Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

Overtreatment and under treatment of hypothyroidism with thyroid hormone is associated with increased death from heart disease

The goal of treating hypothyroidism is achieving a TSH in the normal range. Not keeping the levels in the normal range can increase risk for heart issues and increase the risk of death from heart disease. This study looks into the association of overtreatment and undertreatment of hypothyroidism and the risk of death due to heart disease.

Evron JM et al 2022 Association of thyroid hormone treatment intensity with cardiovascular mortality among US veterans. JAMA Netw Open **5**(5):e2211863. PMID: 35552725.

Is there a risk of heart disease in thyroid cancer patients?

It remains controversial whether patients with thyroid cancer have an increased risk of heart disease as compared to the general population. The goal of this study was to determine the risk of death due to heart disease in a population of adult patients with thyroid cancer compared to a population of patients without thyroid cancer.

Qiang JK et al 2022 Risk of adverse cardiovascular outcomes in differentiated thyroid cancer survivors: A systematic review and meta-analysis. Thyroid. Epub 2022 Oct 20. PMID: 36074932.

Has the diagnostic accuracy of thyroid nodule biopsy improved?

Biopsy of thyroid nodules, which became available in the late 1970s, is an accurate and safe test available to identify cancerous or suspicious thyroid nodules and the results of this test has been used to guide treatment. Several improvements in thyroid biopsy have been developed over the years. The goal of this study was to evaluate whether the diagnostic performance of thyroid biopsy has improved over the past four decades since its introduction.

Hsiao V et al 2022 Diagnostic accuracy of fine-needle biopsy in the detection of thyroid malignancy: A systematic review and meta-analysis. JAMA Surg. Epub 2022 Oct 12. PMID: 36223097.

How effective is radiofrequency ablation as a treatment for benign thyroid nodules?

Radiofrequency ablation (RFA) has been shown to be safe and effective in treating single benign thyroid nodules. RFA uses heat energy to irreversibly destroy thyroid cells and shrink the target tissue. This study was done evaluate the effectiveness and safety of RFA for benign nodules.

Kandil E et al 2022 Efficacy and safety of radiofrequency ablation of thyroid nodules: A multi-institutional prospective cohort study. Ann Surg. Epub 2022 Jul 15. PMID: 35837903.

What should you expect after radioactive iodine therapy for Graves' disease?

Radioactive iodine therapy has been used for treatment of Graves' disease since the 1940s. The current approach is to give a dose of radioactive iodine to completely destroy the thyroid gland, so most patients develop hypothyroidism within the first year of treatment. The main goal of this study was to find out how often and when the thyroid hormone abnormalities developed after radioactive iodine therapy and to compare the effects of different management strategies.

Perros P et al 2022 Post radioiodine Graves' management: The PRAGMA study. Clin Endocrinol (Oxf). Epub 2022 Mar 11. PMID: 35274331.

Trends in lobectomy for pediatric thyroid cancer

While only 1.8% of all thyroid cancers occur in the pediatric population, it is still one of the most common endocrine cancers in the young. In 2015, ATA recommendations urged treating pediatric thyroid cancer with a total thyroidectomy. In contrast, recommendations for treating thyroid cancer in adults stated lobectomy was a suitable procedure. In the current study, the authors evaluate the impact of the ATA guidelines on the treatment of thyroid cancer in children.

Stein E et al 2022 The 2015 American Thyroid Association guidelines and trends in hemithyroidectomy utilization for pediatric thyroid cancer. Head Neck **44:**1833–1841.

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

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 Twitter 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.

February is Hypothyroidism Thyroid Awareness Month.

In this issue, the studies ask the following questions:

- Does treatment of hypothyroidism increase the risk of death from heart disease?
- Is there a risk of heart disease in thyroid cancer patients?
- Has the diagnostic accuracy of thyroid nodule biopsy improved?
- How effective is radiofrequency ablation as a treatment for benign thyroid nodules?
- What should you expect after radioactive iodine therapy for Graves' disease?
- Is lobectomy becoming an option for treatment of pediatric thyroid 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

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

HYPOTHYROIDISM

Overtreatment and under treatment of hypothyroidism with thyroid hormone is associated with increased death from heart disease

BACKGROUND

Hypothyroidism (underactive thyroid) is common and an increased TSH level and, usually, a low FT4 level make the diagnosis. Hypothyroidism is treated with thyroid hormone replacement, usually in the form of levothyroxine. The goal of treating hypothyroidism is achieving a TSH in the normal range, which is usually sufficient in relieved the symptoms of hypothyroidism. However, it is important to not over or undertreat the condition. If a TSH remains high on levothyroxine (undertreatment), the patient is likely to have continued symptoms. If the TSH is too low (overtreatment), the patient may have symptoms of hyperthyroidism.

