Volume 16 | Issue 8 | August 2023

Clinical Thyroidology® for the Public

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

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Editor's Comments

Welcome to another issue of *Clinical Thyroidology® for the Public!* In this journal, we will bring to you the most up-to-date, cutting edge thyroid research. We also provide even faster updates of late-breaking thyroid news through X at @thyroidfriends and on Facebook. Our goal is to provide patients with the tools to be the most informed thyroid patient in the waiting room. Also check out our friends in the **Alliance for Thyroid Patient Education**. The **Alliance** member groups consist of: the *American Thyroid Association®, Bite Me Cancer, the Graves' Disease and Thyroid Foundation, the Light of Life Foundation, MCT8 – AHDS Foundation, ThyCa: Thyroid Cancer Survivors' Association, Thyroid Cancer Canada, Thyroid Cancer Alliance* and *Thyroid Federation International*.

We invite all of you to join our **Friends of the ATA** community. It is for you that the American Thyroid Association® (ATA®) is dedicated to carrying out our mission of providing reliable thyroid information and resources, clinical practice guidelines for thyroid detection and treatments, resources for connecting you with other patients affected by thyroid conditions, and cutting edge thyroid research as we search for better diagnoses and treatment outcomes for thyroid disease and thyroid cancer. We thank all of the *Friends of the ATA* who support our mission and work throughout the year to support us. We invite you to help keep the ATA® mission strong by choosing to make a donation that suits you — it takes just one moment to give online at: www.thyroid.org/donate and all donations are put to good work. The ATA® is a 501(c)3 nonprofit organization and your gift is tax deductible.

August is Thyroid Disease and Pregnancy Awareness Month.

In this issue, the studies ask the following questions:

- What are potential impacts of thyroid cancer treatment on fertility in young women?
- Has there been any change in the incidence of hypothyroidism in the United States?
- When should a levothyroxine absorption test be considered?
- Does Vitamin D supplementation decrease the relapse rate in Graves' disease?
- How dose hypoparathyroidism after thyroid surgery affect patient's quality of life?
- Does radioactive iodine therapy have any effect on survival in hürthle-cell cancer?

We welcome your feedback and suggestions. Let us know what you want to see in this publication. I hope you find these summaries interesting and informative.

— Alan P. Farwell, MD

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THYROID AND PREGNANCY

What are potential impacts of thyroid cancer treatment on fertility in young women?

BACKGROUND

Rates of thyroid cancer has increased in recent years, especially in young woman. Initial treatment of thyroid cancer is surgery. Some patients may require additional treatment with radioactive iodine therapy to destroy any potentially remaining thyroid cancer cells. As thyroid hormone is very important for normal pregnancy, people have been interested to know potential impact of thyroid cancer treatment on fertility (being able to become pregnant). Previous studies did not show decrease in pregnancy rate in thyroid cancer patients who were treated with radioactive iodine therapy compared to those who did not receive radioactive iodine therapy. However, patients who were treated with radioactive iodine therapy were found to have lower ovarian reserve (an indicator for quality and number of eggs remaining in ovary), compared to those who were not treated with radioactive iodine therapy.

This study aimed to assess potential impact of thyroid cancer treatment on fertility and pregnancy rate in women in Israel.

THE FULL ARTICLE TITLE

Hirsch D et al. 2023 Infertility and pregnancy rates in female thyroid cancer survivors: A retrospective cohort study using health care administrative data from Israel. Thyroid 33:456–463. PMID: 36785948.

SUMMARY OF THE STUDY

A total of 1164 woman with thyroid cancer diagnosed before 40 years of age were identified from the records of one of the largest national insurance companies in Israel. A total of 5030 women without history of thyroid disease matched by age to thyroid cancer patients were selected from the same records as a comparison group (controls). The average age of patients included was 31.6 years, and the average follow-up time was 10 years. Thyroid cancer patients and controls had no significant differences in baseline serum TSH level, number of women with history of prior infertility, or number of prior pregnancies per woman.

