Clinical THYROIDOLOGY FOR THE PUBLIC

AMERICAN THYROID ASSOCIATION
FOUNDED 1923

VOLUME 8 • ISSUE 2 • 2015

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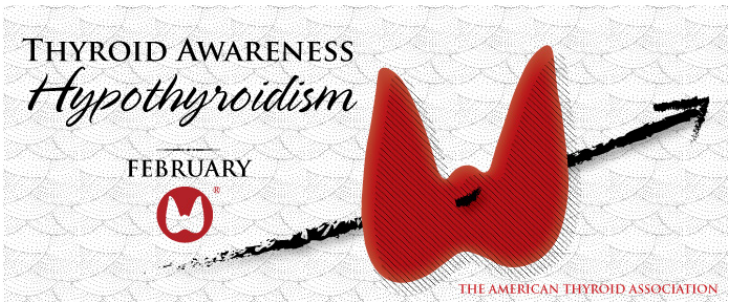

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A publication of the American Thyroid Association
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EDITOR'S COMMENTS

Welcome to another issue of Clinical Thyroidology for the Public. In this journal, we will bring to you the most up-to-date, cutting edge thyroid research. We 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*.

February is Hypothyroidism Awareness month.

In this issue, the studies ask the following questions:

1. Does potassium iodide have a role in the chronic treatment of hypothyroidism?
2. Can modified release recombinant human TSH improve the effectiveness of radioactive iodine in shrinking goiters without the need for surgery?
3. Are there lasting effects to the exposure of nuclear fallout from the atomic bomb in Japan?
4. Are thyroid isthmus nodules different than those that are within the thyroid lobes?
5. Can a blood test help diagnose thyroid cancer?
6. Is there a difference between the amount of thyroid cancer spread to the lymph nodes and cancer recurrence?

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

Chronic potassium iodide therapy caused remission in about half of Graves' patients who had side effects while taking antithyroid drugs

BACKGROUND

The most common cause of hyperthyroidism is Graves' disease. The cause of Graves' disease is antibodies that attack and turn on the thyroid, producing hyperthyroidism. If the antibodies go away, the Graves' disease goes into remission and thyroid function returns to normal. The antithyroid drugs Methimazole and Propylthiouracil are effective in controlling the hyperthyroidism in patients with Graves' disease but can produce allergic responses. When that happens, the only other options are surgery to remove the thyroid or radioactive iodine therapy to destroy the thyroid.

Stable iodine has been used to treat hyperthyroidism for over a century. Because many patients escaped from the beneficial reduction of thyroid hormone levels and their hyperthyroidism became worse while taking iodine, iodine was abandoned as a long-term therapy. This study examines the results of long-term therapy of Graves' disease with potassium iodide in patients who could not use antithyroid drugs because of side effects.

THE FULL ARTICLE TITLE

Okamura K et al Remission after potassium iodide therapy in patients with Graves' hyperthyroidism exhibiting thionamide-associated side effects. J Clin Endocrinol Metab 2014;99:3995-4002. Epub August 21, 2014.

SUMMARY OF THE STUDY

During the 20-year period from 1981 to 2001, 1388 patients with Graves' hyperthyroidism were treated with antithyroid drugs at Kyushu University, Japan. About 15% of these patients had side effects requiring discontinuation of therapy and 44 of them were treated with potassium iodide in daily doses that varied from 13 mg to 800 mg daily. After 1996, the dosing of potassium iodide became standardized. Patients remained on potassium iodide therapy for years, then stopped it to determine remission of the Graves' disease. If they remained in remission for 2 years, they were in the remission group; otherwise they were in the nonremission group.

