Volume 15 | Issue 5 | May 2022

Clinical Thyroidology® for the Public

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

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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.

The COVID-19 pandemic has caused an unprecedented upheaval in our daily lives and presented extremely difficult challenges to our healthcare system. We at the American Thyroid Association would like to make sure that you all have access to most accurate, reliable, fact-based and updated information. (https://www.thyroid.org/covid-19/)

May is International Thyroid Awareness Month.

In this issue, the studies ask the following questions:

- What does brain fog feel like?
- What are the risks and benefits of active surveillance?
- Which patients should not be considered for active surveillance?
- Is there a difference in quality of life in patients who underwent a lobectomy vs total thyroidectomy for thyroid cancer?
- What is the likelihood of hypothyroidism after lobectomy in children?
- What is the risk of second cancers in children treated with radioactive iodine for 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

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HYPOTHYROIDISM

Hypothyroid patients described what brain fog feels like

BACKGROUND

Hypothyroidism is common and is diagnosed with increased TSH and low FT4 levels. Common symptoms of hypothyroidism include feeling tired, cold, and sluggish along with weight gain, dry skin and constipation. These symptoms often resolve on thyroid hormone replacement therapy and return of the FT4 and TSH back to the normal range.

One particular symptom that patients often report is brain fog, which is described as a group of symptoms including low energy, forgetfulness, sleepiness and difficulty focusing. Interestingly, while this symptom is frequently reported in patients with hypothyroidism, it is also reported by patients with other medical conditions, such as lupus, chronic fatigue syndrome, COVID-19 ("long COVID") and depression. Because brain fog is not specific to one particular medical problem, it is difficult to manage. Indeed, brain fog may persist after the other symptoms of hypothyroidism resolve on thyroid hormone therapy.

This study was done to better understand the symptoms associated with brain fog in patients with hypothyroidism, to find out how often it occurs and to determine what improves the symptoms commonly experienced in patients who suffer from brain fog.

THE FULL ARTICLE

Ettleson MD et al 2021 Brain fog in hypothyroidism: Understanding the patient's perspective. Endocr Pract. Epub 2021 Dec 8. PMID: 34890786

SUMMARY OF THE STUDY

A questionnaire was sent online to patients with hypothyroidism who were in the American Thyroid Association database and participate in hypothyroid support groups. Patients over 16 years-old who experience brain fog in spite of treatment were included in the study. Patients were asked what was the cause of their hypothyroidism, how often the symptom presented, what time of the day, what made it better and what other symptoms were present when feeling brain fog.

Over 5000 people who complained of brain fog while being treated for hypothyroidism participated in this study. The average age was about 50 years-old, almost all were women and about half had Hashimoto's thyroiditis as the cause of their hypothyroidism. Most participants reported having brain fog very frequently or all the time and about half reported having this symptom before the diagnosis of hypothyroidism. Over 95% of the patients reported having fatigue, forgetfulness, sleepiness and difficulty focusing when experiencing brain fog. Rest and exercise alleviated the symptoms. A small number of participants felt better when liothyronine (L-T3) was added to their levothyroxine treatment, but the improvement was a bit more common in those over 50 years old. Also, patients reported that the relationship between the patient and their doctor was particularly important in the management of brain fog.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Brain fog in hypothyroid patients was associated most frequently with fatigue, forgetfulness and difficulty focusing and often persists after normalization of the thyroid hormone levels and negatively impacts patients' lives. Important in managing patients with brain fog includes a supportive doctor-patient relationship and willingness to consider additional treatment, including adding liothyronine to the treatment regimen. In addition, lifestyle changes like more rest and exercise can help. More research is needed to better understand the relationship between brain fog and hypothyroidism and to improve current treatment regimens.

