american thyroid association

Clinical Thyroidology for the Public

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www.thyroid.org

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CLINICAL **THYROIDOLOGY** FOR THE **PUBLIC**
A publication of the American Thyroid Association
VOLUME 9 • ISSUE 4 • APRIL 2016

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 will be providing summaries of research studies that were discussed in a recent issue of *Clinical Thyroidology*, a publication of the American Thyroid Association for physicians. These summaries are present in lay language to allow the rapid dissemination of thyroid research to the widest possible audience. This means that you are getting the latest information on thyroid research and treatment almost as soon as your physicians. As always, we are happy to entertain any suggestions to improve *Clinical Thyroidology for the Public* so let us know what you want to see.

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*, *ThyCa: Thyroid Cancer Survivors Association*, *Thyroid Cancer Canada and Thyroid Federation International*.

April is Hashimoto's Disease Awareness Month.

In this issue, the studies ask the following questions:

1. Can thyroglobulin levels provide a measurement of iodine nutrition in populations?
2. Can thyroglobulin antibodies predict thyroid cancer recurrence?
3. Can ultrasound help determine the risk of cancer in nodules discovered on FDG PET-CT scans?
4. What is the risk of extension of large goiters into the chest
5. Does subclinical thyroid disease increase the risk for blood clots?

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, FACE

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IODINE DEFICIENCY

Thyroglobulin blood testing in adults can be used as a population measure of adequate iodine nutrition

BACKGROUND

Iodine is a common micronutrient from the diet. It is important for the normal functioning of thyroid hormones, which are vital for brain development in infants. However, a person's individual iodine status cannot be determined, since there are significant changes each day. Instead, the iodine status of a group of people is determined, which is important for monitoring if certain populations have too little or too much iodine intake (too much iodine intake can also be harmful to the thyroid).

One method of monitoring the iodine status of a population group is measuring iodine levels in the urine, but the collection of urine may be challenging in some situations. Another method of assessing iodine status of a group of people is the measurement of thyroglobulin, a protein made by the thyroid gland, from blood testing. Higher thyroglobulin levels suggest that the thyroid is working harder to compensate for low iodine levels and may be an indication of iodine deficiency. In contrast, lower thyroglobulin levels show that the thyroid is compensating less and thus corresponds to adequate/improved iodine nutrition. Only a drop of blood is needed and can be dried on a filter paper for testing, which may be easier than the urine testing. In children, blood thyroglobulin levels are routinely used to monitor the iodine status on the population level. This study was done to see if blood thyroglobulin levels can also be used to monitor the iodine status of a population among adults.

THE FULL ARTICLE TITLE

Feei Ma Z et al. Iodine supplementation of mildly iodine deficient adults lowers thyroglobulin: a randomized controlled trial. J Clin Endocrinol Metab. 2016 Feb 18:jc20153591. [Epub ahead of print]

SUMMARY OF THE STUDY

This study was of 112 adults between the ages of 18-40 in New Zealand who were asked to take either iodine tablets (as 150 mcg of potassium iodide) or placebo (sugar) pills daily for 24 weeks. All adults who were included were screened and confirmed to have mildly low iodine levels in the urine to begin with. All participants provided urine and blood sample before, during, and at the end of the study period. The urine was measured for iodine, and the blood was measured for thyroglobulin. The blood was also measured for the thyroid hormones in order to assess thyroid function.

In the group who were given the iodine supplement, their iodine levels in the urine had more than doubled (from 79 mcg/L to 178 mcg/L) by the end of the 24 week period. Among the group who took the placebo pills, there was essentially no change in the urine iodine levels. Correspondingly, when compared to the placebo group, the iodine-supplemented group also had blood thyroglobulin levels decrease by 12% at 8 weeks, 20% by 16 weeks, and 27% by the end of the study at 24 weeks. This decreasing trend in blood thyroglobulin levels confirms that the iodine supplementation improved the iodine deficiency (as also confirmed by the increased urine iodine levels) over the study period.

