american thyroid association

Clinical Thyroidology for the Public

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CLINICAL **THYROIDOLOGY** FOR THE **PUBLIC**
A publication of the American Thyroid Association
VOLUME 9 • ISSUE 9 • SEPTEMBER 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*.

September is Thyroid Cancer Awareness Month.

Come to our free Thyroid Patient Forum in Denver, Colorado on September 24, 2017!

In this issue, the studies ask the following questions:

1. Do thyroid nodule management guidelines provide effective cancer risk assessment?
2. Are childhood cancers survivors at high risk for developing endocrine problems?
3. Are there plant compounds that can stimulate thyroid function in Hashimoto's thyroiditis?
4. Does quality of life improve in hypothyroid patients after 6 months on levothyroxine?
5. Are thyroid hormone levels related to obesity?
6. Is subclinical thyroid disease a risk factor for death in elderly patients?

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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THYROID NODULES

Guidelines provide effective cancer risk assessment for thyroid nodules

BACKGROUND

Thyroid nodules are common, but only 4–7% of nodules are cancerous. Both ultrasound and fine-needle biopsy have been used to determine if thyroid nodules are cancerous. Fine needle biopsy is considered an accurate method for identifying thyroid cancer, but all nodules do not need to be biopsied. Guidelines have been developed recommending fine needle biopsy for certain nodules seen on ultrasound. In the American Thyroid Association guidelines, thyroid nodules are classified into five categories according to their combination of US features: (a) high suspicion of cancer, (b) intermediate suspicion of cancer, (c) low suspicion of cancer, (d) very low suspicion of cancer and (e) non-cancerous. Fine needle biopsy is strongly recommended in nodules in the high- and intermediate-suspicion categories, which have cancer rates of more than 70%–90% (high risk) and 10%–20% (intermediate risk). Fine needle biopsy is also recommended for nodules in the low-suspicion, very-low-suspicion, and benign categories when the nodule is larger than 1.5 to 2.0 cm.

Another guideline—the Thyroid Imaging Reporting and Data System (TIRADS)—has been developed to help standardize the reporting and management of thyroid nodules detected on ultrasound. This classification is divided into six categories: 1 (normal thyroid gland), 2 (benign), 3 (probably benign), 4A (low suspicion for cancer), 4B (intermediate suspicion for cancer), 4c (moderate concern but not classic for cancer) and 5 (highly suggestive of cancer). The purpose of this study was to compare the risk stratification of thyroid nodules with the American Thyroid Association guidelines and the TIRADS guidelines.

THE FULL ARTICLE TITLES

Yoon JH. Malignancy risk stratification of thyroid nodules: comparison between the thyroid imaging reporting and data system and the 2014 American Thyroid Association management guidelines. Radiology 2016;278:917–24. Epub September 8, 2015.

SUMMARY OF THE STUDY

This study was conducted from November 2013 to July 2014. A total of 1293 thyroid nodules in 1241 patients were included. Nodules included in the study were either removed surgically or had definitive diagnostic results on fine needle biopsy. All nodules measured at least 10 mm. A TIRADS category and the ultrasound pattern as determined with American Thyroid Association guidelines were assigned to each nodule. The correlation between the TIRADS category or American Thyroid Association grading and the cancer rate were evaluated.

Of the 1293 thyroid nodules, 1059 (81.9%) were benign and 234 (18.1%) were malignant. A total of 44 of the 1293 nodules (3.4%) did not meet the criteria for the American Thyroid Association patterns and were classified as "not specified." The cancer rates of TIRADS category 3, 4a, 4b, 4c, and 5 nodules were 1.9% (6 of 316 nodules), 4.2% (17 of 408 nodules), 12.9% (33 of 256 nodules), 49.8% (130 of 261 nodules), and 92.3% (48 of 52 nodules). The cancer rates of nodules with very low, low, intermediate, and high suspicion for malignancy with the American Thyroid Association guidelines and not-specified patterns were 2.7% (11 of 407 nodules), 3.1% (10 of 323 nodules), 16.7% (39 of 233 nodules), 58.0% (166 of 286 nodules), and 18.2% (8 of 44 nodules). There was high correlation between classification with TIRADS and American Thyroid Association guidelines with no statistically significant differences.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Several studies have focused on specific features on thyroid ultrasound that can help separate benign from cancerous nodules. There has been no universal agreement on a standard classification system for nodules detected with ultrasound. This lack of agreement results in confusion for physicians. The TIRADS and recent American Thyroid Association guidelines aim to minimize the confusion associated with recommendations for the follow-up for thyroid nodules. This study demonstrates both TIRADS and the American Thyroid Association guidelines provide effective cancer risk groupings for thyroid nodules making it easier for physicians to determine who should undergo observation, fine needle biopsy, and surgery.

