseline. Three women (13.6%) had a TSH hormone higher than 5 as early as 4 weeks. (Current guidelines advise a TSH level less than 2.5 for women attempting a pregnancy). The urine and serum iodine also peaked at week 4, but remained significantly elevated up to 24 weeks after the HSG. The T₃ and T₄ hormones did not change significantly.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that thyroid hormone levels can be affected by the administration of Lipiodol, an iodine-rich contrast material. Since Lipiodol is administered during a HSG during a fertility evaluation, this may put women at risk of developing mild hypothyroidism at a time when they are trying for a pregnancy. This study suggests that women getting this procedure should have thyroid function monitored closely for at least 24 weeks after the procedure.

— Jessie Block-Galarza, MD

ATA THYROID BROCHURE LINKS

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

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

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



IODINE AND THE THYROID, 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.

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.

Hysterosalpingography (HSG): an xray study of the uterus that is frequently done as an infertility test. A HSG involves the administration of Lipiodol which is an iodine-rich contrast material.

Thyroid Awareness Monthly Campaigns

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for Bravelets™ will be donated to the ATA. The month of June is **Differentiated Thyroid Cancer Month** and a bracelet is available through the [ATA Marketplace](#) to support thyroid cancer awareness and education related to thyroid disease.