A total of 37 of the 44 patients were women and the average age was 40 years. A total of 29 patients (59%) became euthyroid at a median of 35 days, but 17 of them continued the KI for about 7 years. There were no significant side effects of the therapy, other than hypothyroidism in 5 patients that was treated with thyroxine. Altogether, 24 pateints went into remission and 20 patients did not. Remission was found in 71% of the patients whose hyperthyroidism was controlled on a dose of less than 200 mg KI but in only 29% of those requiring over 200 mg of KI.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Potassium iodide therapy was effective in two thirds of hyperthyroid patients with side effects to antithyroid drugs. About 40% of patients experienced remission after potassium iodide therapy alone, but the chance of remission was small among those whose hyperthyroidism did not respond to potassium iodide. While Methimazole and Propylthiouracil are the mainstays of drug treatment for Graves' disease, this study shows that potassium iodine can be an option for some pateints who cannot tolerate antithyroid drugs.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Hyperthyroidism: http://www.thyroid.org/what-is-hyperthyroidism

Graves' disease: http://www.thyroid.org/what-is-graves-disease

GRAVES' DISEASE, continued

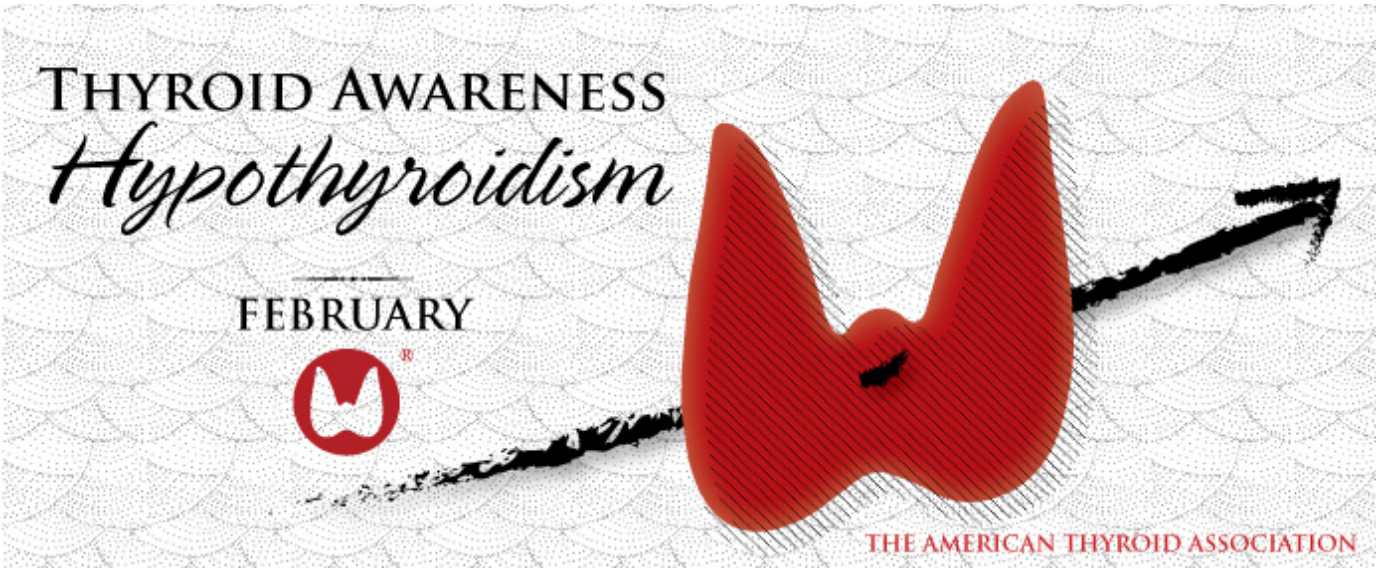
ABBREVIATIONS & DEFINITIONS

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

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

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.

Potassium iodide (KI): a stable form of iodine that blocks uptake of iodine into the thyroid. KI can be used to block radioactive iodine from getting into the thyroid after a nuclear accident. KI also can be used as a treatment for hyperthyroidism as well as iodine deficiency.