— Ronald B. Kuppersmith, MD, FACS

THYROID NODULES, continued

ATA THYROID BROCHURE LINKS

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

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

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

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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CHILDHOOD CANCER AND THYROID DISEASE

Childhood cancer survivors are at high risk for thyroid and other endocrine disorders

BACKGROUND

It is estimated that there are currently 420,000 survivors of childhood cancers in the United States. There has been a significant progress in the treatment of many childhood cancers and the overall 5-year survival rate is >80%. Different cancer treatments, such as radiation therapy to the neck, which may affect the thyroid, or the head, which may affect the hypothalamus/pituitary, can result in endocrine problems. It is expected that many childhood cancer survivors will develop endocrine abnormalities years after the cancer treatment. To date, there is only limited published data on long term follow-up of these patients. This is the largest study evaluating the development of endocrine disorders over an extended period of time in childhood cancer survivors according to the treatment received.

THE FULL ARTICLE TITLE

Mostoufi-Moab S et al Endocrine abnormalities in aging survivors of childhood cancer: a report from the Childhood Cancer Survivor Study. J Clin Oncol. July 5, 2016 Jul 5 [Epub ahead of print].

SUMMARY OF THE STUDY

The study included a total of 14,290 patients from the Childhood Cancer Survivor Study (NCSS), a multi-institutional study including long-term survivors of various childhood cancers treated at 26 U.S. or Canadian institutions. Patients were diagnosed with leukemia, central nervous system cancers, Hodgkin's or non-Hodgkin's lymphoma, Wilms' tumor, neuroblastoma, sarcoma, or bone cancer before age 21. They received cancer treatment between 1970 and 1986 and survived for at least 5 years after diagnosis. The cancers survivors or family members completed a baseline survey between 1994 and 1999 and then follow-up surveys in 2000, 2003, and 2007 regarding personal/family medical history, including development of endocrine disorders and age at diagnosis. A total of 4031 randomly chosen siblings of the study participants who did not have cancer were used for comparison. Cancer diagnosis and treatment data, especially treatments known to affect the endocrine system, such as thyroid, hypothalamic/pituitary, testicular/ovarian, and total-body irradiation were retrieved from medical records.

The average age at cancer diagnosis was 6 years and the average age at final follow-up was 32 years. In the survivor group, 83% were white, 5% black, and 5% Hispanic; the rest had either mixed or unknown ethnicity. Among the survivors, 44% had at least one self-reported endocrine disorder, 16.7% had at least two, and 6.6% had three or more. Hodgkin's lymphoma survivors had the highest frequency of endocrine disorders.

All survivors, and especially those who were exposed to thyroid or hypothalamic-pituitary irradiation had a higher risk of developing thyroid disorders with increasing age, including an underactive or overactive thyroid, thyroid nodules, and thyroid cancer as compared to siblings.

Overall, survivors had the same risk for obesity but a higher risk for diabetes as compared to siblings. Survivors treated with higher doses of cranial irradiation had an almost two-fold greater risk of obesity, while survivors who received abdominal irradiation or total body irradiaiton had an almost two-fold greater risk of diabetes as compared to survivors not exposed.

The risk for ovarian/testicular failure was increased in survivors exposed to ovarian/ testicular irradiation, hypothalamic/pituitary irradiation or cyclophosphamide, as compared with survivors without those exposures.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

All childhood cancer survivors have a higher risk to develop an underactive or overactive thyroid, thyroid nodules, thyroid cancer, and other endocrine disorders than their siblings who did not have cancer, with the risk increasing steadily over time. The risk of thyroid disorders is particularly high in survivors with history of head or neck radiation exposure. These findings underscore the importance of life-long screening for endocrine abnormalities in childhood cancer survivors.

— Alina Gavrila, MD, MMSC

CHILDHOOD CANCER AND THYROID DISEASE, continued

ATA THYROID BROCHURE LINKS

Hypothyroidism: http://www.thyroid.org/hypothyroidism/

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

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

ABBREVIATIONS & DEFINITIONS

Hypothalamus: part of the brain that controls secretion of hormones by the pituitary gland and participate in regulation of different body processes, including body temperature, hunger, and thirst.

Pituitary gland: this endocrine gland sits at the base of the brain and secretes hormones that control thyroid and adrenal function, growth and reproduction. The pituitary gland secretes TSH to control thyroid function.

Thyroid nodule: an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (benign), ~5-10% are cancerous.

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HYPOTHYROIDISM

Can black cumin powder improve thyroid function in Hashimoto's thyroiditis?

