Volume 14 | Issue 8 | August 2021

Clinical Thyroidology® for the Public

AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

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Editor's Comments

Happy summer and 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.

While the Covid-19 pandemic is winding down, it 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/)

August is Pregnancy Awareness Month.

In this issue, the studies ask the following questions:

- What factors predict remission in Graves' disease?
- What are the risk factors for the development of thyroid eye disease?
- How frequently is lobectomy done for low risk thyroid cancer?
- How common is it to require thyroid hormone therapy after a lobectomy for low risk thyroid cancer?
- Is the death rate in thyroid cancer increased in older patients?
- How often are guidelines followed in the evaluation of thyroid nodules in children?

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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GRAVES' DISEASE

Age and sex predict severity, remission, and recurrence in Graves' disease

BACKGROUND

Graves' disease is the most common cause of hyperthyroidism in the United States. It affects most commonly younger women. Graves' disease is an autoimmune disorder, meaning that it is caused by antibodies that get confused and attack the thyroid, turning it on and causing the thyroid to be overactive. There are three ways to treat Graves' disease: 1) surgical removal of the thyroid gland, 2) destroying the thyroid with radioactive iodine therapy or 3) antithyroid medications (Methimazole and PTU). Surgery and radioactive iodine therapy are considered "definitive therapy" because they treat hyperthyroidism by causing permanent hypothyroidism, which is then managed with thyroid hormone therapy. In contrast, antithyroid medications are given with the goal of causing the Graves' disease to go into remission, allowing the medications to be stopped and the thyroid function to return to normal.

Because there is a wide range in the severity of Graves' disease and the response to medications, identifying clinical factors that may predict remission with medications can help guide doctors and patients when deciding on the most appropriate therapy for each individual. This study was done to investigate how age and sex of patients affect the severity of the Graves' disease, the chances of achieving remission and the risk of recurrence once treatment is stopped.

THE FULL ARTICLE TITLE

Suzuki N et al. Does Age or Sex Relate to Severity or Treatment Prognosis in Graves' Disease? Thyroid Epub 2021 Apr 21. PMID: 33882721.

SUMMARY OF THE STUDY

This study was done by reviewing data from patients who were retrospectively identified as newly diagnosed with Graves' Disease at Ito Hospital in Japan from January 2005 to June 2019. Graves' disease was diagnosed by the presence of hyperthyroidism with positive antibodies or an elevated thyroid scan result. Data collected included free T4 and free T3 levels, along with thyroid gland volume (obtained by ultrasound). Patients were grouped into 10-year age groups, ranging from 10-19 years (10's), 20-29 years (20's) and so on. The patients younger than 10 and older than 80 were excluded because there were small numbers in each group.

A group of 2749 patients (2244 females, 505 males) diagnosed with Graves' disease between January 2009 and December 2020 with available data for follow up of 12 months or more were chosen for analysis of prognosis. Within this group, 2191 were treated with antithyroid medications. These medications were discontinued if the serum TSH was within normal range for > 6 months on a very low dose of antithyroid medications. Remission was defined as maintaining normal thyroid hormone levels for > 1 year after stopping the medications.

In this Japanese group of patients studied, men were found to have higher severity of hyperthyroidism due to Graves' disease, with higher serum thyroid hormone concentrations and larger thyroid volumes. Severity of hyperthyroidism declined with age in both sexes. A total of 1187 (53%) of women achieved remission after a course of antithyroid medications as compared to 204 (40%) of men. Younger patients had a higher risk of recurrence. Sex and smoking did not have a significant effect on the risk for recurrence.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that the likelihood of remission of Graves' disease after a trial of antithyroid medications is higher than expected and is more common in women and less common in younger patients. One limitation of the study is that the Japanese diet contains a lot of iodine which likely impacts dose of medications required

GRAVES' DISEASE, continued

and rates of remission. However, this study is important for patients because it adds more information about treatment response and chances for remission. It helps empower patients and doctors when deciding on the most appropriate treatment for each individual.

— Jessie Block-Galarza, MD

ATA THYROID BROCHURE LINKS

Hyperthyroidism in Pregnancy: https://www.thyroid.org/hyperthyroidism-in-pregnancy/

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

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).

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.

Methimazole: an antithyroid medication that blocks the thyroid from making thyroid hormone. Methimazole is used to treat hyperthyroidism, especially when it is caused by Graves' disease.

