

**GOITER****Treatment of goiter and nodules is successful with levothyroxine plus iodine****BACKGROUND**

Thyroid nodules (single and multiple) are common. In some European countries with moderate iodine deficiency, goiters (enlarged thyroid glands) and/or thyroid nodules can be found in a third of adults. In the past, patients with nodular goiters whose nodules are benign (noncancerous) had 3 options: 1) no treatment, observation only, 2) surgery, especially with large goiters that cause symptoms and 3) levothyroxine suppression therapy producing a low TSH and a decrease in the size of the goiter. Levothyroxine therapy is not only unpredictable and highly variable, but side effects are frequent, including irregular heart rhythms (atrial fibrillation) and a tendency toward bone loss and osteoporosis in postmenopausal women. Because of this, levothyroxine therapy is no longer recommended as a treatment option. However, a few studies have indicated that levothyroxine therapy that keeps the TSH in the normal range was still able to reduce thyroid or nodule size to some extent in some patients. Some physicians have recommended the addition of iodine for a decrease in goiter and nodule size, especially in Europe. In this study in a modestly iodine-deficient population, the effects of levothyroxine and iodine together on decreasing the size of goiters was examined.

THE FULL ARTICLE TITLE

Grussendorf M et al. Reduction of thyroid nodule volume by levothyroxine and iodine alone and in combination: a randomized, placebo-controlled trial. *J Clin Endocrinol Metab.* June 29, 2011 [Epub ahead of print]. doi: 10.1210/jc.2011-0356.

SUMMARY OF THE STUDY

In more than 60 centers, a total of 1013 patients were studied for 12 months. The size of nodules and goiters were followed by serial ultrasound studies. There were 4 groups: 1) levothyroxine only, 2) iodide only, 3) levothyroxine

plus iodine and 4) no therapy. The TSH target in patients treated with levothyroxine was in the low normal range.

A decrease in the total thyroid size was significant in all of the treatment groups as compared to the group that was not treated. The best response was seen in the levothyroxine plus iodide group and was ~10%. All treatment groups caused a decrease in size of individual nodules, with the levothyroxine plus iodine group the most effective with ~17% decrease in size. However, the response of the individual cases was quite variable with 26% of the goiters actually increased in size even under treatment. There were no significant side effects in the patients that received levothyroxine.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In a moderately iodine-deficient area, 12 months of treatment with levothyroxine plus iodine significantly reduced thyroid nodule size. However, 26% of the nodules actually increased in size with levothyroxine plus iodine treatment. It is unclear if similar results would be obtained in regions with sufficient iodine intake, such as the United States. While these results are interesting and require further study, levothyroxine therapy is still not generally recommended to shrink thyroid nodules or goiters.

— Alan Farwell, MD

ATA THYROID BROCHURE LINKS

Thyroid Nodules: http://thyroid.org/patients/patient_brochures/nodules.html

Goiter: http://thyroid.org/patients/patient_brochures/goiter.html

Iodine Deficiency: http://thyroid.org/patients/patient_brochures/iodine_deficiency.html

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GOITER, continued

ABBREVIATIONS & DEFINITIONS

Goiter: a thyroid gland that is enlarged for any reason is called a goiter. A goiter can be seen when the thyroid is overactive, underactive or functioning normally. If there are nodules in the goiter it is called a nodular goiter; if there is more than one nodule it is called a multinodular goiter.

Thyroid nodule: an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

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.

Thyroid hormone therapy: patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. Replacement therapy means

the goal is a TSH in the normal range and is the usual therapy. Suppressive therapy means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

Thyroid Ultrasound: a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure of the thyroid gland and accurately identify and characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

Levothyroxine: the major hormone produced by the thyroid gland and available in pill form as Levoxyl™, Synthroid™, Levothroid™ and generic preparations.

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.