BACKGROUND

Hashimoto's thyroiditis is an inflammatory condition in which the immune system attacks the thyroid gland, usually causing destruction of the thyroid cells and low thyroid hormone levels (T_4 and T_3). In response to low thyroid hormones, the pituitary gland produces elevated levels of Thyroid Stimulating Hormone (TSH). Patients with this condition often have elevated markers of immune reaction against the thyroid, called antibodies, and the most common ones are called anti-TPO antibodies. *Nigella sativa* (also known as black cumin seed or black powder) is a plant that grows in Europe and Asia and has been used to treat inflammatory disorders; however, the effect of this seed on Hashimoto's has not been well studied. The goal of this study was to determine the effects of powdered black cumin on thyroid function and inflammation on patients with Hashimoto's thyroiditis.

THE FULL ARTICLE TITLE

Tajmiri S et al. *Nigella sativa* treatment and serum concentrations of thyroid hormones, transforming growth factor β (TGF-β) and interleukin 23 (IL-23) in patients with Hashimoto's thyroiditis. Eur J Integrative Med. March 10, 2016 [Epub ahead of print]

SUMMARY OF THE STUDY

A total of 100 patients with Hashimoto's thyroiditis were screened to see whether they qualified for the study. A total of 47 patients met inclusion criteria and were started on thyroid hormone replacement at 1.7 mcg/kg/day. No changes were made in dose during the study time. Patients were then divided in two groups, the treatment group, which received *Nigella sativa* powder and the placebo or control group. A total of 40 patients with Hashimoto's thyroiditis, aged 20-50 years, were included in the analysis. Patients received either 2 grams a day of *Nigella sativa* (active compound) or 2 grams of corn starch (inactive compound) a day, 1 gram before lunch and 1 gram before dinner for 8 weeks. The body-mass-index (BMI), physical activity level, TSH, T_3 and T_4, Anti-TPO antibodies, and the inflammatory molecules TGF-β and IL-23 were measured before and after the study time. BMI decreased from 27.1 to 26.2 in patients receiving *Nigella sativa*. Results also showed statistically significant decrease in IL-23 levels, anti-TPO antibodies, and TSH levels in the group treated with *Nigella sativa* seed. Also, T_3 and T_4 levels increased significantly in the treatment group. Limitations to the study include that it is not clear what the authors meant by "percent changes in the result table. It is also not clear how the patients were paired after excluding the seven patients. Also, patients were only studied for 8 weeks.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that powdered black cumin may have beneficial effects on patients with Hashimoto's thyroiditis. However, this was only an 8 week study and more studies are needed to confirm whether this compound may help in the management of thyroid disorders.

— Liuska Pesce, MD

ATA THYROID BROCHURE LINKS

Hypothyroidism: http://www.thyroid.org/hypothyroidism/

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

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

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).

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

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HYPOTHYROIDISM, continued

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

Thyroiditis: inflammation of the thyroid, most commonly cause by antibodies that attack the thyroid as seen in Hashimoto's thyroiditis and post-partum thyroiditis. It can also result from an infection in the thyroid.

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

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

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

TPO 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.

Antibodies: proteins that are produced by the body's immune cells that attack and destroy bacteria and viruses that cause infections. Occasionally the antibodies get confused and attack the body's own tissues, causing autoimmune disease.

Autoimmune disorders: A diverse group of disorders that are caused by antibodies that get confused and attack the body's own tissues. The disorder depends on what tissue the antibodies attack. Graves' disease and Hashimoto's thyroiditis are examples of autoimmune thyroid disease. Other Autoimmune disorders include: type 1 diabetes mellitus, Addison's disease (adrenal insufficiency), vitiligo (loss of pigment of some areas of the skin), systemic lupus erythematosus, pernicious anemia (B12 deficiency), celiac disease, inflammatory bowel disease, myasthenia gravis, multiple sclerosis, and rheumatoid arthritis.

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 September is **Thyroid Cancer 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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HYPOTHYROIDISM

Quality of life associated with treated hypothyroidism

BACKGROUND

Hypothyroidism causes many symptoms related to low thyroid hormone levels, including feeling tired, feeling cold, dry skin and weight gain. Treating hypothyroidism by replacing thyroxine, the main hormone produced by the thyroid gland, resolves the symptoms of hypothyroidism in the majority of patients. However, many patients with a diagnosis of hypothyroidism report a decreased quality of life compared to people without hypothyroidism. This has been reported in patients on treatment as well as those untreated. However, changes in quality of life over time and the effects of the initiation of therapy on quality of life have not been done. Therefore, this study measured quality of life with a validated thyroid-specific questionnaire before and at various time points after the initiation of therapy for treatment of hypothyroidism to see if treatment improved quality of life and, if so, what was the time course of treatment to see improvement.

THE FULL ARTICLE TITLE

Winther KH et al. Disease-specific as well as generic quality of life is widely impacted in autoimmune hypothyroidism and improves during the first six months of levothyroxine therapy. PLoS One 2016;11:e0156925.