— Susana Ebner MD

HYPOTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

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

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

ABBREVIATIONS & DEFINITIONS

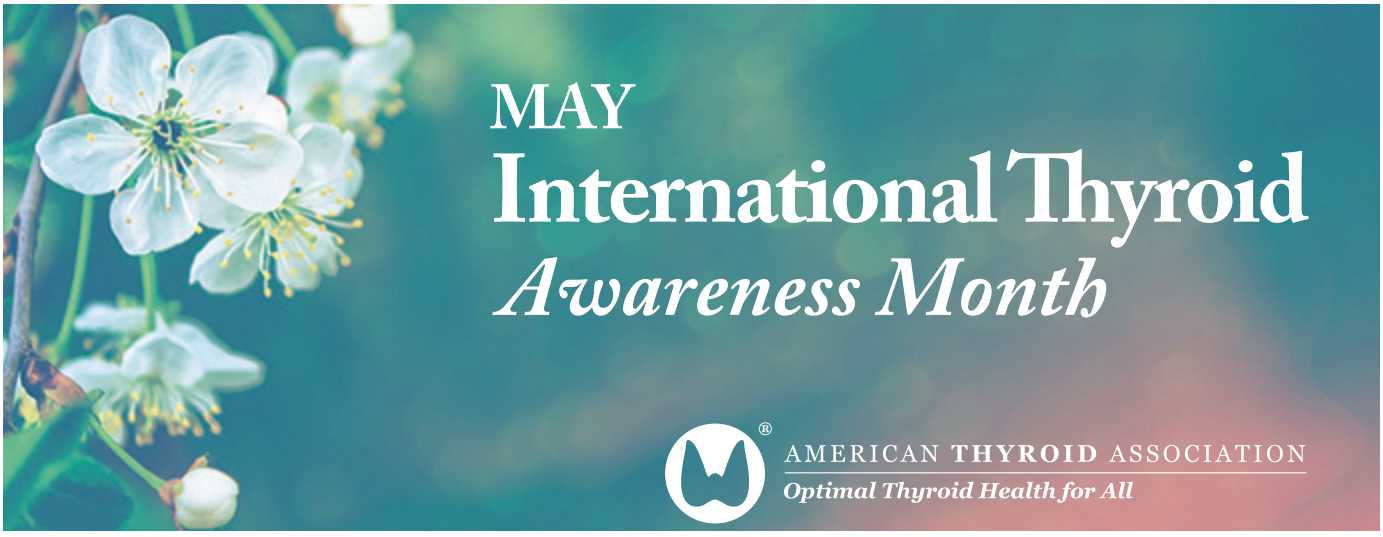
Hypothyroidism: a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

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

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

Triiodothyronine (T3): the active thyroid hormone, usually produced from thyroxine, available in pill form as Liothyronine or Cytomel™.

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.



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THYROID CANCER

What are the risks and benefits of active surveillance vs immediate surgery in low risk thyroid cancer?

BACKGROUND

Thyroid cancer is very common. Fortunately, most cases of thyroid cancer are low risk cancers with an excellent prognosis. This is especially true for small papillary thyroid cancers. The management of low risk thyroid cancers has been changing and immediate surgery is no longer the only option. Following low risk thyroid cancers (single cancers <1 cm with no evidence of spread of the cancer outside of the thyroid) with ultrasounds once or twice a year, known as active surveillance, has been shown to be a safe option. If the cancer grows or changes during active surveillance, then the next step is proceeding to surgery. In 2015, the American Thyroid Association (ATA) updated their guidelines to support active surveillance of low risk thyroid cancer as an alternative to surgery.

This study was done to provide information for further updates to these guidelines an answer two main questions: (1) what are the outcomes of performing surgery versus active surveillance of low risk thyroid cancer and (2) what are the results seen in studies that do not have a clear plan for close monitoring of these patients?

THE FULL ARTICLE TITLE

Chou R et al. 2022 Active surveillance versus thyroid surgery for differentiated thyroid cancer: A systematic review. Thyroid. Epub 2022 Jan 26. PMID: 35081743.

SUMMARY OF THE STUDY

Researchers performed an organized review of 27 publications that described studies in which patients underwent active surveillance of low risk thyroid cancer with neck ultrasound every 6-12 months then underwent surgery if there was cancer growth or patient preference. They looked at the risk of the cancer coming back (recurrence) and death, as well as growth of the cancer, need for surgery, spread of the cancer outside the thyroid, quality of life and harms of surgery.