Not keeping the levels in the normal range can increase risk for heart issues and increase the risk of death from heart disease (cardiovascular mortality). A persistently increased TSH can lead to increased levels of cholesterol, which can cause heart disease. Similarly, a persistently low TSH can lead to an increased risk for atrial fibrillation, which causes the heart to beat irregularly, and increase risk of stroke. This study looks into the association of overtreatment and undertreatment of hypothyroidism and the risk of death due to heart disease.

THE FULL ARTICLE TITLE

Evron JM et al 2022 Association of thyroid hormone treatment intensity with cardiovascular mortality among US veterans. JAMA Netw Open **5**(5):e2211863. PMID: 35552725.

SUMMARY OF THE STUDY

The authors looked into data from charts from the U.S. Veterans Health Administration Corporate Data Warehouse in order to identify those receiving thyroid hormone treatments from January 1, 2004, and December 31, 2017. They also used the National Death Index to assess death rates and cause of death. They used the reference ranges for TSH and free thyroxine (FT4) levels at the Ann Arbor Veterans Administration laboratory for analysis. Patients with a history of thyroid cancer and those who used amiodarone or lithium were not part of the study. Overtreatment of thyroid hormone was defined as TSH levels lower than 0.5 mIU/L or FT4 levels higher than 1.9 ng/dl. Normal use of thyroid hormone treatment was defined as TSH levels from 0.5 to 5.5 mIU/L and FT4 levels from 0.7 to 1.9 ng/dl. Undertrreatment of thyroid hormone was defined as TSH levels higher than 5.5 mIU/L or FT4 levels lower than 0.7 ng/dl. Of the 705,307 patients in the study, 625,444 (88.7%) were men, and the average age was 67 years. Overall, 75,963 patients (10.8%) died of cardiovascular causes during an average follow-up of 4 years.

Risk of death was correlated with both a decreased and an increased TSH levels. Risk of death was increased by 39% if the TSH was suppressed and 13% if the TSH was low but detectable. Risk of death increased steadily as the TSH increased above the normal range, from 42% for a slightly increased TSH to 267% if the TSH was >20. The risk was even higher in older patients (>85) when compared with younger patients, ranging age to 18 to 49 years.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Both overtreatment and undertreatment of hypothyroidism with of thyroid hormone was linked to an increased risk of death due to heart disease. These data clearly show that it is important to keep the TSH levels in the normal range while on thyroid hormone in order to decrease the cardiac risk and death in those patients with hypothyroidism.

— Joanna Miragaya, MD

HYPOTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

Thyroid Hormone Treatment: https://www.thyroid.org/thyroid-hormone-treatment/
Older Patients and Thyroid Disease: https://www.thyroid.org/thyroid-disease-older-patient/
Hyperthyroidism (Overactive): https://www.thyroid.org/hyperthyroidism/
Hypothyroidism (Underactive): https://www.thyroid.org/hypothyroidism/