SUMMARY OF THE STUDY

Adult patients referred to Copenhagen University Hospital from 2008-2012 for treatment of newly diagnosed primary hypothyroidism were recruited for the study. Patient's TSH had to be > 4.0 mIU/L and had to have positive antibodies to their thyroid (ie Hashimoto's). They completed a thyroid-specific quality of life questionnaire (THYPRO) and generic quality of life assessment (SF-36) before treatment with levothyroxine was started, at 6 weeks, and 6 months after starting levothyroxine. A group of randomly selected Danish citizens with normal thyroid function also completed both of the questionnaires for comparison.

Most of the patients that participated with healthy, middle-aged women. Approximately 2/3 of the patients had TSH in the normal range at 6 months, but 1/3 still had mild hypothyroidism, meaning that their levothyroxine dose was too low. Before starting levothyroxine, quality of life was lower in patients with hypothyroidism compared to healthy Danish controls on all measured scales, with the largest difference in the degree of tiredness. Most quality of life scores improved by 6 weeks after starting medication, and scores for depression and cosmetic concerns continued to improve over the entire 6 months. However, at 6 months, many quality of life measures were still worse than the healthy population controls. There was no association between quality of life and thyroid hormone blood levels.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Patients with untreated hypothyroidism had worse quality of life, predominantly fatigue, compared to healthy patients without hypothyroidism. Quality of life improved after treatment but remained not as good as the control population. There are many reasons for this, including having to take a pill every day and having a medical diagnosis. Also, there is consideration as to whether levothyroxine therapy alone is the best treatment for hypothyroidism. None of these possibilities were addressed by this study and should be examined in the future. Although the way the study was done could be improved upon, patients and their physicians should set realistic goals for improvement at the start of treatment, and especially discuss that some level of decreased quality of life may remain beyond 6 months despite adequate treatment.

— Melanie Goldfarb, MD

ATA THYROID BROCHURE LINKS

Hypothyroidism: http://www.thyroid.org/hypothyroidism/

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

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

HYPOTHYROIDISM, continued

ABBREVIATIONS & DEFINITIONS

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

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

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

Thyroid hormone therapy: patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. Replacement therapy means the goal is a TSH in the normal range and is the usual therapy. Suppressive therapy means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

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

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THYROID AND WEIGHT

Thyroid function and weight gain

BACKGROUND

The thyroid hormones are important for regulating weight. It is well-known than hypothyroidism (an underactive thyroid gland) can lead to slower metabolism, weight gain, and a higher body-mass index (BMI). However, not much is known about how the thyroid hormones may be related to other measures of obesity, such as waist size, the ratio of waist to hip sizes, and the ratio of waist size to height. In particular, it is unclear if thyroid hormone levels that are either within the normal range or just mildly abnormal may be related to these measurements. This study was done to help answer these questions using the data of 5 preexisting research subject groups in Europe.

THE FULL ARTICLE TITLE

Tiller D et al. Association of serum TSH with anthropometric markers of obesity in the general population. Thyroid (ePub ahead of print)

SUMMARY OF THE STUDY

This was an analysis of 5 large studies that had available thyroid hormone blood test results. Participants in all of these studies were from the general population in Europe. The researchers then measured the subjects' BMI, waist and hip sizes, and heights. These measurements of body weight were analyzed according to their thyroid hormone blood test results. The main thyroid function test that was studied was thyroid stimulating hormone (TSH) levels in the blood. In total, the 5 studies contained 16,902 subjects from the general population, of which 48.5% were men. The average BMI values ranged from 25.6-27.9, the average TSH levels ranged from 0.66-1.40 mIU/L, and subjects' ages were from 20- 95 years.

In one of the studies that had data for a single point in time, blood TSH levels were related to waist size and the ratio of waist to height sizes. For example, high blood TSH levels in this study (indicating a more underactive thyroid gland) were related to more weight gain. However, the opposite was found in the other four studies, which had data of subjects followed for up to 6 years. From these studies, higher blood TSH levels (indicating a more underactive thyroid gland) were related to actually better measures of weight gain. In all of the studies, these findings remained true whether only normal blood TSH levels were considered or even those which were slightly abnormal.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In this collection of 5 studies, thyroid function (as measured by blood TSH levels) was inconsistently related to various measures of body weight. The study highlights some of the complexities regarding how the thyroid may be related to weight gain and obesity. Additional research in this field will continue to help us understand how the thyroid hormones, even when not in the abnormal range, may be important in regulating metabolism, weight, and the development of obesity.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

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

Thyroid and Weight: http://www.thyroid.org/thyroid-and-weight/

ABBREVIATIONS & DEFINITIONS

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

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.

Body-mass index (BMI): A standardized measure of obesity calculated by dividing the weight in kilograms by the square of the height. A normal BMI is 18.5-24.9, overweight is 25-30 and obese is >30.