Neither of the two groups had any abnormalities or significant changes in the thyroid hormone levels in the blood, which are not surprising, as they reflect changes in iodine status over a much longer timeframe.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study in adults confirms the trend in children that improved iodine nutrition is able to decrease blood thyroglobulin levels. Thus, blood thyroglobulin levels may be a potential way to monitor iodine status in large populations of adults. This is important in areas of the world in which there is insufficient iodine naturally in the diet, particularly in women of childbearing age as a way to safeguard against brain damage in infants and young children.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

Iodine Deficiency: http://www.thyroid.org/iodine-deficiency

IODINE DEFICIENCY, continued

ABBREVIATIONS & DEFINITIONS

Iodine: An element found naturally in various foods that is important for making thyroid hormones and for normal thyroid function. Common foods high in iodine include iodized salt, dairy products, seafood, and some breads.

Thyroglobulin: A protein made only by thyroid cells. Lower thyroglobulin levels show that the thyroid is compensating less and thus corresponds to adequate or improved iodine nutrition.

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THYROID CANCER

Falling levels of thyroglobulin antibody after treatment for thyroid cancer predicts no recurrence

BACKGROUND

Thyroglobulin is a protein made only by thyroid cells, both normal and cancerous. When all thyroid tissue is destroyed in patients with thyroid cancer after surgery and radioactive iodine therapy, thyroglobulin can be used as a thyroid cancer marker. Persistent levels of thyroglobulin indicate that there is still thyroid cells in the body and rising thyroglobulin levels indicate recurrence of the thyroid cancer, most commonly after spread of the cancer to the lymph nodes in the neck. Undetectable thyroglobulin levels usually indicate remission of the thyroid cancer. However, antibodies to thyroglobulin exist in up to 25% of these patients and can interfere with the measurement of thyroglobulin in the blood. Thyroglobulin antibodies attack the thyroid instead of bacteria and viruses and are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States. These antibodies usually disappear once all thyroid tissue is removed successfully. The goal of this study was to follow the change in thyroglobulin antibodies in patients with thyroid cancer and correlate the levels with recurrence of the thyroid cancer.

THE FULL ARTICLE TITLE

Rosario PW. et al Comparison of antithyroglobulin antibodies concentrations before and after ablation with ^{131}I as predictor of structural disease in differentiated thyroid carcinoma patients with undetectable basal thyroglobulin and negative neck ultrasonography. Thyroid. February 2, 2016 [Epub ahead of print].

SUMMARY OF THE STUDY

This was a study that included 116 patients with thyroid cancer who had surgery followed by radioactive iodine therapy in Brazil. The thyroglobulin and thyroglobulin antibodies were measured in the blood before radioactive iodine therapy and 8-12 months later. The patients were then divided into 3 groups according to the change in thyroglobulin antibodies before and after radioactive iodine therapy: a decrease >50% (group A), a decrease <50% (group B) and an increase of >10% (group C). These patients were then followed with measurements of thyroglobulin, thyroglobulin antibodies and imaging studies for up to 140 months.

The study found that recurrence of the thyroid cancer was found in 1.8%, 14.3%, and 24% of patients in groups A, B, and C, respectively. Specifically, among patients with undetectable thyroglobulin, negative ultrasound, and positive thyroglobulin antibodies after radioactive iodine therapy, the frequency of recurrent thyroid cancer was <2% in patients with >50% reduction in thyroglobulin antibodies at 1 year of follow-up. Additionally, 25% of those patients with a significant increase in thyroglobulin antibodies (>10%) were found to have recurrence at 1 year of follow-up.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study has important implications in the treatment and follow-up of thyroid cancer patients. This study suggests that patients with thyroglobulin antibodies that fall >50% by 1 year after initial treatment are at low risk for thyroid cancer recurrence. On the other hand, those patients whose thyroglobulin antibodies do not change or increase have an increased risk for thyroid cancer recurrence. These results will help identify those patients that are at higher risk for thyroid cancer recurrence and, thus, should be followed more closely.