To answer the question of performing surgery versus active surveillance, the review included studies that in sum had > 6,000 patients, from Japan, South Korea, United States, Colombia and Brazil, predominantly middle aged (44-57 years (mostly women)), and a duration of follow-up between 2-7 years. The results of these indicated that there was a similar low risk for death, spread of the cancer outside the thyroid and cancer recurrence in patients who had active surveillance versus immediate surgery. Most decisions to proceed with surgery were related to patient choice rather than cancer progression. Importantly, even though surgery may have complications, such as temporary hoarse voice or low calcium levels and an increased probability of receiving thyroid hormone replacement, no significant differences were seen in quality of life scores between both groups.

To answer the question of outcomes in studies that do not report clear protocols for active surveillance, the review included four studies in 88,654 patients, from the United States, predominantly aged 55-61 (with one study that had an average age of 72), also predominantly women with a follow up of 4.2-5.3 years. The results of these studies showed that surgery was associated with an improved all-cause and thyroid cancer related risk of death compare to no surgery.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This review suggests that there are similar risks of death, cancer recurrence and other outcomes in patients who had active surveillance versus immediate surgery as long as there are clear protocols to follow patients undergoing active surveillance. However, the limitations of the methods used in these studies does not allow strong conclusions to be made. It is important that patient understand their options regarding management of small, low risk thyroid cancer.

THYROID CANCER, continued

Overall, active surveillance may be a safe alternative to immediate surgery and a conversation between patients and their physician regarding their own goals of care are the best way to making an appropriate decision.

— Maria Brito, MD

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

Active surveillance: This refers to following low risk thyroid cancers with ultrasound imaging once or twice a year as opposed to proceeding with immediate surgery.

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 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.

Cancer recurrence: this occurs when the cancer comes back after an initial treatment that was successful in destroying all detectable cancer at some point.

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.

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THYROID CANCER

Thyroid cancer location, in addition to size and growth, is important when selecting patients for active surveillance

BACKGROUND

Small thyroid cancers are low risk in terms of the risk for recurrence and spread beyond the thyroid gland. Further, they do not appear to affect survival. In recent years, following small thyroid cancers with physical exam and ultrasound imaging over time without surgery, known as active surveillance, has been proposed as an alternative management option for these small, low risk thyroid cancers. However, the success of active surveillance depends on the selection of appropriate patients. For example, patients whose cancer is close to or invading important structures such as the windpipe (trachea) or the nerve supplying the voice box (recurrent laryngeal nerve) are not suitable candidates for active surveillance.

This study aimed to better understand the significance of the location of the cancer within the thyroid gland and minimum cancer size when selecting patients for active surveillance

THE FULL ARTICLE TITLE

Newman SK et al 2022 Invasion of a recurrent laryngeal nerve from small well-differentiated papillary thyroid cancers: Patient selection implications for active surveillance. Thyroid 32:164–169. PMID: 34714169.

SUMMARY OF THE STUDY

This was a study of 30 patients with papillary thyroid cancers 2 cm or smaller who had evidence of invasion of the recurrent laryngeal nerve found before or during surgery and who were seen at Memorial Sloan Kettering between 1986 and 2015. Reports of the operative procedure, ultrasound and other imaging techniques was studied in detail. The spread of the cancer beyond the thyroid gland and it's association with the size of the initial cancer was done as part of the study. Nerve involvement by the thyroid cancer of a nerve called the recurrent laryngeal nerve in the neck was also studied.

The majority of patients were women (76.6%) and the average age at diagnosis was 51.3 years. The average cancer size was 1.6 cm and two-thirds of the cancers with recurrent laryngeal nerve invasion were 1.5-2.0 cm. In addition to the invasion of the recurrent laryngeal nerve, invasion into the trachea, esophagus, fibroadipose tissue, strap muscles, and larynx was seen in 15 (50%), 12 (40%), 4 (13.3%), 3 (10.0%), and 3 (10%) patients, respectively. Imaging before surgery showed invasion of the recurrent laryngeal nerve in only 8 patients (26.7%). In 29 out of 30 patients, the primary cancer was on the inner side of the thyroid next to the trachea. However, the overall risk of involvement of structures in the neck beyond the thyroid gland with these cancers was low. This was especially true for tumors that were very small, that is less than 9 mm in size.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study showed that patients with thyroid cancers that are next to the trachea are not appropriate candidates for active surveillance. Moreover, only one-fourth of the patients had findings on imaging before surgery suggesting extension of the cancer beyond the capsule and invading other structures. It is encouraging that invasion of the recurrent laryngeal nerve was not observed for cancers smaller than 0.9 cm regardless of cancer location.