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SUBCLINICAL THYROID DISEASE

Subclinical thyroid disease is associated with increased death in the elderly

BACKGROUND

Subclinical thyroid disease occurs when the only lab abnormality is the thyroid-stimulating hormone (TSH) level as the thyroid hormone levels of T_3 and T_3 are normal. In subclinical hypothyroidism (underactive thyroid), a mild form of hypothyroidism, the TSH is slightly increased. In subclinical hyperthyroidism, a mild form of hyperthyroidism (overactive thyroid), the TSH is slightly low. While moderate to severe thyroid disease clearly have adverse health effects, it is less clear to determine the adverse effects of subclinical thyroid disease. The elderly have an increased risk of moderate to severe thyroid disease and are more susceptible to possible adverse effects, including death. It is unclear whether subclinical/mild thyroid disease is associated with death in the elderly. This study was done to examine to what degree, if any, subclinical hypothyroidism and subclinical hyperthyroidism are associated with early death in the elderly.

THE FULL ARTICLE TITLE

Grossman A et al. Subclinical thyroid disease and mortality in the elderly: a retrospective cohort study. Am J Med 2016;129:423-30. Epub December 20, 2016.

SUMMARY OF THE STUDY

The study included a total of 17,440 patients 65 years or older from the Clalit Health Medical Organization database in Israel, who had at least one TSH measurement in 2002 and were followed until 2012. Of these, 14,946 patients were normal cases (euthyroid) and 2495 patients had subclinical hypothyroidism or subclinical hyperthyroidism. Patients were divided into 3 groups according to their TSH values: normal (normal TSH value), subclinical hypothyroidism (serum TSH values greater than 4.2 mIU/L) and subclinical hyperthyroidism (serum TSH values less than 0.35 mIU/L). The death rate was compared among the 3 groups.

The study found that both patients with subclinical hypothyroidism and subclinical hyperthyroidism were independently associated with significantly increased death as compared to the normal cases. In patients with subclinical hypothyroidism, the highest death rates were associated with a TSH higher than 6.38 mIU/L. For patients with subclinical hyperthyroidism, there was no threshold for increased death.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study found that subclinical thyroid disease might be associated with early death in patients over the age of 65. Earlier reports supported the view that increasing levels of TSH were associated with decreased death rates, especially in patients over the age of 80. Clinicians should be cautious in interpreting the results of this study, as this was not a prospective study. However, as the treatment of subclinical thyroid disease in the elderly remains controversial, this study may provide information regarding patients in whom the decision to treat is not obvious.

— Maria Papaleontiou, MD

ATA THYROID BROCHURE LINKS

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

Hypothyroidism: http://www.thyroid.org/hypothyroidism/

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

ABBREVIATIONS & DEFINITIONS

Subclinical Hypothyroidism: a mild form of hypothyroidism where the only abnormal hormone level is an increased TSH. There is controversy as to whether this should be treated or not.

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

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SUBCLINICAL THYROID DISEASE, continued

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.

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

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

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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**

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.

continued on next page

AMERICAN THYROID ASSOCIATION
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Light of Life Foundation
checkyourneck.com

GRAVES' DISEASE & THYROID FOUNDATION

Thyroid Federation International

BITE ME CANCER!

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

Thyroid Cancer Canada
Cancer de la thyroïde Canada

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

AMERICAN THYROID ASSOCIATION
FOUNDED 1923

Light of Life Foundation
checkyourneck.com

GRAVES' DISEASE & THYROID FOUNDATION

Thyroid Federation International

BITE ME CANCER!

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

Thyroid Cancer Canada
Cancer de la thyroïde Canada

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.

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Thyroid Cancer Canada
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FREE Public Health Forum – All are welcome

Thyroid experts from the American Thyroid Association and thyroid patients join together to inform the general public, other thyroid patients, and their friends and families about:

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Thyroid Disease and You

Concerned about low energy?...Memory loss?...Fatigue?...Depression? …
Rapid heartbeat?…Restlessness?…Infertility?... Weight or hair changes?…
A lump on your neck?... Could it be your thyroid?

Saturday, September 24, 2016

2:30 pm – 4:30 pm

Denver, Colorado

Location: Governor's Square 14 Room, Plaza Building, Concourse Level
Sheraton Denver Downtown Hotel
1550 Court Place, Denver, CO 80202
Phone: 1-303-893-3333

Physician experts will discuss thyroid disorders.

This program is free and all are welcome, including walk-in-attendees. Reservations are encouraged to ensure we have enough seating. For more information and to register, please e-mail ThyCa at thyca@thyca.org.

Who should attend?

Anyone who has had an overactive or underactive thyroid, thyroiditis, a thyroid nodule, thyroid cancer, or a family history of thyroid problems or related disorders, including rheumatoid arthritis, juvenile diabetes, pernicious anemia, or prematurely gray hair (starting before age 30) Please come if you have questions, symptoms, or concerns about a thyroid problem. Receive free educational materials.