— Maria Papaleontiou, MD

ATA THYROID BROCHURE LINKS

Thyroid Cancer: http://www.thyroid.org/thyroid-cancer/

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

THYROID CANCER, continued

ABBREVIATIONS & DEFINITIONS

Thyroid Cancer: papillary and follicular thyroid cancers are referred to as differentiated thyroid cancer, which means that the cancer cells look and act in some respects like normal thyroid cells. Papillary and follicular thyroid cancers account for more than 90% of all thyroid cancers. They tend to grow very slowly.

Thyroglobulin: a protein made only by thyroid cells, both normal and cancerous. When all normal thyroid tissue is destroyed after radioactive iodine therapy in patients with thyroid cancer, thyroglobulin can be used as a thyroid cancer marker in patients that do not have thyroglobulin antibodies.

Thyroglobulin antibodies: these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States.

Prospective study: a research study in which a group of individuals who have one or more common characteristics are followed over time.

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.

Imaging studies: for example, thyroid ultrasound, which is used to evaluate the structure of the thyroid gland.

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

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THYROID NODULES

Ultrasound imaging of thyroid nodules detected on PET-CT scan

BACKGROUND

Cancer cells are more metabolically active than normal cells and take up glucose to a higher degree than normal cells. Using radiolabeled glucose (18F-2-fluoro-2-deoxy-d-glucose, FDG) and special imaging scans (positron emission tomography, PET and computerized tomography, CT), cancer can be identified in those areas that show increased FDG uptake. These FDG PET-CT are frequently performed in individuals with known cancer, to determine where the cancer may be located. This type of information is used to determine the stage of the cancer and any response to treatment. It is not uncommon for thyroid nodules to be incidentally detected in individuals with no known thyroid problems who may be undergoing a FDG PET-CT scan for an unrelated cancer. In general, nodules that are cancerous may show increased FDG uptake. However, nodules that are overactive and some that are working normally also will take up FDG. This study was performed to determine whether the imaging features of a FDG PET-CT-detected thyroid nodule on neck ultrasound may provide information about the risk of cancer of the nodule(s).

THE FULL ARTICLE TITLE

Beech P et al. Ultrasound stratification of the FDG-avid thyroid nodule. Clin Radiol 2016;71:164-9. Epub December 10, 2015.

SUMMARY OF THE STUDY

In this study, the records were reviewed of 47 individuals who had undergone FDG PET-CT scan and were found to have one or more thyroid nodules that concentrated FDG and, thus, were concerning for cancer. All patients underwent a thyroid ultrasound and biopsy of such nodules. The study was performed in a single institution in Australia. There were data from 48 nodules included in the study. The final diagnosis was based on the biopsy results. The authors reported that 49% of the nodules had features on ultrasound that were suspicious for cancer (very dark appearance, irregular margins, microcalcifications, or increased blood flow). In this group, the results of the biopsy were as follows: benign – 50%, indeterminate – 29% and cancerous – 21%. For the rest of the nodules where there were no suspicious features on ultrasound, the results of the fine needle aspiration biopsy was as follows: benign – 92%, indeterminate – 8%, and malignant – 0%.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that thyroid nodules that are identified on FDG PET-CT scans have a higher risk of cancer than those that do not take up FDG, although most nodules identified on these scans are not cancerous. Importantly, most cancers were found in nodules that had suspicious features on ultrasound; the rate of cancer found on biopsy was much lower in the group that had no suspicious features on ultrasound. This study reinforces ultrasound examination as a standard of care in evaluation of thyroid nodules and can be used to help determine which nodules should be biopsied in patients with pre-exisiting non-thyroid cancer.

— Anna Sawka, MD

ATA THYROID BROCHURE LINKS

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

Thyroid Cancer: http://www.thyroid.org/thyroid-cancer/

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.