These findings are important to guide physicians and patients when discussing different management options for small thyroid cancers, including active surveillance. In addition to the cancer size and growth rate, the cancer's location in respect to the trachea and the recurrent laryngeal nerve should be considered in decision-making. It is also important for patients to have high-quality imaging and an experienced multidisciplinary team to carefully interpret findings, before considering active surveillance.

— Maria Papaleontiou, MD
and Vibhavasu Sharma, MD, FACE

THYROID CANCER, continued

ATA THYROID BROCHURE LINKS

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

ABBREVIATIONS & DEFINITIONS

Active surveillance: This refers to following low risk thyroid cancers with ultrasound imaging once or twice a year as opposed to proceeding with immediate surgery.

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).

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.

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THYROID CANCER

Quality of life is similar between total thyroidectomy and lobectomy in thyroid cancer survivors at 1 year after surgery

BACKGROUND

Thyroid cancer is very common. Fortunately, most cases of thyroid cancer are low risk cancers with an excellent prognosis. The management of low risk thyroid cancers has been changing, as removal only of the lobe containing the thyroid cancer (lobectomy) has become more common. Indeed, survival appears to be the same if these patients have the whole thyroid removed or just a lobectomy. Thus, the current ATA guidelines state that choice of surgery should be determined individually.

There are studies suggesting that total thyroidectomy may be associated with higher cost, higher rate of complications and lower health related quality of life outcomes (HRQOL). The previous studies are limited either because they look at treatments already performed or have a small number of participants. This study was done to evaluate HRQOL in large number of patients who were planning to have either a total thyroidectomy or lobectomy as treatment for their low risk thyroid cancer.

THE FULL ARTICLE TITLE

Chen W et al W 2021 Association of total thyroidectomy or thyroid lobectomy with the quality of life in patients with differentiated thyroid cancer with low to intermediate risk of recurrence. JAMA Surg. Epub 2021 Dec 22. PMID: 34935859.

SUMMARY OF THE STUDY

The study enrolled over 1000 patients at a single institution in China who were diagnosed with low to intermediate risk thyroid cancer and underwent either total thyroidectomy or lobectomy. They were studies using three different questionnaires of HRQOL before surgery and at 1,3, 6 and 12 months after surgery. Their TSH was also monitored after surgery. Of the patients studied, most were women (78%) with an average age of 38 years.

Total thyroidectomy was performed in 47% of patients and lobectomy in 53%. As compared with the lobectomy group, the total thyroidectomy group was more likely to be married, to have larger cancers (>4 cm), and to have a lymph node dissection and radioactive iodine therapy.

In terms of the HRQOL questionnaire:

- At 1 month after surgery, the total thyroidectomy group reported more anxiety, depression, fatigue, pain, voice change, tingling, and sexual dysfunction.
- At 3 months, the total thyroidectomy group reported more anxiety, fatigue, appetite loss, neuromuscular symptoms, voice changes, tingling, and financial difficulties.
- By 6 and 12 mo there was no difference between the two groups except for sleep disturbance in the total thyroidectomy group.

Both the total thyroidectomy and lobectomy groups had a higher rate of depression and anxiety as compared to evaluation before surgery. TSH was better controlled in the lobectomy group even at 12 mo after surgery. Patient satisfaction between the two groups was unchanged at 1 year after surgery.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study concludes that quality of life outcomes are similar by 6-12 mo after total thyroidectomy compared to lobectomy. Thus, a decision regarding extent of surgery should not be dependent upon this factor. The described changes in HRQOL over the year after surgery can help patients understand what to expect after surgery and allow for reassurance from providers about the course of symptoms over the year.

— Marjorie Safran, 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

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*.