Reservations requested. Walk-ins welcome.

E-mail thyca@thyca.org to RSVP
(Please indicate in your message the thyroid condition you are most concerned about.)

Online educational information for patients is provided by all members of the ATA Alliance for Patient Education co-sponsoring this forum: ThyCa: Thyroid Cancer Survivors' Association, Graves' Disease and Thyroid Foundation, Light of Life Foundation, Bite Me Cancer, Thyroid Cancer Canada and Thyroid Federation International. Go online to www.thyroid.org and click on "Patient Information" to access the resources you need.

Join us for the

September 21-25, 2016

86th Annual Meeting of the American Thyroid Association

DENVER, COLORADO
www.thyroid.org

JOIN EXPERTS AND THOUGHT LEADERS IN FIELD OF THYROIDOLOGY TO HEAR INNOVATIVE TALKS, participate in interactive sessions, and network with friends and colleagues at the ATA Annual Meeting. Held at the Sheraton Denver Downtown Hotel in Denver, Colorado, the ATA meeting is open to all health care professionals interested in broadening their knowledge of the thyroid gland and its disorders. The ATA Program Committee led, by Co-Chairs Peter Arvan and Stephanie Fish, have developed a scientific program to satisfy the interests of all audiences. The Ridgway Trainee Conference, the full-day satellite ultrasound course and focused discussion debate, will be available to accent the robust meeting agenda. Don't miss your opportunity to earn CME credits, develop professionally and foster long lasting connections.

ATA 2016 CALL FOR ABSTRACT SUBMISSIONS

Regular Call:
Site Closed – Wednesday, May 25, 2016

Short Call:
Site Opens – Wednesday, July 27, 2016
Site Closes – Wednesday, August 10, 2016

REGISTRATION and HOUSING OPEN NOW AT WWW.THYROID.ORG

Agenda, meeting updates, exhibitor and sponsor opportunities available online.

SAVE THE DATE FOR THESE UPCOMING ATA MEETINGS:

87th Annual Meeting of the American Thyroid Association – October 18-22, 2017
The Fairmont Empress and Victoria Conference Center, Victoria, BC, Canada

88th Annual Meeting of the American Thyroid Association – October 3-7, 2018
Marriott Marquis, Washington, DC

89th Annual Meeting of the American Thyroid Association – October 30-November 3, 2019
Sheraton Grand Chicago, Chicago, IL

Spring Meeting of the American Thyroid Association – May 28-30, 2020
Westin New York at Times Square, New York, NY

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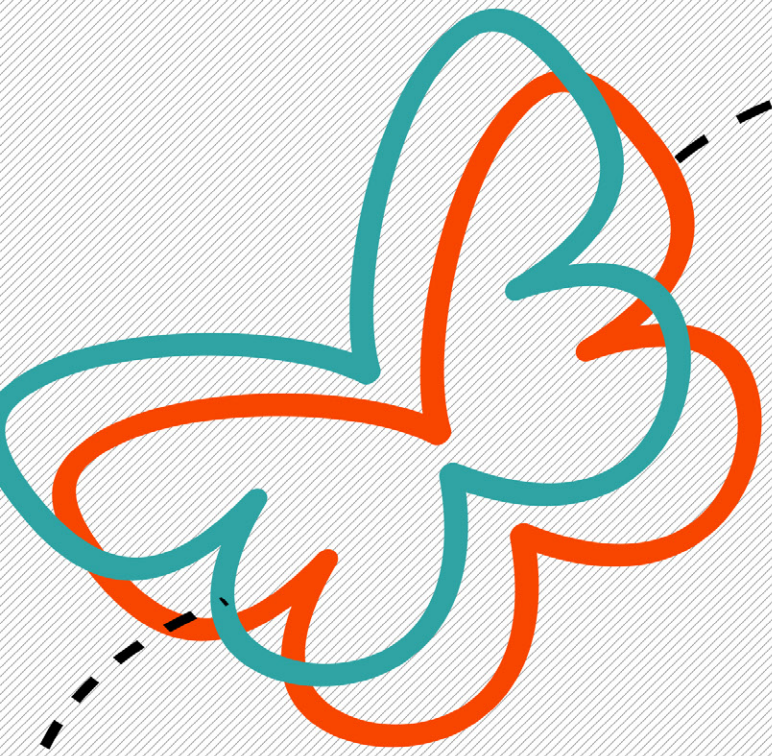
6066 Leesburg Pike, Suite 550, Falls Church VA 22041 USA | 703.998.8890
thyroid@thyroid.org | www.thyroid.org

American Thyroid Association

Dedicated to scientific inquiry, clinical excellence, public service, education and collaboration

Reasons to #GIVE2THYROID

www.thyroid.org/donate



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:

+thyroid brochures
+summarized medical literature
+endocrinologist referral
+monthly newsletters
+support links
+patient alliance community
+health and education forums

Reason 2

Thyroid Physicians, Scientists & Professionals

The American Thyroid Association® provides outstanding leadership in thyroidology by promoting excellence and innovation in clinical management, research, education, and patient care. Help support thyroid specialists and the development of resources that advance our understanding of thyroid disorders and cancer including:

+clinical practice guidelines
+position statements
+early career training
+research and education grants
+leadership & service awards
+community for collaboration
+continuing education programs
+peer-review biomedical journals
+summarized medical literature
+up to date thyroid news & publications
+patient education

American Thyroid Association

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Thyroid Cancer

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.