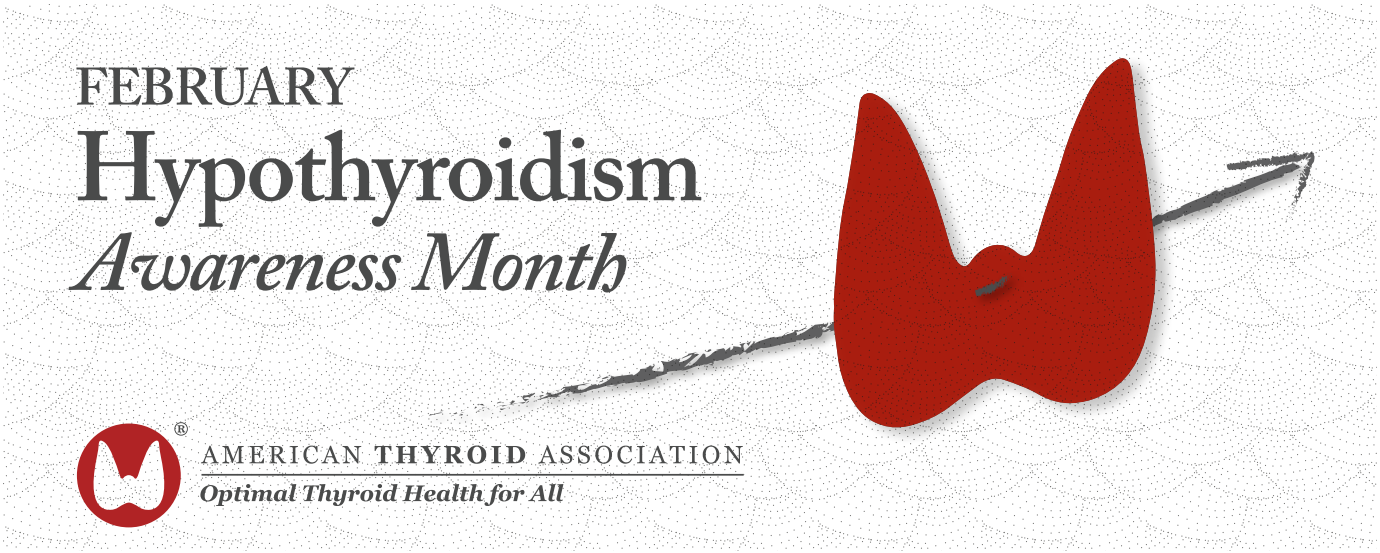
ABBREVIATIONS & DEFINITIONS

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

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.

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.



AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

THYROID CANCER

Is there a risk of heart disease in thyroid cancer patients?

BACKGROUND

Thyroid cancer is the most common endocrine cancer in the world. Overall, thyroid cancer has an excellent prognosis. Given the low risk of death caused directly by thyroid cancer, it is important to understand what other factors contribute to illness and death among patients with thyroid cancer. It remains controversial whether patients with thyroid cancer have an increased risk of heart disease as compared to the general population. Some studies suggest that some risk factors for heart disease, such as obesity and high cholesterol levels, are also associated with an increased risk of developing thyroid cancer. Similarly, some studies suggest that patients with thyroid cancer may be at an increased risk of developing high blood pressure and diabetes, two conditions that can increase one's risk for developing heart disease. Finally, a low TSH level on thyroid hormone treatment, which may be part of the treatment of thyroid cancer, has been associated with an increased risk of atrial fibrillation.

The goal of this study was to determine the risk of death due to heart disease in a population of adult patients with thyroid cancer compared to a population of patients without thyroid cancer.

THE FULL ARTICLE TITLE

Qiang JK et al 2022 Risk of adverse cardiovascular outcomes in differentiated thyroid cancer survivors: A systematic review and meta-analysis. Thyroid. Epub 2022 Oct 20. PMID: 36074932.

SUMMARY OF THE STUDY

The authors identified 7 studies to include in their analysis. In one study that examined 2096 Dutch patients (524 with thyroid cancer and 1572 without thyroid cancer), the risk of death from heart disease was more than 3 times greater among patients with thyroid cancer. Furthermore, among patients with thyroid cancer, a lower TSH level was associated with a higher risk of death from heart disease.

In an analysis of 4428 patients with thyroid cancer, combined from three separate studies, the authors found that the risk of atrial fibrillation is greater among patients with thyroid cancer compared to the general population. In additional analyses, the authors determined that the risk of developing heart disease, heart failure, and stroke among patients with thyroid cancer is not significantly different from that of the general population.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The study findings suggest that patients with thyroid cancer may be at an increased risk of developing atrial fibrillation and of death from heart disease as compared to the general population. While this data is interesting, more population-based studies are needed to understand the relationship between thyroid cancer and heart disease.

— Debbie Chen, MD

ATA THYROID BROCHURE LINKS

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

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

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

THYROID CANCER, continued

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

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.

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.

Atrial fibrillation: an irregular and often very rapid heart rhythm (arrhythmia) that can lead to blood clots in the heart. Atrial fibrillation increases the risk of stroke, heart failure and other heart-related complications.