Propylthiouracil (PTU): an antithyroid medication that blocks the thyroid from making thyroid hormone. Propylthiouracil is used to treat hyperthyroidism, especially in women during pregnancy.

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).

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GRAVES' DISEASE

Risk factors for the development of thyroid eye disease in patients with Graves' disease

BACKGROUND

Graves' disease is the most common cause of hyperthyroidism in the United States. Up to 50% of patients with Graves' disease develop involvement of the eye (thyroid eye disease - TED). While TED is most often seen in patients with Graves' disease, it also can be seen in patients with Hashimoto's thyroiditis. TED results from inflammation of the eyes, eye muscles and the surrounding tissues. Symptoms of TED can include dry eyes, red eyes, bulging of the eyes and double vision. The cause of TED is likely related to the antibodies that cause Graves' disease that also bind to receptors on cells in the tissues around the eye and cause them to increase in size and number. Fortunately, the vast majority of patients with TED have mild disease requiring minimal or no treatment. However, moderate to severe TED is very serious and can significantly affect the appearance of the eyes and cause loss of vision. For severe TED, treatment options are limited.

A number of factors are identified that increase the risk of developing TED, including smoking, treatment with radioactive iodine, advanced age and poorly controlled hyper-and hypothyroidism. This study was performed to see if there were other factors associated with TED and, in particular, with progression to severe TED.

THE FULL ARTICLE TITLE

Lee, M et al 2020 Risk factors of thyroid eye disease. Endocr Pract 27:245–253. PMID: 33655885

SUMMARY OF THE STUDY

The study was done by identifying articles previously published in established databases that were original studies, written in or translated into English and examined the risk factors for TED. Data was extracted from these articles and study populations were split into those with and without TED and those with active vs inactive TED. Information was examined regarding demographics (ie age, sex), characteristics of the study, patient comorbidities (other illnesses) and the details of the patients Graves' disease.

The authors were able to extract data from 56 or 2228 articles initially identified. Of this group 14,052 had Graves' disease without TED and 6051 had TED. Ages ranged from 28.6-50.9 years with TED occurring in 46% in women and 49% in men.

They confirmed that patients with TED were on average older than patients without TED, but found no difference in sex, family history, ethnicity or other illnesses.

When comparing patients with active vs inactive TED, again age was a risk factor as well as male sex and smoking history. In addition those with active TED were more likely to be current smokers than those with inactive TED (OR 2.78).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study confirms that cigarette smoking and age are significant risk factors for developing TED. These factors as well as male sex were also associated with developing active TED. Since the major, modifiable risk factor is smoking, all patients with Graves' disease who smoke should be encouraged to stop and those with TED should be aggressively counselled in smoking cessation.

— Marjorie Safran, MD, FACE

ATA THYROID BROCHURE LINKS

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

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

GRAVES' DISEASE, continued

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.

Thyroid eye disease (TED): also known as Graves ophthalmopathy. TED is most often seen in patients with Graves' disease but also can be seen with Hashimoto's thyroiditis. TED includes inflammation of the eyes, eye muscles and the surrounding tissues. Symptoms include dry eyes, red eyes, bulging of the eyes and double vision.

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THYROID CANCER

Do surgeons support lobectomy for low-risk papillary thyroid cancer?

BACKGROUND

Thyroid cancer is usually initially treated by surgery. This can either be a lobectomy (removal only the thyroid lobe containing the cancer) or a total thyroidectomy (removal of the entire thyroid). Given the excellent prognosis of thyroid cancer, in recent years thyroid experts, high volume thyroid surgeons and national guidelines have recommended for a 'less is more' approach to thyroid cancer surgery. This means doing a lobectomy as opposed to a total thyroidectomy for low risk thyroid cancers, which are identified by being small (<4 cm), confined to the thyroid gland and no evidence for spread to the outside the thyroid to the lymph nodes in the neck. However, much of thyroid surgery in the US is performed by low volume surgeons, which may not be aware of newer guidelines and/or may not have the experience or knowledge of the disease to adapt this newer approach. Therefore, the authors of the study surveyed surgeons across the country that had performed thyroid surgery in recent years to examine their attitudes and performance of type of surgery for low risk thyroid cancer.

THE FULL ARTICLE TITLE

McDow AD et al 2021 Thyroid lobectomy for low-risk papillary thyroid cancer: A national survey of low- and high-volume surgeons. Ann Surg Oncol.