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 February is **Hypothyroidism 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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GOITER

Treatment with modified-release recombinant human TSH prior to radioactive iodine therapy for large goiters does not change the degree of shrinkage of the goiter but does cause more hypothyroidism

BACKGROUND

When a multinodular goiter is large enough, it can cause compressive symptoms (ie choking and/or difficulty swallowing) or be disfiguring. Even if thyroid biopsies are non-cancerous, therapy to relieve these symptoms must be considered. In most cases, surgical thyroidectomy is the preferred therapy. But in many older patients or in those who want to avoid thyroidectomy and its possible complications, radioactive iodine therapy can be used and has been shown to be efficacious for shrinking the goiter in many studies. Some reports suggest that stimulating the thyroid to take up radioactive iodine with modified-release recombinant human TSH (MRrhTSH) may result in a further decrease in goiter size as compared to treating with radioactive iodine without stimulation. The purpose of the present report was to provide a 3 year follow-up of patients who had been pretreated with MRrhTSH to improve thyroid uptake before administering the radioactive iodine.

THE FULL ARTICLE TITLE

Fast S et al Long-term efficacy of modified-release recombinant human TSH (MRrhTSH) augmented radioiodine (^{131}I) therapy for benign multinodular goiter: results from a multicenter international, randomized, placebo-controlled dose-selection study. Thyroid. December 16, 2013 [Epub ahead of print].

SUMMARY OF THE STUDY

This study initially included 95 patients with multinodular goiter who were treated with radioactive iodine to reduce the size of the goiter. Patients were 35 to 80 years old with a normal free T_4 index and total T_3 levels. Patients were randomly assigned to receive either no pre-treatment or a single injeciton of a low dose or high dose MRrhTSH 24 hours before the dose of radioactive iodine. The dose of radioactive iodine was calculated to deliver the same effective dose in all groups. Thyroid volume and cross-sectional area of the windpipe was estimated by CT scans at baseline and at 6 and 36 months after radioactive iodine therapy. Patients also underwent a thyroid-disease–specific questionnaire to evaluate the effect of the treatment on quality of life.

The results from 86 patients were analyzed at 36 months. The average decrease in goijter size 44% in the group without stimulation as compared to 41±21.0 in the low dose MRrhTSH group and 53% in the high dose group. There was no difference in windpipe diameter within the groups. Symptoms improved in all groups. The development of permanent hypothyroidism requiring levothyroxine therapy was 13%, 33%, and 45% in the non-stimulation, low dose and high dose MRrhTSH groups, respectively. More patients in the MRrhTSH groups reported adverse events as well.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This important study shows that adding MRrhTSH prior to radioactive iodine for symptomatic multinodular goiter does not affect the decrease in size but does increase the risk of developing hypothyroidism. Thus, MRrhTSH should not be used in this therapy.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Goiter: http://www.thyroid.org/what-is-a-goiter

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

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GOITER, continued

ABBREVIATIONS & 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.

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).

Recombinant human TSH (rhTSH): human TSH that is produced in the laboratory and used to produce high levels of TSH in patients after an intramuscular injection. This is mainly used in thyroid cancer patients before treating with radioactive iodine or performing a whole body scan. The brand name for rhTSH is Thyrogen™.

Modified-release recombinant human TSH (MRrhTSH): a lower dose of rhTSH that is released more slowly into the blood stream after injection to provide more sustained levels of TSH.

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

Levothyroxine (T_4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

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CHILDHOOD RADIATION

Thyroid nodules and thyroid cancer in World War II atomic bombs survivors 60 years later

BACKGROUND

Ionizing radiation is a type of radiation that can result from many sources, including atomic (nuclear) bombs and nuclear accidents. Children exposed to ionizing radiation are at risk for developing thyroid cancer and thyroid nodules later in life. This study was done to see how the dose of radiation received may relate to the development of thyroid nodules and thyroid cancer. The study was done in Hiroshima and Nagasaki atomic bomb survivors who were younger than 10 years old at the time of the nuclear fallout in Japan nearly 60 years later after the radiation exposure.