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

THYROID NODULES

Has the diagnostic accuracy of thyroid nodule biopsy improved?

BACKGROUND:

Thyroid nodules represent a common medical problem, affecting up to half of the population. However, most nodules are not cancerous (benign) as only ~5% of thyroid nodules are cancer. It is important to distinguish cancer from benign thyroid nodules in order to avoid excessive evaluation and unnecessary surgery. Biopsy of thyroid nodules, which became available in the late 1970s, is an accurate and safe test available to identify cancerous or suspicious thyroid nodules and the results of this test has been used to guide treatment. For example, thyroid nodules with cancer on a biopsy usually result in surgery while those with a benign result will be monitored by ultrasound for growth. Several improvements in thyroid biopsy have been developed over the years, including the increased use of ultrasound to guide the thyroid biopsy, improved resolution of ultrasound, increased standard reporting of the biopsy results, and improved techniques used in the evaluation of biopsy results. The goal of this study was to evaluate whether the diagnostic performance of thyroid biopsy has improved over the past four decades since its introduction.

THE FULL ARTICLE TITLE:

Hsiao V et al 2022 Diagnostic accuracy of fine-needle biopsy in the detection of thyroid malignancy: A systematic review and meta-analysis. JAMA Surg. Epub 2022 Oct 12. PMID: 36223097.

SUMMARY OF THE STUDY:

The authors searched the medical literature for English-language reports of studies that evaluated the thyroid biopsy accuracy and included at least 20 adult patients between 1975 and 2020. The data used for analysis included: age, gender, use of ultrasound-guidance during the thyroid biopsy, the cytopathology reporting system, accuracy of information, study period start and end, and income/development of the country where the study was performed. To account for the different cytopathology reporting systems used, all biopsy results were reclassified into one of four categories: benign, malignant, indeterminate, or non-diagnostic. The biopsy results were compared to a reference standard consisted of either the surgical pathology results for thyroid nodules removed surgically or results of follow-up thyroid ultrasounds for nodules initially characterized as benign.

Of the 1,023 eligible studies, 36 met the inclusion criteria. A total of 16,597 patients with an average age of 47.3 years were included, 79% being female patients. The overall accuracy of thyroid biopsy was 86%, while 7.2% of the results were non-diagnostic. Of the non-diagnostic biopsy results that went to surgery, 13.4% were cancerous. The diagnostic accuracy, proportion of non-diagnostic results, and rate of cancer of thyroid biopsies were not dependent of the time period when the study was performed. There was a high variability between the individual study results; however, none of the factors assessed could explain this finding, including the study period, type of reference standard used, cytological reporting system, use of ultrasonography, or being a study from a high-income country.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Thyroid nodule biopsy is a reliable diagnostic test for thyroid cancer with an overall acceptable diagnostic performance. Despite recent improvements in this procedure, its diagnostic accuracy and the rate of non-diagnostic results appear unchanged since its introduction more than four decades ago. Additional information regarding how patients are selected for the thyroid biopsy as well as the level of expertise of those performing this procedure and of those completing the cytological assessment might impact the overall diagnostic performance trends. Further studies should also evaluate the effect of the use of molecular markers and of the reclassification of a subset of papillary thyroid cancer into a new benign category, termed non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP) on the thyroid biopsy results.

— Alina Gavrila, MD, MMSc

THYROID NODULES, continued

ATA THYROID BROCHURE LINKS

Thyroid Nodules: https://www.thyroid.org/thyroid-nodules/

Fine Needle Aspiration Biopsy of Thyroid Nodules: https://www.thyroid.org/fna-thyroid-nodules/

ABBREVIATIONS & DEFINITIONS

Thyroid nodule: an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (benign), 5-15% are cancerous (malignant).

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.

Thyroid biopsy: a simple procedure that is done in the doctor's office to determine if a thyroid nodule is benign (non-cancerous) or cancer. The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.

Non-diagnostic/insufficient thyroid biopsy: this happens when not enough cells are obtained during the biopsy to provide a diagnosis. This occurs in 5-10% of biopsies, and it often results in the need to repeat the biopsy.