SUMMARY OF THE STUDY

A survey was made available to 1500 actively practicing physicians. Of these, 33.3% responded and 320 were analyzed (because the rest were not from currently practicing surgeons performing thyroidectomy). The responses were from 150 general surgeons (46.9%) and 170 otolaryngologists (ears, nose and throat surgeons) (53.1%). Surgeons were given various clinical cases and asked what surgery they would perform and their beliefs of different surgerys. Low–volume surgeons were defined as doing <25 operations per year and 64% of those that responded were categorized as low-volume surgeons. They were much less likely to recognize that a lobectomy was supported by current guidelines and evidence for treatment of thyroid cancer. High volume surgeons reported that thyroid lobectomy was under-utilized, but most reported they would still perform a total thyroidectomy instead of lobectomy for a low risk cancer.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Knowledge and translation of updated guidelines is poor, meaning that thyroid experts are doing a poor job educating all potential surgeons performing thyroid surgery in the community about updates in the treatment of low risk thyroid cancer. This is important for patients to understand that the surgeon's recommendation of treatment may be based on personal experience and not updated knowledge or current updated national guidelines and studies. Most importantly, patient's needs to be their own advocates. The best course of action would be to consult with a high volume surgeon, but that is not always possible, and this study shows that many of them also have their only ideas based on their personal experiences. Therefore, the patient may also need to take it upon themselves to ask questions and self-educate as best as possible the options available to them.

— Melanie Goldfarb, MD

ATA THYROID BROCHURE LINKS

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

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

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).

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.

Total thyroidectomy: surgery to remove the entire thyroid gland.

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THYROID CANCER

Initiation of thyroid hormone therapy is common following thyroid lobectomy for low-risk thyroid cancer

BACKGROUND

Thyroid cancer is usually initially treated by surgery. This can either be a lobectomy (removal only the thyroid lobe containing the cancer) or a total thyroidectomy (removal of the entire thyroid). Many thyroid cancers are low risk (small, confined to the thyroid gland and no evidence for spread to the outside the thyroid to the lymph nodes in the neck) and many patients have do fine after only a lobectomy. One advantage of a thyroid lobectomy is the possibility the patient will maintain normal thyroid function from the remaining lobe and will not need lifelong thyroid hormone therapy via medications. However, many of the studies indicating patients will not need thyroid hormone after lobectomy included patients who did not have thyroid cancer. This is an important distinction as one of the goals after thyroid surgery for thyroid cancer is often to keep the TSH level in the low normal range. Thus, after a lobectomy for thyroid cancer, thyroid hormone therapy may be indicated even if the TSH level is in the normal range. This study was performed to see how often patients who had a lobectomy for low-risk thyroid cancer needed thyroid hormone after the surgery and why the treatment was started.

THE FULL ARTICLE TITLE

Schumm MA et al. 2021 Frequency of thyroid hormone replacement after lobectomy for differentiated thyroid cancer.

SUMMARY OF THE STUDY

This was a study of patients taken care of at one medical center who had a thyroid lobectomy and a low-risk thyroid cancer removed with that surgery. Patients who were already on thyroid hormone before surgery or started on thyroid hormone before the first TSH test, those that were pregnant or had another tiny thyroid cancer not related to the primary nodule/cancer for which the surgery was performed were not included in the study.

A total of 115 patients were included in the study and 70% were women. The average age was 50 years old and 73% had a TSH level before surgery of <2 (the upper cut off TSH desired for patients with active or a history of thyroid cancer). Patient charts were followed for an average of 2.6 years.

A total of 84% of patients had a TSH >2 after surgery, which was an average of 39 days after surgery. Compared to patients with a postoperative serum TSH >2 mIU/L, patients with a serum TSH ≤2 mIU/L were younger, had lower TSH levels before surgery, and were more likely to have cancers ≥1 cm. Overall, 68% of patients with a TSH >2 after surgery were started on thyroid hormone.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The majority of patients who had a thyroid lobectomy for low-risk thyroid cancer had a post-operative TSH >2 and most of those patients were started on thyroid hormone. This is important to patients because they should be aware that it is likely they will need at least a small dose of thyroid hormone after thyroid lobectomy as the remaining thyroid lobe will likely not make enough thyroid hormone to maintain a TSH level <2.

— Joshua Klopper, 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

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.

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.