18F-2-fluoro-2-deoxy-d-glucose-positron emission tomography (FDG-PET) and PET-CT: a nuclear medicine imaging test that uses a small amount of radiolabeled glucose to identify cancer. Since cancer cells are more active than normal cells, the cancer cells take up more of the radiolabeled glucose and show up on the FDG-PET scan. FDG-PET scans are frequently combined with computerized tomography (CT) scans (ie. PET-CT) to accurately identify where in the body a cancer may be located.

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THYROID NODULES, continued

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.

Indeterminate thyroid biopsy: this happens usually 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.

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THYROID SURGERY

Extension of the thyroid into the upper chest

BACKGROUND

The thyroid gland is typically located in the lower third of the neck in front of the trachea (wind pipe) and above the breast bone. In some patients, the thyroid gland or masses within the gland can grow large and extend into the upper chest into a space known as the mediastinum. This is known as a substernal thyroid. If the thyroid extends into this space and needs to be removed surgically, in most cases this can be accomplished through an incision in the neck. In much fewer cases, the chest needs to be surgically opened (by a sternotomy) as well which is a more extensive and invasive operation. The two studies reviewed look at which patients are more likely to have extension of their thyroid into the chest, how this impacts surgical outcome, and how to predict who may need a procedure that requires opening the chest.

THE FULL ARTICLE TITLES

Moten AS et al. Demographics, disparities, and outcomes in substernal goiters in the United States. Am J Surg. January 6, 2016 [Epub ahead of print].

Nankee L et al. Substernal goiter: when is a sternotomy required? J Surg Res 2015;199:121-5. Epub April 18, 2015.

SUMMARY OF THE STUDIES

The first study (Moten, et al.) looked at a large database of patients who underwent either a complete or one-sided substernal thyroidectomy between 2000 and 2010. They were compared with patients who underwent complete or one-sided thyroidectomy that did not have a portion of the thyroid in the chest. The group was comprised of 110,889 patients who received thyroid surgery during the study period. Of these patients, 5525 required substernal thyroidectomy. The patients who required thyroid tissue to be removed from their chest were more likely to be older, African-American, have hypertension, diabetes, or obesity. These patients typically needed to stay in the hospital longer and were more likely to require emergency surgery. Patients that required substernal thyroidectomy had increased odds of several postoperative complications: hemorrhage/hematoma, respiratory failure, pulmonary embolism/deep venous thrombosis, hypoparathyroidism, hypocalcemia, collapsed lung, bloodstream infections, accidental puncture or laceration, and death.

The second study (Nankee, et al.) looked at 220 patients at the University of Wisconsin Medical Center who underwent total thyroidectomy for large or substernal goiters. The dates of the study were between 1995 and 2013. The patients with the substernal goiter were significantly older, by about a decade, than the patients with enlarged thyroids limited to the neck. Of the 127 patients who had a substernal goiter, 7 ultimately required a sternotomy. The sternotomy was anticipated in 6 of the 7 cases, with only 1 intraoperative decision to proceed with sternotomy. All patients who underwent sternotomy had previously undergone a CT scan and appeared to have more significant symptoms, such as chest pressure or voice symptoms. The addition of the sternotomy to the surgical procedure added an average of 2 hours to the surgery and a significant increase in blood loss. Patients who underwent sternotomy also had a longer length of stay. The group analyzed CT characteristics and found that at least 70% of the thyroid gland was below the sternal notch in all 7 patients who underwent sternotomy and all had extension to or below the aortic arch.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Extension of the thyroid gland into the upper chest is uncommon but can lead to more severe symptoms, make surgery more complicated and prolong recovery. Most surgeries can be completed through a neck incision but in some cases a sternotomy is required to remove the thyroid tissue from the upper chest. CT scans can be helpful in identifying which patients will require sternotomy.

— Ronald B. Kuppersmith, MD, FACS

ATA THYROID BROCHURE LINKS

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

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

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THYROID SURGERY, continued

DEFINITIONS

Goiter: a thyroid gland that is enlarged for any reason is called a goiter. A goiter can be seen when the thyroid is overactive, underactive or functioning normally. If there are nodules in the goiter it is called a nodular goiter; if there is more than one nodule it is called a multinodular goiter.

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.