Indeterminate thyroid biopsy: this happens when a few atypical cells are seen but not enough to be abnormal (atypia of unknown significance (AUS) or follicular lesion of unknown significance (FLUS)) or when the diagnosis is a follicular or Hurthle cell lesion. Follicular and Hurthle cells are normal cells found in the thyroid. Current analysis of thyroid biopsy results cannot differentiate between follicular or Hurthle cell cancer from noncancerous adenomas. This occurs in 15-20% of biopsies and often results in the need for surgery to remove the nodule.

Cytology: the study of cells.

Test accuracy: the test ability to differentiate between patients and healthy people correctly.

Molecular markers: genes and microRNAs that are expressed in benign or cancerous cells. Molecular markers can be used in thyroid biopsy specimens to either diagnose cancer or to determine that the nodule is benign. The two most common molecular marker tests are the AfirmaTM Gene Expression Classifier and ThyroseqTM.

Noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP): a new term has been used to describe a type of papillary thyroid cancer which is non-invasive. These cancers behave less aggressively than typical papillary thyroid cancer and have been shown to have low risk for recurrence and low risk for spread outside of the thyroid.

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

THYROID NODULES

How effective is radiofrequency ablation as a treatment for benign thyroid nodules?

BACKGROUND

Thyroid nodules are common and most are benign. However, sometimes patients are bothered by the size of the nodule, either because of symptoms or how it looks and some of these nodules can cause hyperthyroidism. Traditional treatment is generally limited to surgery or radioactive iodine. The problems with surgery include the resultant scar, damage to the nerves in the neck or to the parathyroid glands, the frequent need for thyroid hormone replacement and the requirement to undergo general anesthesia in most cases, which can be limiting in the setting of multiple other medical problems.

More recently, radiofrequency ablation (RFA) has been shown to be safe and effective in treating single benign thyroid nodules. RFA uses heat energy to irreversibly destroy thyroid cells and shrink the target tissue. A probe is inserted into the nodule, much like a thyroid biopsy, and the thermal energy is applied. This study was done evaluate the effectiveness and safety of RFA for benign nodules.

THE FULL ARTICLE TITLE

Kandil E et al 2022 Efficacy and safety of radiofrequency ablation of thyroid nodules: A multi-institutional prospective cohort study. Ann Surg. Epub 2022 Jul 15. PMID: 35837903.

SUMMARY OF THE STUDY

This was a study of patients with thyroid nodules from two major medical centers, previously determined to be benign by thyroid biopsy. They studied 233 patients treated with RFA from July 2019 -January 2022. Monitoring was then performed at 1, 3, 6, and 12 months and then yearly. Items followed were the decrease in volume (considered successful if >50%), size measurements, thyroid state, ultrasound characteristics and procedure complications.

There were 233 nodules studied in the 233 subjects, 76% were female with an average age of 61. Only 4 patients had overactive nodules prior to RFA. Of the initial 233 patients, follow up was available in 162, 71, 85 and 70 patients at 1, 3, 6 and 12 months, respectively. Nodule volume decreased by 54%, 58%, 73% and 76% respectively. By the 12 month follow up exam, the average nodule volume was 0.39 ml compared to 4.17 ml initially. The 4 patients who were hyperthyroid prior to RFA all had normal thyroid function at 3 month follow up.

There were a small number of complications (2.5%) including temporary voice changes, drainage from the RFA site and minor skin burns. One patient developed thyroid overactivity that resolved on its own. Another patient with known Hashimoto's thyroiditis was started on thyroid hormone replacement. There are some changes in ultrasound after RFA which will require long-term follow up.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that RFA is a useful and safe treatment for benign thyroid nodules that are symptomatic. It is able to significantly decrease the size of a thyroid nodule with minimal complications. While only a small number of patients had hyperfunctioning nodules, RFA also decreased their thyroid levels to normal. This offers another treatment option for patients with symptomatic nodules with a low risk of complications.

— Marjorie Safran, MD

THYROID NODULES, continued

ATA THYROID BROCHURE LINKS

Thyroid Nodules: https://www.thyroid.org/thyroid-nodules/

ABBREVIATIONS & DEFINITIONS

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.

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.

Thyroid fine needle aspiration biopsy (FNAB): a simple procedure that is done in the doctor's office to determine if a thyroid nodule is benign (non-cancerous) or cancer. The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.