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THYROID CANCER

Competing Risks of Death in Older Thyroid Cancer Patients

BACKGROUND

Most types of thyroid cancer have an excellent prognosis, with a 10 year survival of 85-90%. The exception to this is the rare anaplastic thyroid cancer, which represents less than 2% of all thyroid cancers but is very aggressive, with a 10-year survival of <5%. Thus, most thyroid cancer patients who do not have anaplastic cancer die of other causes and not related to the thyroid cancer. Further, more than 70% of all thyroid cancer deaths occur in patients who are 65 years and older, with an average age of 73 years. Older adults with thyroid cancer also have a higher risk of developing treatment-related complications, including complications from thyroid surgery, as well as heart complications and osteoporosis (thinning of the bones) due to the need to partially suppress TSH levels with thyroid hormone therapy. This age group has a higher risk of dying from other diseases as well, such as heart disease and chronic lung disease. Given the health and economic impact of thyroid cancer on older adults, the decision regarding the extent of the diagnostic tests and treatment needs to take into consideration the patients' age, the burden of other medical conditions, and life expectancy in addition to the severity of the thyroid cancer in order to provide a more personalized patient-centered care.

The objective of this study was to determine whether older adults with thyroid cancer are more likely to die from thyroid cancer or other diseases, and determine factors associated with each.

THE FULL ARTICLE TITLE:

Papaleontiou M et al. 2021 Competing causes of death in older adults with thyroid cancer. Thyroid. Epub 2021 Mar 25. PMID: 33764188.

SUMMARY OF THE STUDY:

This study examined two American databases: SEER (Surveillance, Epidemiology, and End Results), which provides information on cancer statistics for approximately 35% of the U.S. population; and Medicare health services claims, which provide billing information and diagnoses. More than 97% of older adults (aged 65 years and older) are eligible to enroll in Medicare, which covers claims for health services. This SEER–Medicare database was used to identify all patients diagnosed with any type of thyroid cancer (papillary, follicular, Hürthle-cell, medullary, anaplastic, other) at age 66 years or older between 2000 and 2015. Patients with any previous cancer diagnosis were excluded.

The study included 21,509 patients with an average age of 72 years, the majority being female (70%) and White (80%). The duration of follow-up varied based on the type of thyroid cancer with a average follow-up of 50 months. As expected, the majority of thyroid cancers were papillary thyroid cancer (76%). Overall, 2644 (12.3%) of patients died from their thyroid cancer versus 4168 (19.4%) who died from other causes during the survey period.

A higher proportion of patients with the common types of thyroid cancer died from diseases other than thyroid cancer, this trend becoming more apparent over time. Patients with medullary thyroid cancer were more likely to die from their cancer within the first 6.25 years, while death from other causes became more likely later. Patients with anaplastic thyroid cancer had high mortality rates, with the highest rates of death in the first year after diagnosis.

Several factors were associated with death from thyroid cancer, including the thyroid cancer type other than papillary (especially anaplastic cancer), larger cancer size (especially tumors larger than 4 cm), and SEER cancer stage (the presence of regional or distant metastases). Male sex, Black and other pre-existing conditions (heart disease, chronic lower respiratory disease, Alzheimer's disease and diabetes mellitus) were associated with death from other causes. Increasing age was associated with both increased death from thyroid cancer and death from other causes.

THYROID CANCER, continued

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In adults of age 66 years and older with thyroid cancer, the likelihood of dying from thyroid cancer correlated with cancer characteristics, including cancer type, size, and stage, while the likelihood of dying from other diseases correlated with patient characteristics, including other medical problems. These results emphasize the importance of evaluating which older patients are expected to benefit from thyroid cancer diagnosis and treatment, especially in the context of other medical problems. This evaluation is essential to better understand the patient's prognosis and provide personalized patient-centered care. For older patients with lower-risk thyroid cancer and multiple other diseases, thyroid cancer is very unlikely to shorten their lives and the benefits of an aggressive treatment may be minimal.

— Alina Gavrila, MD, MMSc

ATA THYROID BROCHURE LINKS

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

Medullary Thyroid Cancer: https://www.thyroid.org/medullary-thyroid-cancer/

Anaplastic Thyroid Cancer - https://www.thyroid.org/anaplastic-thyroid-cancer/

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).

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

Hurthle-cell cancer: a type of follicular thyroid cancer.

Medullary thyroid cancer (MTC): a relatively rare type of thyroid cancer that often runs in families. Medullary cancer arises from the C-cells in the thyroid.

Anaplastic thyroid cancer (ATC): a very rare but very aggressive type of thyroid cancer. In contrast to all other types of thyroid cancer, most patients with anaplastic thyroid cancer die of their cancer and do so within a few years.