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

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

Thyroid Awareness Monthly Campaigns

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for Bravelets™ will be donated to the ATA. The month of April is **Hashimoto's Disease Awareness Month** and a bracelet is available through the ATA Marketplace to support thyroid cancer awareness and education related to thyroid disease.

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SUBCLINICAL THYROID DISEASE

Does subclinical thyroid disease increase the risk for blood clots?

BACKGROUND

Subclinical, or mild, thyroid disease is defined as a condition in which the TSH level is abnormal but the actual hormone levels in the blood are normal. Subclinical hyperthyroidism is diagnosed when the TSH is low and subclinical hypothyroidism is diagnosed when the TSH is increased. This condition is considered more common in patients above the age of 65 years. Venous thromboembolism (VTE), is a condition caused by formation of blood clots in the circulation. These may involve the legs and can have serious outcomes if the clots travel to the lungs, a condition called pulmonary embolism. VTE occurs nearly 1% annually among individuals 65 years of age or older and VTE is associated with an increased risk of dying. Both overt and subclinical hyperthyroidism are associated with elevated levels of clotting factors in the blood and one study found that both low and high TSH values were associated with an increased risk of VTE. The goal of this study was to determine the relationship between thyroid status and recurrent VTE risk

THE FULL ARTICLE TITLE

Segna D et al. Association between thyroid dysfunction and venous thromboembolism in the elderly: a prospective cohort study. J Thromb Haemost. January 27, 2016 [Epub ahead of print].

SUMMARY OF THE STUDY

The study looked at patients who were at least 65 years old. A total of 41% of participants were female, the mean age was 74 years, 7% were smokers, 30% had a history of VTE, 11% had active cancer, 17% had diabetes, and 65% had hypertension. Over 500 patients were studied. These patients were admitted to the hospitals with VTE and their risk for getting another similar illness or pulmonary embolism was studied.

At baseline, a total of 35 (6%) of study participants had subclinical hypothyroidism and 26 (5%) had subclinical hyperthyroidism. Over an average follow-up of 20.8±9.1 months, 52 (9%) of subjects experienced recurrent VTE. The incidence of recurrent VTE was 7.2 per 100 patient-years in participants with subclinical hypothyroidism and 5.85 per 100 patient among euthyroid participants. Recurrent VTE was not observed in the subjects with subclinical hyperthyroidism. Levels of some clotting factors were higher in patients with subclinical hyperthyroidism than in euthyroid subjects. A total of 56 (10%) of participants died over the course of the follow-up period. TSH and thyroid status were not associated with mortality.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that among elderly patients with a history of VTE, patients with subclinical hyperthyroidism had lower rates of recurrent VTE than those who were euthyroid. Thus, subclinical hyperthyroidism may not increase the risk of VTE; however, the authors recommend larger studies to further understand the link.

—Vibhavasu Sharma, MD

ATA THYROID BROCHURE LINKS

Hyperthyroidism: http://www.thyroid.org/hyperthyroidism/

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

Thyroid Disease in the Older Patient: http://www.thyroid.org/thyroid-disease-older-patient/

ABBREVIATIONS & DEFINITIONS

Venous thromboembolism (VTE): this is a condition caused by formation of blood clots in the circulation.

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

Subclinical hyperthyroidism: a mild form of hyperthyroidism where the only abnormal hormone level is a decreased 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 THYROID DISEASE, continued

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

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 towards the improvement of thyroid education and resources for patients.

WHO WE ARE (in alphabetical order)

- **American Thyroid Association**
- **Bite Me Cancer**
- **Graves' Disease and Thyroid Foundation**
- **Light of Life Foundation**
- **ThyCa: Thyroid Cancer Survivors' Association, Inc.**
- **Thyroid Cancer Canada**
- **Thyroid Federation International**

AMERICAN THYROID ASSOCIATION

www.thyroid.org
ATA Patient Resources: http://www.thyroid.org/patients-portal/
Find a Thyroid Specialist: www.thyroid.org
Phone (toll-free): 1-800-THYROID
e-mail: thyroid@thyroid.org

ATA Mission: The ATA leads in promoting thyroid health and understanding thyroid biology.
ATA Vision: The ATA is the leading organization focused on thyroid biology and the prevention and treatment of thyroid disorders through excellence and innovation in research, clinical care, education, and public health.
ATA Values: The ATA values scientific inquiry, clinical excellence, public service, education, collaboration, and collegiality.