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Optimal Thyroid Health for All

Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

GRAVES' DISEASE

What should you expect after radioactive iodine therapy for Graves' disease?

BACKGROUND

Graves' disease is the most common cause of hyperthyroidism in the United States. Radioactive iodine therapy has been used for treatment of Graves' disease since the 1940s. The thyroid is the only gland that takes up and stores iodine, which is used to make thyroid hormone. Radioactive iodine works by being taken up into the thyroid and destroying the gland. Initially, the goal was to find the right dose of radioactive iodine to bring the thyroid hormone levels back to normal, but this approach did not work well as the hyperthyroidism would often recur if the dose was too low. The current approach is to give a dose of radioactive iodine to completely destroy the thyroid gland, so most patients develop hypothyroidism within the first year of treatment.

One area of debate is when to start thyroid hormone treatment after radioactive iodine therapy. Past studies showed increased risk of Graves' eye disease, weight gain and poor quality of life if patients develop hypothyroidism. To catch when the thyroid hormone levels fall into hypothyroid range patients need close monitoring. The American Thyroid Association recommends testing thyroid hormone (free T4 and total T3) and TSH levels for the first 2 months then to continue every 4 – 6 weeks for 6 months or until hypothyroidism develops and stable levels are reached with thyroid hormone treatment. There are 3 main management approaches during this period. Medications to decrease the thyroid hormone levels can be continued after radioactive iodine therapy treatment, or these medications can be used with thyroid hormone at the same time (block and replace), or the levels can be checked without any medication until hypothyroidism develops and then treatment with thyroid hormone is started. The main goal of this study was to find out how often and when the thyroid hormone abnormalities developed after radioactive iodine therapy and to compare the effects of different management strategies.

THE FULL ARTICLE TITLE

Perros P et al 2022 Post radioiodine Graves' management: The PRAGMA study. Clin Endocrinol (Oxf). Epub 2022 Mar 11. PMID: 35274331.

SUMMARY OF THE STUDY

The study was done in the United Kingdom. Patient information was found through reviewing databases of 31 National Health Service hospitals. Adult patients with confirmed Graves' disease who were treated with radioactive iodine and had follow up information over 12 months following treatment were included. Medical records were reviewed to collect the thyroid test results and the results were grouped as hypothyroid, hyperthyroid, euthyroid, mild hypothyroid, or mild hyperthyroid then analyzed divided into 3-month quarters.

A total of 812 patients were included in the study. Hyperthyroidism was most common in the first 3-months after RAI (26%). Hypothyroidism was most common in the second quarter (60%). Overall, 80% experienced hypothyroidism at some point and 49% had hyperthyroidism. Only 5% of these patients did not have any abnormal thyroid tests. Differences between the 3 management groups were small, the only significant difference was less hyperthyroidism in the group treated with thyroid hormone only. No increase in the risk of worsening Graves' eye disease, weight gain, or heart problems were found in the patients who had abnormal thyroid function. Only 21% of patients had the recommended tests at 6 weeks and 28% at 12 weeks, which increased to 80% by 12 months.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors concluded that patients often had abnormal thyroid hormone levels in the first 12 months after radioactive iodine therapy, especially in the first 6 months. The effectiveness of conventional management strategies

GRAVES' DISEASE, continued

to keep the thyroid function normal was low and there was no significant difference between them. Adherence to national guidelines about follow-up testing was also low, especially in the first 6 months when the abnormalities were more likely to happen.

The reported findings are important especially in showing the high risk of developing hypothyroidism in the first 6 months following radioactive iodine therapy and should raise awareness of both physicians and patients to follow the frequent testing schedule early on as suggested by national guidelines so thyroid hormone treatment can be started in a prompt manner. There is a need to develop better strategies after radioactive iodine therapy treatment to avoid abnormal thyroid function. The findings from this study can also guide physician-patient discussions prior to radioactive iodine therapy treatment of Graves' disease.

— Ebru Sulanc, MD

ATA THYROID BROCHURE LINKS

Radioactive Iodine Therapy: https://www.thyroid.org/radioactive-iodine/

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

ABBREVIATIONS & DEFINITIONS

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.

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.

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.

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.

Subclinical Hyperthyroidism: a mild form of hyperthyroidism where the only abnormal hormone level is a decreased TSH.