CANCER OF THE THYROID

Thyroid cancer is rare compared to other cancers. In the United States in 2010 an estimated 45,000 patients were diagnosed with thyroid cancer compared to over 200,000 patients with breast cancer and 140,000 patients with colon cancer. However, fewer than 2000 patients die of thyroid cancer each year. In 2008 when statistics were last collected, over 450,000 patients were alive and living with thyroid cancer. Thyroid cancer is usually very treatable and is often cured with surgery (see *Thyroid Surgery brochure*) and, if indicated, radioactive iodine (see *Radioactive Iodine brochure*). Even when thyroid cancer is more advanced, effective and well-tolerated treatment is available for the most common forms of thyroid cancer. It is interesting that the number of individuals - both men and women - with newly diagnosed thyroid cancer is increasing at a rate faster than for other types of cancer. The reason for this is unclear. Even though the diagnosis of cancer is terrifying, the outlook for patients with thyroid cancer is usually excellent.

WHAT ARE THE SYMPTOMS OF THYROID CANCER?

Thyroid cancer often arises in a lump or nodule in the thyroid and does not cause any symptoms (see *Thyroid Nodule brochure*). Lab tests generally do not help to find thyroid cancer. Thyroid tests such as TSH are usually normal even when a cancer is present. The best way to find a thyroid cancer is to make sure that your thyroid gland does not have nodules and is not enlarged. Neck examination by your doctor is the best way to do that. Often, thyroid nodules are discovered incidentally on imaging tests like CT scans and neck ultrasound done for completely unrelated reasons. Occasionally, patients themselves find thyroid nodules by noticing a lump in their neck while looking in a mirror, buttoning their collar, or fastening a necklace. Rarely, thyroid cancers and nodules do cause symptoms. In these cases, patients may complain of pain in the neck, jaw, or ear. If a nodule is large enough to compress the windpipe or esophagus, it may cause difficulty with breathing, swallowing, or cause a "tickle in the throat". Even less commonly, hoarseness can be caused if a cancer invades the nerve that controls the vocal cords.

The important points to remember are that cancers arising in thyroid nodules generally do not cause symptoms, thyroid tests are typically normal even when cancer is present, and the best way to find a thyroid nodule is to make sure your doctor checks your neck!

WHAT CAUSES THYROID CANCER?

Thyroid cancer is more common in people who have a history of exposure to high doses of radiation, have a family history of thyroid cancer, and are older than 40 years of age. However, for most patients, we do not know the specific reason why thyroid cancers develop.

High dose radiation exposure, especially during childhood, increases the risk of developing thyroid cancer in susceptible patients. Prior to the 1960s X-ray treatments were often used for conditions such as acne, inflamed tonsils, adenoids, lymph nodes, or to treat enlargement of a gland in the chest called the thymus. All these treatments have been associated with an increased risk of developing thyroid cancer later in life. Even X-ray therapy used to treat serious cancers such as Hodgkin's disease (cancer of the lymph nodes) or breast cancer has been associated with an increased risk for developing thyroid cancer if the treatment included exposure to the head, neck or chest. Routine X-ray exposure such as dental X-rays, chest X-rays, mammograms have not been shown to cause thyroid cancer.

Thyroid cancer can also be caused by radioactive iodine released during nuclear disasters such as the 1986 accident at the Chernobyl power plant in Russia or the 2011 nuclear disaster in Fukushima, Japan related to the tsunami. Children are usually the most affected and often develop cancers within a few years of exposure. However, even adults exposed during these accidents develop thyroid cancer with increased frequency, sometimes as many as 40 years later.

Thyroid Cancer

You can be protected from developing thyroid cancer in the event of a nuclear disaster by taking potassium iodide (see *Nuclear Radiation and the Thyroid brochure*). This prevents the absorption of radioactive iodine and has been demonstrated to reduce the risk of thyroid cancer. The American Thyroid Association recommends that anyone living within 200 miles of a nuclear accident be given potassium iodide. If you live in a state containing a nuclear reactor and want more information about potassium iodide, check the recommendations from your state at the following link: *http://www.thyroid.org/professionals/publications/statements/ki/02_04_09_ki_states.html.*

HOW IS THYROID CANCER DIAGNOSED?