Thyroid cancer patients had a higher overall rate of infertility diagnosis (difficulty getting pregnant or inability to get pregnant) compared to those without thyroid disease (23.9% vs. 20.4%). Infertility rate remained higher in thyroid cancer patients compared to controls even after excluding those who had infertility diagnosis before thyroid cancer diagnosis or inclusion in the study (28.7% vs. 24.5%). However, there were no significant differences in pregnancy rates between thyroid cancer patients and controls.

Thyroid cancer patients, on average, were slightly older at time of pregnancy and took longer to become pregnant compared to control patients (33.3 years vs. 32.7 years, and 37 months vs. 31 months, respectively). When patients were divided into four groups based on age (≤26.8, 26.8–31.6, 31.6–35.6, and ≥35.6 years), infertility rate was significantly higher in thyroid cancer patients than controls in those aged 26.8-31.6 years and ≥35.6 years (32.4% vs 24.1% and 15.9% vs 11.5%, respectively).

Among thyroid cancer patients, 52.5% were treated with radioactive iodine therapy after thyroidectomy. After accounting for small age differences, there were no significant differences in infertility rate or pregnancy rate between thyroid cancer patients treated with radioactive iodine therapy and thyroid cancer patients not treated with radioactive iodine therapy. However, average time to pregnancy after thyroid cancer diagnosis was longer in thyroid cancer patients treated with radioactive iodine therapy compared to thyroid cancer patients not treated with radioactive iodine therapy (45 months vs. 29 months).

THYROID AND PREGNANCY, continued

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In conclusion, this study found that female Israeli thyroid cancer patients had a higher infertility rate and longer time to pregnancy compared to those without thyroid disease. However, there was no significant impact of radioactive iodine therapy treatment in infertility rate or pregnancy rate in patients with thyroid cancer. It is not entirely clear what factors contribute to the higher infertility rate in thyroid cancer patients compared to patients without thyroid disease. It is, however, reassuring that pregnancy rate between the two groups was not different, suggesting that thyroid cancer diagnosis did not significantly affect the ultimate ability to become pregnant. Therefore, it would be important for patients to be aware of this potential impact of thyroid cancer treatment. We would encourage patients to discuss with their physicians regarding treatment plan after diagnosis of thyroid cancer if they are interested in pregnancy in near future.

— Sun Lee, MD

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): https://www.thyroid.org/thyroid-cancer/

Thyroid Disease in Pregnancy: https://www.thyroid.org/thyroid-disease-pregnancy/

ABBREVIATIONS & DEFINITIONS

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. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (*Thyroid Scan*) or to take pictures of the whole body to look for thyroid cancer (*Whole Body Scan*).

Fertility: a person's ability to conceive children

Infertility: difficulty in getting pregnant or an inability to get pregnant

Thyroidectomy: surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a *total thyroidectomy*. When less is removed, such as in removal of a lobe, it is termed a *partial thyroidectomy*.

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

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.

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HYPOTHYROIDISM

Hypothyroidism: an underestimated issue

BACKGROUND

Hypothyroidism is a common problem. Population-based studies from more than two decades ago estimated that about 5% of the United States population was affected by overt hypothyroidism where the TSH level is high and the FT4 level is low. When adding subclinical, or mild hypothyroidism, where the TSH level is high but the FT4 level is normal, the percent rises to 10-20%. Hypothyroidism is treated with thyroid hormone replacement, most often levothyroxine. Indeed, levothyroxine has been one of the most prescribed medications in the United States in recent years.

This study primarily aimed to provide an update as to if there has been any change to the prevalence of hypothyroidism.

THE FULL ARTICLE TITLE

Wyne KL et al 2022 Hypothyroidism prevalence in the United States: A retrospective study combining National Health and Nutrition Examination Survey and claims data, 2009-2019. J Endocr Soc 7(1):bvac172. PMID: 36466005.