THE FULL ARTICLE TITLE

Imaizumi M et al Association of Radiation Dose With Prevalence of Thyroid Nodules Among Atomic Bomb Survivors Exposed in Childhood (2007-2011). JAMA Intern Med 2014 Dec 29. [Epub ahead of print]

SUMMARY OF THE STUDY

The researchers studied 2,668 Hiroshima and Nagasaki atomic bomb survivors who were younger than 10 years of age during radiation exposure. Information the subjects provided regarding their location, body position, and any shielding or other protective measures employed were used to estimate how uch radiation each person received. Over 17% were found to have significant thyroid nodules when imaged by ultrasound 60 years later, but less than 1% of all people were found to have a thyroid cancer after thyroid biopsy. The amount of radiation received was associated with a higher risk of having any thyroid nodule, whether the nodule was cancerous or not. Furthermore, the youngest children were those most likely to have a thyroid nodule and thyroid cancer.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Other studies have previously shown that radiation exposure during childhood is a risk factor for thyroid cancer. This study supports this by showing that the dose received is also important, with children who were exposed to higher radiation amounts tending to have more thyroid nodules, including those which contain thyroid cancer, several decades later. Thus, the health risks of radiation can be long-lasting. This may be important for how children from the recent Fukushima nuclear accident are followed for the development of thyroid disease in the years ahead.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

Childhood Head and Neck Radiation: http://www.thyroid.org/pediatric-endocrinology

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

ABBREVIATIONS & DEFINITIONS

Ionizing radiation: radiation that can damage cells, causing cell death or mutation. It can originate from radioactive materials, x-ray tubes or specialized machines. It is invisible and not directly detectable by human senses.

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

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THYROID CANCER

Cancers in the thyroid isthmus are more likely to spread outside of the thyroid

BACKGROUND

The thyroid gland is shaped like a butterfly with two wings or lobes on either side of the windpipe that are joined together by a bridge of tissue, called the isthmus, which crosses over the front of the windpipe. Most thyroid cancers are found in the lobes and only 2-9% of cancers are located in the isthmus. Investigators have reported that cancers in isthmus are more likely to spread outside of the thyroid. While overall prognosis of papillary thyroid cancer is good, the prognosis of patients with cancer spreading out of the thyroid is less favorable. Specific ultrasound features of nodules are suspicious of cancer like: taller-than-wide shape, an irregular margin, markedly dark appearance and microcalcifications. However, these findings are based on cancers located in the thyroid lobes and so far there are no reports on characteristics of suspicious nodules located in the isthmus. This study examined ultrasound characteristics of papillary thyroid cancer located in the isthmus as compared to cancers located in the thyroid lobes.

THE FULL ARTICLE TITLE

Hahn SY et al. Ultrasound findings of papillary thyroid carcinoma originating in the isthmus: comparison with lobe originating papillary thyroid carcinoma. AJR Am J Roentgenol 2014;203:637-42.

SUMMARY OF THE STUDY

At total of 48 patients with papillary thyroid cancer located in the isthmus and 96 patients with papillary thyroid cancer located in lobes were identified between 2007 and 2008. All the patients had undergone preoperative ultrasound of the neck, total thyroidectomy with bilateral central-lymph-node dissection and postoperative follow-up for at least 2 years.

The cancers located in the isthmus showed a higher frequency of the cancer spreading outside of the thyroid as compared with cancers located in the lobe (83% vs. 66%). Both groups showed no differences in term of other prognostic factors. Ultrasound imaging showed that cancers located in the isthmus were associated with a higher incidence of the following features than tumors located in the lobes: wider-than-tall shape (91.7% vs. 56.3%) and ultrasound findings suspicious for tumor spreading outside the thyroid (93.8% vs. 53.1%). In addition, in the group of patients with spread of the cancer to the lymph nodes, cancers located in the lobe tended to associate with lymph node spread at the same side of the cancer (84.6%), whereas patients with isthmus cancers tended to have lymph node involvement on the both sides of the neck (50%).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The results of this study suggest that papillary thyroid cancers located in the isthmus are more likely to spread outside of the thyroid than cancers located in the lobes. Because of these findings, a biopsy should be performed in all isthmus nodules with suspicious findings by ultrasound and special attention should be paid to search for abnormal lymph nodes on both sides of the neck.