TSH: thyroid stimulating hormone — produced by the pituitary gland that regulates thyroid function; also, the best screening test to find if the thyroid is functioning normally

Euthyroid: a condition where the thyroid gland as working normally and producing normal levels of thyroid hormone.

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Optimal Thyroid Health for All

Volume 16 | Issue 2 | February 2023

Clinical Thyroidology® for the Public

THYROID CANCER

Trends in lobectomy for pediatric thyroid cancer

BACKGROUD

Thyroid cancer is the most common endocrine cancer. While only 1.8% of all thyroid cancers occur in the pediatric population (those less than 18 years of age), it is still one of the most common endocrine cancers in the young. In 2015 the American Thyroid Association (ATA) published recommendations for managing thyroid cancer in children. They urged treating pediatric thyroid cancer with a total thyroidectomy. In contrast, recommendations for treating thyroid cancer in adults published around the same time stated that a less invasive lobectomy (removal of only the lobe containing the cancer) was a suitable procedure. The need for more extensive surgery in children was justified because thyroid cancer in youth more often presents with cancer in both thyroid lobes, thus, there may be an increased risk for recurrence with less extensive surgery. Also, youth with thyroid cancer are more likely to develop spread of the cancer beyond the thyroid, both into the lymph nodes in the neck and spread to the lungs.

In the current study, the authors evaluate the trend in lobectomy before and after 2015 to assess the impact of the ATA–pediatric guidelines on the treatment of thyroid cancer in children.

THE FULL ARTICLE TITLE

Stein E et al 2022 The 2015 American Thyroid Association guidelines and trends in hemithyroidectomy utilization for pediatric thyroid cancer. Head Neck **44:**1833–1841.

SUMMARY OF THE STUDY

The authors studied a large American cancer database called the National Cancer Database (NCDB) to identify 4776 patients less than 18 years old with thyroid cancer. Established in 1989, the NCDB is a national clinical database that annually captures 72% of newly diagnosed cancers in the US. Of the group with thyroid cancer, 92% of the patients had papillary thyroid cancer, with the remainder having follicular or Hurthle cell cancer. In addition, 3441 of the patients (72%) had surgery before the 2015 ATA guidelines, and 1335 (28%) were treated after 2015.

Overall, only 451 patients (9.4%) had a lobectomy. Patients with follicular and Hurthle cell cytology on biopsy and cancer size less than 1 cm were associated with a lobectomy. Those with papillary cytology and cancer that had spread to lymph nodes in the neck were less likely to have a lobectomy. Interestingly, lobectomy was performed more frequently in areas with an average income greater than $50,353. The authors suggest that this might be due to a concern that patients of lower socioeconomic status might be lost to follow-up after a lobectomy and might potentially be at increased risk for recurrence. Alternatively, patients of higher socioeconomic status may be more likely to question the need for a total thyroidectomy.

Most importantly, the rate of lobectomy after the publication of the 2015 guidelines was 50% greater than would have been predicted based on trends before 2015 (8.4% predicted vs 16.6% actual).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Since the release of the 2015 edition of the pediatric ATA guidelines, there has been a significant increase in the proportion of patients undergoing a lobectomy for thyroid cancer. This is true despite the fact that guidelines recommend a total thyroidectomy for most patients, and it suggests that surgeons have begun to take a more conservative and tailored approach to the treatment of thyroid cancer in the pediatric population.

— Phillip Segal, MD

THYROID CANCER, continued

ATA THYROID BROCHURE LINKS

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

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

ABBREVIATIONS & DEFINITIONS

Total thyroidectomy: surgery to remove the entire thyroid gland

Lobectomy: surgery to remove half of the thyroid gland. This procedure, also referred to as a hemithyroidectomy or partial thyroidectomy

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Follicular thyroid cancer: the second most common type of thyroid cancer.

Hurthle cell thyroid cancer: a relatively rare type of thyroid cancer

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Optimal Thyroid Health for All

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(Toll-free): 1-800-THYROID
thyroid@thyroid.org

Bite Me Cancer
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info@bitemecancer.org

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

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

MCT8 – AHDS Foundation
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Contact@mct8.info

Thyca: Thyroid Cancer Survivors' Association, Inc.
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