To further our mission, vision and values the ATA sponsors "Friends of the ATA" online to advance the information provided to patients and the public such as this publication, *Clinical Thyroidology for the Public*. We welcome your support.

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Light of Life Foundation checkyourneck.com

GRAVES' DISEASE & THYROID FOUNDATION

Thyroid Federation International

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

Thyroid Cancer Canada
Cancer de la thyroïde Canada

BITE ME cancer® attitude is everything.

ATA Alliance for Thyroid Patient Education

Continued...

BITE ME CANCER
http://www.bitemecancer.org

Bite Me Cancer was formed as a nonprofit foundation in September, 2010, by Nikki Ferraro, who was 17-years old at the time. Nikki was diagnosed with a rare form of thyroid cancer in April 2010 when she was a junior at Chantilly HS in Virginia. Nikki was determined to lead a Relay for Life team just two weeks after her diagnosis. She named the team Bite Me Cancer and experienced immediate success. When Nikki decided to create a foundation a few months later, she wanted to continue the legacy of her team name and thus her foundation became the Bite Me Cancer Foundation.
e-mail: info@bitemecancer.org

GRAVES' DISEASE AND THYROID FOUNDATION
www.gdatf.org
Phone (toll-free): 1-877-NGDF-123 or 643-3123
e-mail: Gravesdiseasefd@gmail.com

Founded in 1990, the Graves' Disease Foundation offers support and resources to Graves' disease patients, their families, and health care professionals. Their mission is to find the cause of and the cure for Graves' thyroid disease through research, to improve the quality of life for persons with Graves' disease and their caregivers and to educate persons with Graves' disease, their caregivers, healthcare professionals, and the general public about Graves' disease and its treatment. The web site features a monitored bulletin board.

LIGHT OF LIFE FOUNDATION
www.checkyourneck.com
email: info@checkyourneck.com

The Light of Life Foundation, founded in 1997, is a nonprofit organization that strives to improve the quality of life for thyroid cancer patients, educate the public and professionals about thyroid cancer, and promote research and development to improve thyroid cancer care.

continued on next page

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Light of Life Foundation
checkyourneck.com

GRAVES' DISEASE & THYROID FOUNDATION

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

Thyroid Federation International

Thyroid Cancer Canada
Cancer de la thyroïde Canada

BITE ME cancer
attitude is everything.

ATA Alliance for Thyroid Patient Education

Continued...

THYCA: THYROID CANCER SURVIVORS' ASSOCIATION, INC.

www.thyca.org
Phone (toll-free): 877 588-7904
e-mail: thyca@thyca.org

ThyCa: Thyroid Cancer Survivors' Association, Inc., founded in 1995, is an international nonprofit organization, guided by a medical advisory council of renowned thyroid cancer specialists, offering support and information to thyroid cancer survivors, families, and health care professionals worldwide.

THYROID CANCER CANADA

www.thyroidcancercanada.org
Phone: 416-487-8267
Fax: 416-487-0601
e-mail: info@thyroidcancercanada.org

Thyroid Cancer Canada is a non-profit organization founded in 2000. The organization works towards creating an environment in which people who are dealing with thyroid cancer, especially the newly diagnosed, are met with support and information. Their goals & objectives include facilitating communication among thyroid cancer patients, providing credible information about the disease, providing emotional support, and assisting thyroid cancer patients with voicing their needs to health care professionals and those who are responsible for health care policy.

THYROID FEDERATION INTERNATIONAL

www.thyroid-fed.org
e-mail: tfi@thyroid-fed.org

Thyroid Federation International (TFI) was established in Toronto in 1995. Thyroid Federation International aims to work for the benefit of those affected by thyroid disorders throughout the world by providing a network of patient support organizations.