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.

SEER: Surveillance, Epidemiology and End Results program, a nation-wide anonymous cancer registry generated by the National Cancer Institute that contains information on ~35% of the United States population. Website: http://seer.cancer.gov/

Cancer metastasis: spread of the cancer from the initial organ where it developed to other organs, such as the lungs and bone.

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THYROID NODULES

An evaluation of the management of thyroid nodules in children

BACKGROUND

Thyroid nodules are an abnormal growth of thyroid cells that form a lump within the thyroid. Thyroid nodules can be benign (not cancer) or malignant (cancer). While thyroid nodules are very common in adults, occurring in up to 50% of individuals, they are uncommon in children. However thyroid nodules have a higher rate of cancer in children than in adults. Further, thyroid cancer in children tends to be more aggressive and can be more advanced compared to in adults. The American Thyroid Association (ATA) developed guidelines in 2015 for the management of pediatric (childhood) thyroid nodules. The purpose of this study is to analyze the management of thyroid nodules in children and understand the clinical practice variations or differences when comparing clinical practices to the 2015 ATA guidelines.

THE FULL ARTICLE TITLE

Al Maawali A et al 2020 The thyroid nodules in kids study (ThyNK study): An evaluation of clinical practice variation. J Pediatr Surg 55:950–953. PMID: 32081357.

SUMMARY OF THE STUDY

A study of pediatric patients presenting with a thyroid nodule at a single pediatric center from 2007 to 2017 was performed. Patients up to 18 years of age with a solitary or dominant thyroid nodule were identified using a chart-based patient registry at the British Columbia Children's Hospital. Age at presentation, mode of referral, presenting symptom, and relevant history were collected. Blood thyroid function tests (blood tests used to measure how well the thyroid gland is working) done before surgery, thyroid ultrasound, neck imaging with a computed tomography (CT), thyroid scan, and thyroid biopsy results were reviewed. The ATA pediatric guidelines for thyroid nodules were reviewed and variations from the ATA recommendations were identified.

A total of 86 patient records were reviewed. The average age at presentation was 14.4 years and 59 (68.6%) were female. Of all patients presenting with thyroid enlargement (86 patients), a total of 44 thyroid biopsies were completed. Thyroid stimulating hormone (TSH) was the most commonly ordered blood test at presentation. Of the 47 patients (55%) who had thyroid surgery, 14 (30%) had thyroid cancer. Of these 47 patients who underwent surgery, 7 patients (15%) did not have a neck ultrasound prior to thyroid surgery and 12 (26%) did not have a biopsy before surgery. All patients with a low TSH had a thyroid scan completed. One patient with high/normal TSH did not have a pre-surgery biopsy completed. Patients with thyroid cancer were treated with lobectomy (removal of 1 thyroid lobe) or total thyroidectomy (removal of the entire thyroid) based on specific cancer type/pathology. Variations from the ATA pediatric guidelines were associated with complex presentations, surgical decisions to perform surgery without biopsy results or imaging and uncommon diagnoses.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The ATA pediatric guidelines provide valuable recommendations for the management of thyroid nodules in children, however there are limitations. The rate of cancer in children is indeed higher than in adults. Variations from the ATA guidelines exist because of complexity of cases and differences amongst patients.

— Priya Mahajan, MD

THYROID NODULES, continued

ATA THYROID BROCHURE LINKS

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

Fine Needle Aspiration Biopsy of Thyroid Nodules in Children and Adolescents: https://www.thyroid.org/fna-thyroid-nodules-children-adolescents/

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

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

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

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 scan: this imaging test uses a small amount of a radioactive substance, usually radioactive iodine, to obtain a picture of the thyroid gland. A "cold" nodule means that the nodule is not functioning normally. A patient with a "cold" nodule should have a fine needle aspiration biopsy of the nodule. A "functioning", or "hot", nodule means that the nodule is taking up radioactive iodine to a degree that is either similar to or greater than the uptake of normal cells. The likelihood of cancer in these nodules is very low and a biopsy is often not needed.

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.

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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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.

ATA® *Optimal Thyroid Health for All*

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

Thyroid Cancer Canada
www.thyroidcancercanada.org
416-487-8267
info@thyroidcancercanada.org

Thyroid Federation International
www.thyroid-fed.org
tfi@thyroid-fed.org

AMERICAN THYROID ASSOCIATION
ATA | Founded 1923

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