SUMMARY OF THE STUDY

The goal of this study was to use two administrative databases (2009-2012 data from the National Health and Nutrition Examination Survey [NHANES] and 2012-2019 data from the Optum claims database) to provide an update on what percent of the United States population is affected by hypothyroidism. The study included individuals who were at least 12 years of old and not pregnant (from the NHANES database) or at least 18 years of age (from the Optum database). The authors determined whether or not individuals were affected by hypothyroidism based on available results of the thyroid hormone function tests and the presence/absence of prescription for thyroid hormone replacement.

Based on the NHANES data, the authors estimated that almost 10% of the United States population were affected with hypothyroidism between 2009-2012. Similarly, analysis of the Optum data suggest that an increasing percentage of the United States population is affected with hypothyroidism, with rates increasing from 9.5% in 2012 to 11.7% in 2019. The rate of hypothyroidism was highest among females and among those older than 60 years of age.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The study demonstrates that the percentage of United States population affected by hypothyroidism has more than doubled in the past two decades. Thus, more research is needed to understand this trend and how to best treat this patient population.

— Debbie Chen, MD

ATA RESOURCES

Hypothyroidism (Underactive): https://www.thyroid.org/hypothyroidism/

Thyroid Function Tests: https://www.thyroid.org/thyroid-function-tests/

Thyroid Hormone Treatment: https://www.thyroid.org/thyroid-hormone-treatment/

HYPOTHYROIDISM, 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.

Subclinical Hypothyroidism: a mild form of hypothyroidism where the only abnormal hormone level is an increased TSH. There is controversy as to whether this should be treated or not.

Overt Hypothyroidism: clear hypothyroidism an increased TSH and a decreased T4 level. All patients with overt hypothyroidism are usually treated with thyroid hormone pills.

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.

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

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.

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HYPOTHYROIDISM

Use of levothyroxine absorption tests

BACKGROUND

Hypothyroidism is a disorder in which the body does not have enough T4, an essential hormone. The defect arises from either the thyroid or less commonly, from the pituitary. The most common thyroid disorder in the U.S. is called Hashimoto's thyroiditis, in which the body gets confused and makes antibodies that will destroy the thyroid gland, causing hypothyroidism.

To supply the body needs, most patients take oral levothyroxine, which is the T4 hormone, on a daily basis. The dose of levothyroxine needed to return the low levels seen in hypothyroidism back to normal can be variable and affected by a number of factors, including a patient's weight, other medications that the patient may be taking and whether the patient misses any doses. Missing doses is a common cause of erratic thyroid hormone levels in the blood in hypothyroid patients but many other factors can also cause difficulty in controlling hypothyroidism and returning thyroid hormone levels back to normal. In general, levothyroxine is absorbed well in the intestine. However, levothyroxine's absorption by the intestines can decrease when patients take it with other medications, or when taken with food or vitamins, or in cases of celiac disease or other diseases. This can result in high doses of levothyroxine being required to get thyroid hormone levels back into the normal range and also lead to erratic thyroid hormone levels despite taking levothyroxine regularly.

To evaluate whether there are problems absorbing levothyroxine in patients with hypothyroidism, several absorption tests have been developed and published. This study examine the use of these levothyroxine absorption tests in patients with hypothyroidism.

THE FULL ARTICLE TITLE

Caron P and Declèves X 2023 The use of levothyroxine absorption tests in clinical practice. J Clin Endocrinol Metab. Epub 2023 Mar 14. PMID: 36916146.

SUMMARY OF THE STUDY

The study looked at 43 published studies. The authors reviewed procedures used, levothyroxine dose and formulation, duration of the test, and frequency of blood tests and other analysis. The tests varied in several topics, such as fasting/ non-fasting, levothyroxine doses and even if the patient was supervised. After reviewing multiple published variations of oral levothyroxine absorption tests, the authors made the following key recommendations:

- The oral levothyroxine test dose should be greater than 300 µg; the authors suggest a 1000-µg dose.
- The FT4 level should increase more than 0.40 ng/dl, or a total T4 level should increase more than 6 µg/dl to a test dose to be considered normal absorption.
- If the test indicates abnormal levothyroxine absorption, options include cautiously increasing the levothyroxine dose with monitoring, changing to a different brand or formulation of levothyroxine, and/or referring the patient to a gastroenterologist for evaluation of malabsorption.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Erratic thyroid hormone levels and high dose requirements for levothyroxine are often seen in patients with hypothyroidism. While missing doses is a common cause of erratic thyroid hormone levels, it is important to identify possible causes for decreased levothyroxine absorption, as patients with decreased absorptions of levothyroxine might also suffer from decreased absorption of vitamins and other important elements for the body. This study identified potential tests evaluating the absorption of levothyroxine and recommended a simple clinically applicable test.

— Joanna Miragaya, MD

HYPOTHYROIDISM, continued

ATA RESOURCES

Hypothyroidism (Underactive): https://www.thyroid.org/hypothyroidism/

Thyroid Function Tests: https://www.thyroid.org/thyroid-function-tests/

Thyroid Hormone Treatment: https://www.thyroid.org/thyroid-hormone-treatment/

ABBREVIATIONS & DEFINITIONS

Autoimmune thyroid disease: a group of disorders that are caused by antibodies that get confused and attack the thyroid. These antibodies can either turn on the thyroid (Graves' disease, hyperthyroidism) or turn it off (Hashimoto's thyroiditis, hypothyroidism).

Hashimotos thyroiditis: the most common cause of hypothyroidism in the United States. It is caused by antibodies that attack the thyroid and destroy it.

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

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

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.

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

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.

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GRAVES' DISEASE

Does Vitamin D supplementation reduce relapse of Graves' Disease?

BACKGROUND

Graves' disease is the most common cause of hyperthyroidism. Graves' disease is an autoimmune disease where the body produces an antibody that attacks and turns on the thyroid. If the antibody decreases or goes away, Graves' disease can go into remission. Antithyroid drugs (ATDs) are often the first-line therapy for the treatment of Graves' disease in the United States. The goal of ATD treatment is to control the Graves' disease in preparation for surgery or radioactive iodine therapy or to treat long term until the Graves' disease goes into remission. Unfortunately, the risk of relapse (recurrence of hyperthyroidism) after withdrawing ATDs is as high as 30 to 70%.

Vitamin D is an important vitamin for bone formation and calcium regulation. There are also some studies that show a decrease in the number of patients developing autoimmune disease with vitamin D supplementation. Studies investigating the role of vitamin D in Graves' disease outcomes have been mixed and limited by short trial durations, small groups of patients and not looked at relapse as the primary outcome. To this end, researchers in Denmark examined whether supplementation with vitamin D in patients with newly diagnosed Graves' disease would decrease the relapse rate of the disease after stopping ATDs.

THE FULL ARTICLE TITLE

Grove-Laugesen D et al 2023 Effect of vitamin D supplementation on Graves' disease: The DAGMAR trial. Thyroid. Epub 2023 May 23. PMID: 37218433.

SUMMARY OF THE STUDY

This study included patients ages 18 to 80 years with new-onset Graves' disease who were evaluated at Danish outpatient endocrinology clinics between March 2015 and December 2017. A diagnosis of Graves' disease was confirmed biochemically based on suppressed levels of thyroid stimulating hormone (TSH), elevated levels of triiodothyronine (T3) and/or thyroxine (T4) and a positive thyrotropin receptor antibody (TRAb) test. Patients were excluded if they had been previously received an ATD for more than 3 months or were already receiving vitamin D supplementation.

All patients were treated with a usual course of ATDs for around 12 to 18 months, but the decision on when to stop therapy was ultimately left to the clinicians. In addition to this standard treatment, participants were randomly assigned to either supplementation with Vitamin D (cholecalciferol) 2800 IU per day or no Vitamin D that was begun when the patient started ATDs. This intervention was continued for an average of 12±1 months after ATD discontinuation or occurrence of one of three study outcomes.