May 25th

WORLD THYROID DAY

GOALS

1. Increase awareness of thyroid health.
2. Promote understanding of advances made in treating thyroid diseases.
3. Expand awareness of new treatment modalities.
4. Focus on the urgent need for education and prevention programs.
5. Emphasize the prevalence of thyroid diseases

impact of thyroid disease & thyroid cancer

Tens of millions of people worldwide are affected by diseases of the thyroid. The thyroid gland, butterfly-shaped and located in the middle of the lower neck, produces hormones that influence every cell, tissue and organ in the body. The thyroid hormones regulate the body's metabolism—the rate at which the body produces energy from nutrients and oxygen—and affects critical body functions, such as energy level and heart rate.

JOIN US IN CELEBRATING AND SUPPORTING

AMERICAN THYROID ASSOCIATION
FOUNDED 1923

European Thyroid Association
ETA

May 25th
Thyroid Day

Latin American Thyroid Society

ATA SINCE 1975
ASIA & OCEANIA THYROID ASSOCIATION

for more information visit
www.thyroid.org

Hashimoto's Thyroiditis (Lymphocytic Thyroiditis)

WHAT IS THE THYROID GLAND?

The thyroid gland is a butterfly-shaped endocrine gland that is normally located in the lower front of the neck. The thyroid's job is to make thyroid hormones, which are secreted into the blood and then carried to every tissue in the body. Thyroid hormone helps the body use energy, stay warm and keep the brain, heart, muscles, and other organs working as they should.

WHAT IS HASHIMOTO'S THYROIDITIS?

The term "Thyroiditis" refers to "inflammation of the thyroid gland". There are many possible causes of thyroiditis (See *Thyroiditis* brochure). Hashimoto's thyroiditis, also known as chronic lymphocytic thyroiditis, is the most common cause of hypothyroidism in the United States. It is an autoimmune disorder in which antibodies directed against the thyroid gland lead to chronic inflammation. It is not known why some people make antibodies, although this condition tends to run in families. Over time, however, this results in impaired ability of the thyroid gland to produce thyroid hormones, leading to gradual failure and eventually an underactive thyroid (Hypothyroidism). Hashimoto's thyroiditis occurs most commonly in middle aged women, but can be seen at any age, and can also affect men, and children.

WHAT ARE THE SYMPTOMS OF HASHIMOTO'S THYROIDITIS?

There are no signs or symptoms that are unique to Hashimoto's thyroiditis.

Because the condition usually progresses very slowly over many years, people with Hashimoto's thyroiditis may not show any symptoms early on, even when the characteristic TPO antibodies may be detected in blood tests. However, over time, thyroiditis causes slow and chronic cell damage leading to the development of a goiter (enlarged thyroid) with gradual thyroid failure. Eventually, most patients will develop symptoms of hypothyroidism (See *Hypothyroidism* brochure). Hypothyroid symptoms may include fatigue, weight gain, constipation, increased sensitivity to cold, dry skin, depression, muscle aches and reduced exercise tolerance, and irregular or heavy menses.

HOW IS THE DIAGNOSIS OF HASHIMOTO'S THYROIDITIS MADE?

The diagnosis of Hashimoto's thyroiditis is usually made when patients present with symptoms of hypothyroidism, often accompanied by the finding of a goiter (an enlarged thyroid gland) on physical examination, and laboratory tests consistent with hypothyroidism (an elevated serum TSH with low thyroid hormone [Free thyroxine] levels). Antibodies against TPO (thyroid peroxidase), when measured, are usually elevated. TPO is an enzyme that plays a role in the production of thyroid hormones.