Lobectomy: surgery to remove one lobe of the thyroid.

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.

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).

HRQOL: health related quality of life

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HYPOTHYROIDISM

What is the likelihood of hypothyroidism after thyroid lobectomy in children?

BACKGROUND:

Thyroid surgery is done for both cancer and non-cancerous (benign) conditions. Thyroid surgery can remove the whole thyroid (total thyroidectomy) or just a lobe (lobectomy) if that is all that is needed. For a variety of reasons, thyroid lobectomy is recognized to be preferred over removing the entire thyroid gland when possible. The most important reason is that patients many not need to be on life-long thyroid hormone replacement if they undergo a lobectomy. As such, there is an increasing number of adults and children who undergo this procedure. Although the majority of adult patients continue to have normal thyroid function after lobectomy, it is known that 15-30% of adults develop hypothyroidism and need to start thyroid hormone. Despite the fact that the frequency of lobectomy is also increasing in children, there is limited data regarding the risk of hypothyroidism in children and teenagers after having this operation.

This study was done to increase understanding of the risk of hypothyroidism in children after having a thyroid lobectomy in order to improve counseling to patients and their families before the surgery and to recommend management after the procedure.

THE FULL ARTICLE TITLE:

Baran JA et al 2021 Clinical course of early postoperative hypothyroidism following thyroid lobectomy in pediatrics. Thyroid 31:1786–1793. PMID: 34714171.

SUMMARY OF THE STUDY:

This study was done by reviewing medical charts of all patients younger than 19 years of age who underwent a thyroid lobectomy at Children's Hospital of Philadelphia between 2004 and 2020. Patients who were noted to have had a second surgery to remove the remaining lobe within 12 months of the initial surgery, who did not have record of thyroid blood tests after surgery, who had Hashimoto's thyroiditis, or who were prescribed levothyroxine even if thyroid levels were normal after surgery were excluded from the analysis.

A group of 110 patients met criteria for inclusion in study. They were separated in groups according to the TSH level obtained after surgery. These groups were : Normal: (TSH 0.45-4.5), Subclinical hypothyroidism (TSH 4.51-10.0); overt hypothyroidism (TSH >10) or hyperthyroidism (TSH <0.45). Transient (short-lived) hypothyroidism was defined as having a temporary elevation of TSH (>4.5), recovering to normal within 12 months after surgery.

The study included 94 female and 16 male patients with an average age of 14.9 years. Transient hypothyroidism developed in 17.5% of patients and permanent hypothyroidism in 7.8%. The majority of patients who required levothyroxine therapy began treatment in the first post-operative month although 2 patients needed to start treatment after the 12 month mark. Patients who had a suppressed TSH prior to surgery because of an overactive thyroid nodule had a higher risk of developing hypothyroidism after surgery.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that the majority of children who undergo a lobectomy will have normal thyroid hormone levels within 12 months after surgery, Based on these findings, the authors suggest evaluating thyroid function at 4-6 weeks after a lobectomy, and every 3 months thereafter up to 12 months after surgery for those patients who have a TSH in the subclinical range (>4.5 and <10). Levothyroxine should be started if TSH remains in the subclinical range or continues to trend upwards after 12 months. A shorter length of observation with initiation of treatment should be pursued for patients with TSH >10.0 after lobectomy. This is important for patients to discuss with their providers when evaluating surgical treatment options for thyroid disease in children.

— Jessie Block-Galarza, MD

HYPOTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

Thyroid Surgery: https://www.thyroid.org/thyroid-surgery/
Hypothyroidism (Underactive): https://www.thyroid.org/hypothyroidism/

ABBREVIATIONS & DEFINITIONS

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

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.

Lobectomy: surgery to remove one lobe of the thyroid.

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 or lobectomy.

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THYROID CANCER

Patients treated with radioactive iodine for thyroid cancer in childhood or young adulthood may be at increased risk for developing a second cancer

BACKGROUND

Thyroid cancer is the most common endocrine cancer seen in children and young adults. In United States, it is the second most common cancer in people younger than the age of 45 years. Until recent years, these cancers were routinely treated with removing the thyroid gland followed by radioactive iodine therapy to prevent the cancer from coming back. As our knowledge about these cancers grew, it was found that majority of these cancers already had very low risk of causing death, so for many patients radioactive iodine therapy did not really offer much benefit.