At baseline, the 9-month mark, and the end of the study, participants provided blood samples for thyroid laboratory testing and completed questionnaires on quality of life, adherence, and side effects. A subset of patients had vitamin D levels assessed. The primary outcome was the number of participants who did not enter into or sustain remission. Researchers also studied a secondary outcome (risk of relapse) for its association with age, sex, vitamin D status, and smoking status and its effect on quality of life.

The study group was composed of 278 patients who were randomly assigned to either vitamin D supplementation (n = 140) or no Vitamin D (n = 138). Baseline characteristics of the two groups were similar, as were the dropout rates. The average age was 44 years, and 79% were female. There were 35% of participants who were vitamin D–deficient at baseline. The risk of failure to enter and sustain remission in conjunction with ATD use was 42% in the vitamin D group and 32% in the placebo group. There was a slightly higher proportion of smokers in the group who received vitamin D supplementation, but this did not reach statistical significance.

GRAVES' DISEASE, continued

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This randomized study showed that in patients with Graves' disease, use of 2800 units of vitamin D supplementation along with ATD had no effect on the risk of relapse following stopping the ATD. At this point, the use of Vitamin D to decrease relapse of Graves' disease after stopping ATDs cannot be recommended, although this study does not rule out whether higher doses of Vitamin D would have an effect. However, the use of Vitamin D supplementation should be reserved for those patients with Graves' disease who are Vitamin D deficient.

— Alan P. Farwell, MD

ATA RESOURCES

Graves' Disease: https://www.thyroid.org/graves-disease/

Thyroid Function Tests: https://www.thyroid.org/thyroid-function-tests/

ABBREVIATIONS & DEFINITIONS

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

Graves' disease: the most common cause of hyperthyroidism in the United States. It is caused by antibodies that attack the thyroid and turn it on.

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

Triiodothyronine (T3): the active thyroid hormone, usually produced from thyroxine.

TRAb: antibodies often present in the serum of patients with Graves disease that are directed against the TSH receptor, often causing stimulation of this receptor with resulting hyperthyroidism.

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.

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Clinical Thyroidology® for the Public

THYROID SURGERY

Hypoparathyroidism after thyroid surgery

BACKGROUND

Thyroid surgery is indicated to treat a variety of conditions, including thyroid cancer, thyroid nodules and an overactive thyroid (hyperthyroidism). One potential complication of thyroid surgery is damage to the parathyroid glands, which are located next to the thyroid. The parathyroid glands control the body's calcium levels and there are usually 4 – 2 on each side of the thyroid. Damage to the parathyroid glands can cause hypoparathyroidism which causes low calcium levels. Low calcium levels may be associated with muscle twitching or cramping and, if severe, can cause seizures and/or heart problems. During thyroid surgery, the parathyroid glands may be damaged as a result of losing their blood supply or being removed completely as part of the operation. At least 1 ½ of the parathyroid glands are needed to maintain normal calcium levels. Because of this, hypoparathyroidism is a possible complication of a total thyroidectomy, not a lobectomy. Hypoparathyroidism represents more than half of the complications of thyroidectomy, with rates ranging from 15 to 30% for short-lived hypoparathyroidism after surgery and from 1 to 7% for permanent hypoparathyroidism. Treatment for hypoparathyroidism includes calcium and vitamin D supplements to manage this condition.

This study aimed to assess the symptoms and quality of life (QoL) of patients with hypoparathyroidism after undergoing thyroid surgery and to compare them with those with normal parathyroid function after surgery.

THE FULL ARTICLE TITLE

Hillary SL et al 2022 Quality of life in post-surgical hypoparathyroidism (PoSH) in thyroid and parathyroid surgery. World J Surg 46:3025–3033. PMID: 36184675.

SUMMARY OF THE STUDY

Patients who underwent thyroid surgery (total thyroidectomy) were studied. The records of 875 patients with a history of total thyroidectomy or bilateral neck exploration were reviewed; 16 of these patients had permanent postoperative hypoparathyroidism (requiring treatment of more than 6 months' duration). Those patients were matched with patients with normal parathyroid function after surgery by sex, age, and procedure in the same year, resulting in a subgroup of 48 patients. The study was conducting using an Internet based questionnaire/survey about patient's symptoms and quality of life.