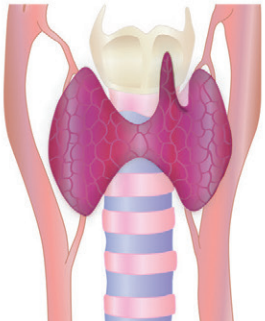
Occasionally, the disease may be diagnosed early on, especially in people with a strong family history of thyroid disease, during routine laboratory screening, even before the patient develops symptoms of hypothyroidism. In these cases, often isolated mild elevation of serum TSH is seen, with normal levels of thyroid hormones and positive TPO antibodies.

HOW IS HASHIMOTO THYROIDITIS TREATED?

Patients with elevated TPO antibodies but normal thyroid function tests (TSH and Free thyroxine) do not require treatment.

For those patients with overt hypothyroidism (elevated TSH and low thyroid hormone levels) treatment consists of thyroid hormone replacement (see *Thyroid Hormone Treatment* brochure). Synthetic levothyroxine taken orally at an appropriate dose is inexpensive, very effective in restoring normal thyroid hormone levels, and results in improvement of symptoms of hypothyroidism. All patients with Hashimoto's thyroiditis who develop hypothyroidism will require lifelong treatment with levothyroxine. Finding the appropriate dose, particularly at the beginning may require testing with TSH every 6-8 weeks after any dose adjustment, until the correct dose is found. After that, monitoring of TSH once a year is generally sufficient.

When levothyroxine is taken in the appropriate dose, it has no side effects. However, when an insufficient dose is taken, serum TSH remains elevated and patients may have persistent symptoms of hypothyroidism (See *Hypothyroidism* brochure). If the dose is excessive, serum TSH will become suppressed and patients may develop symptoms of hyperthyroidism (See *Hyperthyroidism* brochure).



FURTHER INFORMATION

Further details on this and other thyroid-related topics are available in the patient information section on the American Thyroid Association® website at *www.thyroid.org*.

Reasons to #GIVE2THYROID

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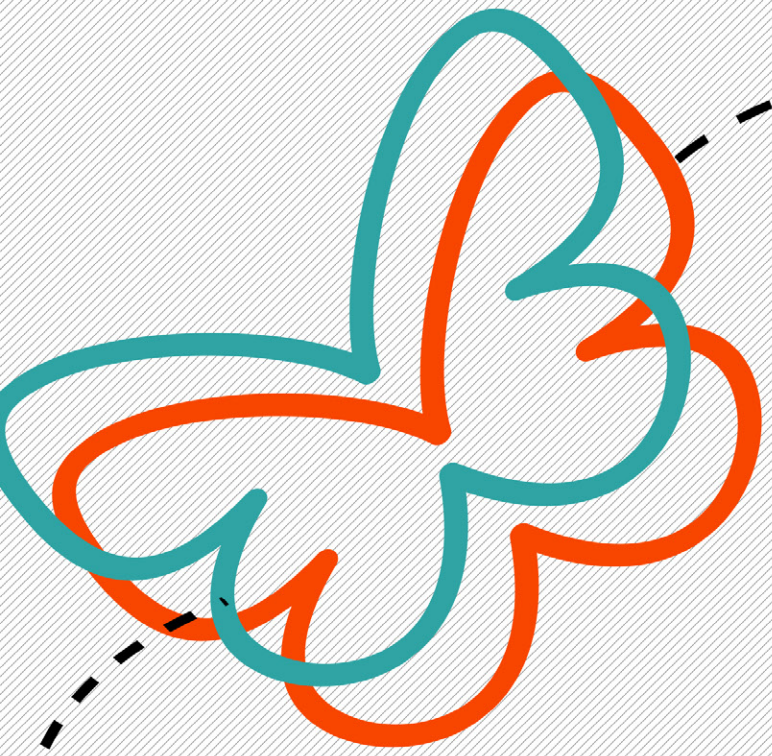

Reason 1

Public & Thyroid Patients

The American Thyroid Association® is dedicated to serving as an educational resource for the public by supporting thyroid research and promoting the prevention, treatment and cure of thyroid-related diseases and thyroid cancer. Help support the continuation of our patient/public education programs and resources including:

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+summarized medical literature
+endocrinologist referral
+monthly newsletters
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