In 2015, American Thyroid Association guidelines recommended not to use radioactive iodine therapy treatment after surgery for cancers less than 1 cm. Currently, radioactive iodine therapy is recommended only for patients that have higher risk of being harmed by the cancer, for example those who have larger cancers extending outside of the thyroid or if the cancer has already spread to lymph nodes. Whether this approach would also be better for pediatric patients is controversial. Children diagnosed with thyroid cancer have a higher risk of having the thyroid cancer coming back years later compared to adults.

There has also been growing concern about unwanted effects of radioactive iodine therapy, such as risk of developing other cancers. This concern is especially for children and young adults since radiation has a stronger effect on younger tissue and life expectancy is much longer providing enough time for the harmful effects to show up. There have been studies that reported increased risk of leukemia and solid organ cancers, like cancers of salivary glands, kidneys, or breast. However, past studies were sometimes too small or did not follow the patients for a long time.

The aim of this study was to find out whether radioactive iodine therapy for thyroid cancer in childhood or young adulthood is associated with increased risk of developing a second cancer other than thyroid cancer.

THE FULL ARTICLE TITLE

Pasqual E et al 2022 Association between radioactive iodine treatment for pediatric and young adulthood differentiated thyroid cancer and risk of second primary malignancies. J Clin Oncol. Epub 2022 Jan 19. PMID: 35044839.

SUMMARY OF THE STUDY

The study used information from 9 US SEER cancer registries and included patients who were diagnosed with thyroid cancer before age 45 between 1975 and 2017. Patients whose cancer had already spread outside of thyroid at the time of diagnosis were excluded. Patients who later developed solid organ cancers (other than thyroid) and blood-related cancers (leukemia, lymphoma and myeloma) were identified.

There were 36,311 patients diagnosed with thyroid cancer, 45% of whom had received radioactive iodine therapy. Radioactive iodine therapy was used more often in patients younger than 15 years of age. Patients were followed on average for 15 years and up to 43 years. Radioactive iodine therapy was associated with a 51% increased risk of total blood-related cancers including leukemia and 23% increased risk of solid cancers. The risk increased with time after the diagnosis, particularly over 20 years. The most common second cancer was breast cancer and had 1.46-fold increased risk more than 20 years after radioactive iodine therapy. The researchers estimated that 6% of all solid cancers, 5% of breast cancers, 14% of blood-related cancers that were found in thyroid cancer survivors may be attributable to radioactive iodine therapy.

THYROID CANCER, continued

The cumulative incidence of a second solid cancer at 20 years after the diagnosis of DTC was 5.6% for radioactive iodine therapy treated patients and 5% for patients who were not treated with radioactive iodine therapy.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that radioactive iodine therapy for thyroid cancer diagnosed in children and young adults less than 45 years age was associated with increased risk of leukemia and several solid cancers, especially more than 20 years after exposure. However, a second cancer was relatively rare in thyroid cancer survivors. These findings support the recommendations in the recent guidelines to avoid radioactive iodine therapy in patients who are at very low risk of being harmed from thyroid cancer. In contrast, patients with high-risk thyroid cancers will still benefit from radioactive iodine therapy and they should not be scared to receive this treatment. It is important to weigh the risks of radioactive iodine therapy against benefits for each individual patient with thyroid cancer. Patients should have an open discussion with their physicians to understand their specific situation and have a clear treatment and long-term care plan including regular medical check-ups after completing the initial treatment.

— Ebru Sulanc, MD

ATA THYROID BROCHURE LINKS

Pediatric Differentiated Thyroid Cancer: https://www.thyroid.org/pediatric-differentiated-thyroid-cancer/

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

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

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*).

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/

Second primary cancer: A new cancer different from the original one in a person with a history of cancer

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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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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

Thyroid Cancer Canada
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416-487-8267
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Thyroid Federation International
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tfi@thyroid-fed.org

AMERICAN THYROID ASSOCIATION
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