— Jamshid Farahati MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://www.thyroid.org/cancer-of-the-thyroid-gland

Thyroid Surgery: http://thyroid.org/patients/patient_brochures/surgery.html

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

ABBREVIATIONS & DEFINITIONS

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

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THYROID CANCER, 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.

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

Microcalcifications: Small flecks of calcium within a thyroid nodule, usually seen as small bright spots on ultrasonography. These are frequently seen in nodules containing papillary thyroid cancer.

Papillary thyroid cancer: the most common type of thyroid cancer.

Total thyroidectomy: surgery to remove the entire 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 CANCER

A simple blood test can be helpful in the diagnosis of papillary thyroid cancer

BACKGROUND

Thyroid nodules are very common, occurring in up to 50% of people. Most nodules are benign with only 5-10% of nodules being cancerous. Thyroid biopsy is the procedure of choice to identify patients who require surgery for a potential cancer, but it is not a perfect test. When the biopsy diagnosis is in question, some patients undergo for what is eventually found to be benign disease. Searching for alternative, confirmatory methods short of surgery remains a goal for diagnosis of thyroid nodules and thyroid cancers. Genetic changes and molecular markers of cancers and benign disease are of great interest. MicroRNA (miRNAs) are small bits of genetic material that leak out of cells and are found in the bloodstream. Thyroid cancer cells can release miRNAs and these miRNAs have been a focus of research to find a thyroid cancer marker in the bloodstream. In this study, serum miRNA testing was done to find determine if a diagnosis of thyroid cancer can be made or confirmed by simply drawing blood from a patient.

THE FULL ARTICLE TITLE

Cantara S et al Circulating miRNA95 and miRNA190 are sensitive markers for the differential diagnosis of thyroid nodules in a Caucasian population. J Clin Endocrinol Metab 2014;99(11):4190-8. Epub July 24, 2014.

SUMMARY OF THE STUDY

Initially, 12 healthy individuals, 12 patients with nodular goiters and 12 patients with papillary thyroid cancer were studied by pooling the blood samples from each group and comparing the results found on a MicroRNA card with 384 markers. A total of 8 miRNA markers were found. These markers were then evaluated on each individual in the pool. A total of 4 of these 8 markers were confirmed to be significantly different in the papillary thyroid cancer patients when compared with nodular goiter and healthy individuals. These 4 miRNAs were then evaluated in a second group of patients (79 with papillary thyroid cancer, 80 with nodular goiter, 41 healthy individuals). Two of the miRNA markers (miRNA-95 and miRNA-190) were found to be highly correlated with thyroid cancer and 95% accurate in making a cancer diagnosis.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This promising study identifies 2 miRNAs that may serve as a blood test to diagnose papillary thyroid cancer. Further studies in larger numbers of patients from different ethnic backgrounds will be necessary to confirm these findings and validate this study. The utility of serum markers for disease within the thyroid is an exciting future direction for thyroid nodule evaluation and treatment. This study suggests that someday a less invasive and more precise way to diagnose cancers may be available.

— Julie Hallanger Johnson, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://www.thyroid.org/cancer-of-the-thyroid-gland

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

ABBREVIATIONS & DEFINITIONS

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

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

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THYROID CANCER, continued

Genes: a molecular unit of heredity of a living organism. Living beings depend on genes, as they code for all proteins and RNA chains that have functions in a cell. Genes hold the information to build and maintain an organism's cells and pass genetic traits to offspring

microRNA: a short RNA molecule that has specific actions within a cell to affect the expression of certain genes.

Molecular markers: genes and microRNAs that are expressed in benign or cancerous cells. Molecular markers can be used in thyroid biopsy specimens to either to diagnose cancer or to determine that the nodule is benign.

Papillary thyroid cancer: the most common type of thyroid cancer.

