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HYPERTHYROIDISM

Surgery for hyperthyroidism lowers cardiovascular mortality compared with radioactive iodine

BACKGROUND

The most common cause of hyperthyroidism by far is Graves' disease, followed by toxic multinodular goiter and toxic adenoma. Three main treatment options are currently available for hyperthyroidism, each of them having specific benefits and side effects. Antithyroid drugs are frequently used, however, they can result in rare but serious side effects and the hyperthyroidism reoccurs in many patients once the treatment is discontinued. Radioactive iodine therapy and thyroid surgery are definitive treatment options that result in hypothyroidism because of permanent destruction or removal of the thyroid gland; both treatments have a very low relapse rate. However, radioactive iodine therapy can worsen the thyroid-associated eye disease in patients with Graves' disease, while surgery can result in damage of the recurrent laryngeal nerve causing hoarseness and to the parathyroid glands causing hypoparathyroidism with low blood calcium levels. The individual patient profile and preference should be taken into consideration when choosing treatment for hyperthyroidism. To date, only a few studies have evaluated the long-term adverse effects from these treatments. The aim of this study was to compare the long-term death rate of hyperthyroid patients treated with radioactive iodine therapy with those treated with surgery.

THE FULL ARTICLE TITLE

Giesecke P et al. 2017 All-cause and cardiovascular mortality risk after surgery versus radioiodine treatment for hyperthyroidism. Br J Surg. Epub 2017 Nov 8. PMID: 29116656.

SUMMARY OF THE STUDY

This study used the national Swedish registry that collects demographic and medical information for the entire country population. In the Stockholm area, between 1976 and 2000, a total of 10,250 patients received radioactive iodine therapy, as registered in the Stockholm Radioiodine Cohort, and 742 patients underwent thyroid surgery, as registered in the Swedish National Patient Register. Information regarding the patients' other medical conditions related to prior hospitalizations was obtained from the National Patient Register database. Vital status was assessed during a mean follow-up period of 16 to 22 years. The cause of death was obtained from death certificates.

Women represented 85% of the patients in both groups. Patients treated with radioactive iodine therapy were older as compared to patients treated with surgery (average age 64 vs. 47 years) and had more baseline medical problems, including heart disease, such as myocardial infarction and atrial fibrillation, stroke, hypertension, diabetes and cancer. A higher percentage of the patients in the surgery group had thyroid-associated eye disease as compared to the radioactive iodine therapy group (13.2% vs. 8.5%).

After adjusting the analysis for the difference in the patients' age and comorbid conditions, the surgery group had a lower risk of all-cause mortality and cardiovascular mortality, especially due to heart disease as compared to radioactive iodine therapy group during long-term follow-up. Subgroup analysis, however, revealed that only men and not women had a higher risk of death after radioactive iodine therapy when compared to thyroid surgery. The risk of death due to cancer or other causes was similar for the two treatment groups.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Surgery for hyperthyroidism was associated with a lower risk of all-cause and cardiovascular death as compared to radioactive iodine therapy during long-term follow-up, particularly in men. This is the first study reporting a difference in the long-term outcome of the two treatment options for hyperthyroidism, especially related to cardiovascular disease in men. However, this study did not include information and did not adjust the analysis for the patients' thyroid status after the radioactive iodine therapy and surgery, including relapse data, since it is known that persistent hyperthyroidism by itself is associated

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with an increased all cause and cardiovascular mortality. Additional studies are needed to further evaluate whether hyperthyroid men have better long-term outcomes with thyroid surgery. At present, radioactive iodine therapy is the preferred definitive therapy for Graves' hyperthyroidism in the US. Importantly, and similar to prior studies, this study showed no increased risk of cancer following radioactive iodine therapy treatment during long-term follow-up.

— Alina Gavrila, MD, MMSC

ATA THYROID BROCHURE LINKS

Hyperthyroidism (Overactive): https://www.thyroid.org/hyperthyroidism/
Radioactive Iodine: https://www.thyroid.org/radioactive-iodine/
Thyroid Surgery: https://www.thyroid.org/thyroid-surgery/

ABBREVIATIONS & DEFINITIONS

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Causes of hyperthyroidism include Graves' disease, toxic nodular goiter and toxic adenoma. Hyperthyroidism may be treated with antithyroid medications (Methimazole, Propylthiouracil), radioactive iodine or surgery.

Thyroid eye disease (TED): also known as Graves ophthalmopathy. TED includes inflammation of the eyes, eye muscles and the surrounding tissues. Symptoms include dry eyes, red eyes, bulging of the eyes and double vision.

Radioactive iodine (RAI): this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid.

Thyroidectomy: surgery to remove the entire thyroid gland.

Hypothyroidism: a condition where the thyroid gland is underactive and does not produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

Hypoparathyroidism: low calcium levels due to decreased secretion of parathyroid hormone (PTH) from the parathyroid glands located next to the thyroid. This can occur as a result of damage to the parathyroid glands during thyroid surgery and usually resolves.