There were 439 survey respondents who were classified according to presence or absence of postoperative hypoparathyroidism. Most (86%) were female, and the average age was 52 years. The years of surgery ranged from 1973 to 2019, and 347 respondents fully completed the questionnaire. The average QoL score in those with postoperative hypoparathyroidism was significantly lower than in those without (54.2% vs. 60.6%), The main cause of this difference was that patients with hypoparathyroidism reported significantly lower levels of energy after the procedure. Of the 88 patients with available serum calcium levels, only 43% reported them to be in the normal range but there was no difference in QoL scores related to calcium levels. Finally, of the 11 patients who self-identified as having postoperative hypoparathyroidism, all had been prescribed vitamin D.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Hypoparathyroidism is a complication of thyroid surgery. It may impact patients in the short-term or long-term following the surgery, especially in terms of fatigue and energy levels. This study helps us better understand the impact on the quality of life of patients who have undergone this procedure. Further understanding of this condition and developing more effective treatment options are necessary.

—Vibhavasu Sharma, MD, F.A.C.E

THYROID SURGERY, continued

ATA RESOURCES

Thyroid Surgery: https://www.thyroid.org/thyroid-surgery/

ABBREVIATIONS & DEFINITIONS

Thyroidectomy: surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy.

Hypoparathyroidism: low calcium levels due to decreased secretion of parathyroid hormone (PTH) from the parathyroid glands next to the thyroid. This can occur as a result of damage to the glands during thyroid surgery and usually resolves. This may also occur as a result of autoimmune destruction of the glands, in which case it is usually permanent.

Parathyroid glands: usually four small glands located around the thyroid that secrete parathyroid hormone (PTH) which regulates the body's calcium levels.

Hypocalcemia: low calcium levels in the blood, a complication from thyroid surgery that is usually short-term and relatively easily treated with calcium pills. If left untreated, low calcium may be associated with muscle twitching or cramping and, if severe, can cause seizures and/or heart problems.

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Clinical Thyroidology® for the Public

THYROID CANCER

Radioactive iodine therapy has no clear benefit on survival in patients with hürthle-cell thyroid cancer

BACKGROUND

Hürthle-cell cancer (HCC) is a rare type of thyroid cancer, representing 3-5% of all thyroid cancers. HCC used to be classified as a subtype of follicular cancer. However, in 2017, the World Health Organization (WHO) identified HCC as a different type, because of significant differences in the cancer behavior and prognosis. Overall, HCC has more aggressive features and a poorer prognosis than follicular thyroid carcinomas. Because of this, usual therapy includes a total thyroidectomy and many also undergo radioactive iodine therapy. More recently, in 2022, WHO recommended using the term "oncocytic carcinoma of the thyroid" instead of HCC. Prior studies of this type were small, given the rarity of HCC, and they reported conflicting results regarding treatment and overall prognosis.

The aim of this study was to evaluate whether radioactive iodine therapy after total thyroidectomy improves prognosis and survival in patients with HCC.

THE FULL ARTICLE TITLE

Wang X et al 2022 Radioactive iodine therapy does not improve cancer-specific survival in Hürthle cell carcinoma of the thyroid. J Clin Endocrinol Metab 107:3144–3151. PMID: 35908290.

SUMMARY OF THE STUDY

In this study, the authors used the U.S. Surveillance, Epidemiology, and End Results (SEER) database to identified patients diagnosed with HCC who underwent total thyroidectomy between 2000 and 2018. Among the 2279 patients included in the study, 1438 (63%) received radioactive iodine therapy treatment after their thyroid surgery. The patients who received radioactive iodine therapy were younger (average age: 54 versus 56 years), had larger cancers (average cancer: 3.8 versus 3.5 cm), showed more frequent cancer extension outside the thyroid gland (17% versus 13%), and had more advanced disease including spread outside the neck (16% versus 12%) as compared to those who did not receive radioactive iodine therapy. To control for sex, age, race, year of diagnosis, cancer staging, spread outside the neck, and spread to the lymph nodes, a new patient sample was selected from the initial study group that included 733 patients.