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THYROID CANCER

Large lymph nodes containing metastatic papillary thyroid cancer confer a higher risk of persistent or recurrent cancer than small lymph nodes

BACKGROUND

Papillary thyroid cancer is the most common type of thyroid cancer. It is typically treated by surgery to remove the thyroid (thyroidectomy) followed by radioactive iodine therapy to destroy any remaining thyroid tissue, both normal and cancerous thyroid tissue. While this treatment can cure many patients with thyroid cancer, some people have a recurrence of their thyroid cancer. Patients at risk for thyroid cancer recurrence usually have more extensive disease at the time of diagnosis such as spread to the lymph nodes, growth outside of the thyroid and invasion into blood vessels. The spread to the lymph nodes can either cause an enlarged lymph node and be obvious (macroscopic) or not change the size of the lymph node and seen only by a microscope (microscopic). This study was done to look at whether the size of the cancerous lymph nodes — macroscopic or microscopic — makes a difference in recurrence rates of patients with papillary thyroid cancer.

THE FULL ARTICLE TITLE

Bardet S et al Prognostic value of microscopic lymph node involvement in patients with papillary thyroid cancer. J Clin Endocrinol Metab. 2015;100(1):132-140.

SUMMARY OF THE STUDY

A total of 305 thyroid cancer patients treated with thyroidectomy and radioactive iodine therapy were included in the study. Cancerous lymph nodes that were either felt on physical exam, seen on ultrasound imaging before surgery, or suspected to be cancerous by the surgeon during surgery were considered macroscopic lymph nodes. All other lymph node metastases were considered microscopic because they could only be detected by the pathologist looking at the lymph node under the microscope. Persistent or recurrent thyroid cancer was evaluated by various types of imaging tests including radioactive iodine whole body scanning with SPECT-CT, FDG-PET imaging, ultrasound and CT scans. The results showed that patients with macroscopic lymph node metastases had a 49% risk for recurrence, whereas those patients with microscopic lymph node metastases had a 24% risk for recurrence. Patients without lymph node metastases had a 12% recurrence rate. Patients with cancers ≥2cm, spread outside of the thyroid and any spread to lymph nodes were more likely to have persistent or recurrent thyroid cancer.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors conclude that patients with microscopic lymph node involvement with cancer have a lower rate of persistence or recurrence than patients with macroscopic lymph node disease, but higher than those with no metastatic lymph nodes. Since post-surgical treatment and future monitoring of thyroid cancer is often based on the findings at the time of the initial thyroid surgery, this study helps physicians determine the risk for persistent or recurrent thyroid cancer so that they can best guide the treatment and long term follow up of each patient.

— Wendy Sacks, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://www.thyroid.org/cancer-of-the-thyroid-gland

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

Thyroid Surgery: http://thyroid.org/patients/patient_brochures/surgery.html

THYROID CANCER, continued

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer.

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.

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.

Diagnostic Whole Body Scans: these radioactive iodine scans are performed under TSH stimulation, either after thyroid hormone withdrawal or after injections of recombinant human TSH (Thyrogen), and usually include measuring serum thyroglobulin levels.

Positron-Emission-Tomography (PET) scans: 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 PET scan. PET scans are frequently combined with CT scans to accurately identify where the cancer is located.

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

Metastatic cancer: spread of cancer cells from the original site of the cancer (primary cancer) to another site, such as lymph nodes, lung, bone, liver or other tissues.

Macroscopic Nodal Metastases: Lymph nodes harboring thyroid cancer that are visibly abnormal on ultrasound imaging of the neck or to the surgeon during the time of surgery.

Microscopic Nodal metastases: Lymph nodes harboring thyroid cancer that can only be detected on microscopic evaluation by the pathologist.

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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 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**

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www.thyroid.org
ATA Patient Resources: http://www.thyroid.org/patients/
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.

continued on next page

AMERICAN THYROID ASSOCIATION
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Light of Life Foundation
checkyourneck.com

GRAVES' DISEASE & THYROID FOUNDATION

Thyroid Federation International

ThyCa: Thyroid Cancer Survivors' Association, Inc.
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.

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AMERICAN THYROID ASSOCIATION FOUNDED 1923

Light of Life Foundation checkyourneck.com

GRAVES' DISEASE & THYROID FOUNDATION

ThyCa: Thyroid Cancer Survivors' Association, Inc.SM 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

http://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.

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