The primary study outcome was cancer-specific survival (CSS), calculated as the time from the initial diagnosis to death from thyroid cancer, last follow-up or 12/31/2018, the first occurring event being chosen for each patient. In the entire group, disease-specific death occurred in 125 patients (5.5%) during an average follow-up time of 92 months. The CSS rates for the entire group were 97% at 5 years, 93% at 10 years, and 90% at 15 years. There was no difference in CSS rates between patients who received radioactive iodine therapy and those who did not when examining the entire group or the matched group. Increased age (55 years or older), larger cancer size (larger than 4 cm), and more advanced cancer were associated with a higher disease-specific mortality. Radioactive iodine therapy treatment also did not improve the CSS rates in patients with more aggressive cancer features.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In this large SEER-based study, patients with HCC who underwent total thyroidectomy had overall an excellent cancer-specific survival. Older patients with larger cancers or more advanced cancer stage had increased disease-specific mortality. However, there was no difference in cancer-specific survival noted between patients who received and those who did not receive radioactive iodine therapy after total thyroidectomy.

— Alina Gavrila, MD, MMSC

THYROID CANCER, continued

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): https://www.thyroid.org/thyroid-cancer/
Radioactive Iodine Therapy: https://www.thyroid.org/radioactive-iodine/

ABBREVIATIONS & DEFINITIONS

Differentiated thyroid cancer: the most common type of thyroid cancer, which includes papillary and follicular thyroid cancers.

Hürthle cells: a particular type of thyroid cells found in both benign and cancerous thyroid nodules.

Total thyroidectomy: surgery to remove the entire thyroid gland.

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. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (*Thyroid Scan*) or to take pictures of the whole body to look for thyroid cancer (*Whole Body Scan*).

SEER: Surveillance, Epidemiology and End Results program: a nation-wide anonymous cancer registry generated by the National Cancer Institute that contains information on 26% of the United States population. Website: http://seer.cancer.gov/

Lymph node: bean-shaped organ that plays a role in removing what the body considers harmful, such as infections and cancer cells.

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Volume 16 | Issue 8 | August 2023

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ATA® Alliance for Thyroid Patient Education

GOAL The goal of our organizations is to provide accurate and reliable information for patients about the diagnosis, evaluation and treatment of thyroid diseases. We look forward to future collaborations and continuing to work together toward the improvement of thyroid education and resources for patients.

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Graves' Disease & Thyroid Foundation

ThyCa: Thyroid Cancer Survivors' Association, Inc.
www.thyca.org

Light of Life Foundation
checkyourneck.com

Bite Me Cancer

MCT8 - AHDS Foundation

Thyroid Cancer Alliance

Thyroid Cancer Canada
Cancer de la thyroïde Canada

Thyroid Federation International

American Thyroid Association®
www.thyroid.org
ATA® Patient Resources:
www.thyroid.org/thyroid-information/
Find a Thyroid Specialist: www.thyroid.org
(Toll-free): 1-800-THYROID
thyroid@thyroid.org

Bite Me Cancer
www.bitemecancer.org
info@bitemecancer.org

Graves' Disease and Thyroid Foundation
www.gdatf.org
(Toll-free): 877-643-3123
info@ngdf.org

Light of Life Foundation
www.checkyourneck.com
info@checkyourneck.com

MCT8 – AHDS Foundation
mct8.info
Contact@mct8.info

Thyca: Thyroid Cancer Survivors' Association, Inc.
www.thyca.org
(Toll-free): 877-588-7904
thyca@thyca.org

Thyroid Cancer Alliance
www.thyroidcanceralliance.org
www.thyroidcancerpatientinfo.org
Rotterdam, The Netherlands

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