A diagnosis of thyroid cancer is usually made by a fine needle aspiration biopsy of a thyroid nodule or after the nodule is removed during surgery (see *Thyroid Nodule brochure*). Although thyroid nodules are very common, less than 1 in 10 harbors a thyroid cancer.

WHAT ARE THE TYPES OF THYROID CANCER?

PAPILLARY THYROID CANCER. Papillary thyroid cancer is the most common type, making up about 70% to 80% of all thyroid cancers. Papillary thyroid cancer can occur at any age. Papillary cancer tends to grow slowly and often spreads to lymph nodes in the neck. However, unlike many other cancers, papillary cancer has a generally excellent outlook even if there is spread to the lymph nodes.

FOLLICULAR THYROID CANCER. Follicular thyroid cancer, which makes up about 10% to 15% of all thyroid cancers in the United States, tends to occur in somewhat older patients than does papillary cancer. As with papillary cancer, follicular cancer first can spread to lymph nodes in the neck. Follicular cancer is also more likely than papillary cancer to grow into blood vessels and from there to spread to distant areas, particularly the lungs and bones.

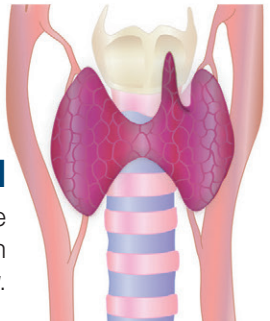
MEDULLARY THYROID CANCER. Medullary thyroid cancer, which accounts for 5% to 10% of all thyroid cancers, is more likely to run in families and be associated with other endocrine problems. In family members of an affected person, a test for a genetic mutation in the RET proto-oncogene can lead to an early diagnosis of medullary thyroid cancer and, subsequently, curative surgery to remove it.

ANAPLASTIC THYROID CANCER. Anaplastic thyroid cancer is the most advanced and aggressive thyroid cancer and is the least likely to respond to treatment. Fortunately, anaplastic thyroid cancer is rare and found in less than 2% of patients with thyroid cancer.

WHAT IS THE TREATMENT FOR THYROID CANCER?

SURGERY. The primary therapy for all forms of thyroid cancer is surgery (see *Thyroid Surgery brochure*). The generally accepted approach at the present time is to remove the entire thyroid gland in what is called a total thyroidectomy. Some patients will have thyroid cancer present in the lymph nodes of the neck or upper chest. These lymph nodes are removed at the time of thyroid surgery or sometimes, as a later procedure. After surgery, patients need to be on thyroid hormone for the rest of their life (see *Thyroid Hormone Treatment brochure*). Often, thyroid cancer is cured by surgery alone, especially if the cancer is small. If the cancer is larger, if it has spread to lymph nodes or if your doctor feels that you are at high risk for recurrent cancer, radioactive iodine may be used to destroy any remaining thyroid cancer cells after the thyroid gland is removed. Please read the Thyroid Surgery brochure to learn more details about the risks and benefits of surgery, and what kind of recovery can be expected.

RADIOACTIVE IODINE THERAPY. Thyroid cells and most thyroid cancers absorb and concentrate iodine very readily. That is why radioactive iodine can be used so effectively to destroy all remaining normal and cancerous thyroid tissue after thyroidectomy (see *Radioactive Iodine brochure*). The procedure to destroy or ablate thyroid tissue is called a radioactive iodine ablation. This produces high concentrations of radioactive iodine in thyroid tissues damaging the DNA in the thyroid cells, eventually causing the cells to die. Since other tissues in the body do not efficiently absorb or concentrate iodine, radioactive iodine used during the ablation procedure has little or no effect on tissues outside of the thyroid. Two risks are known to happen. In some patients, the radioactive iodine can affect the glands that produce saliva and lead to a having a dry mouth. In other patients, when high dose of radioactive iodine are necessary, there may be a small risk of developing other cancers later. These risks are small but increase as the doses of radioactive iodine increase. The potential risks of treatment can be minimized by using the smallest dose possible. Balancing potential risks against the benefits of radioactive iodine therapy is an important discussion that you should have with your doctor if radioactive iodine therapy is recommended.



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*.

Thyroid Cancer

If your doctor recommends radioactive iodine therapy, your TSH will need to be elevated prior to the treatment. This can be done in two ways. The first is by stopping to take thyroid hormone pill (levothyroxine) for 4-6 weeks. This causes you to become hypothyroid and high levels of TSH will be produced by your body naturally. However, hypothyroidism causes fatigue that can sometimes be significant. To minimize the symptoms of hypothyroidism your doctor may prescribe T3 (Cytomel®, liothyronine) which is a short acting form of thyroid hormone that is usually taken after the levothyroxine is stopped until the final 2 weeks before treatment. Alternatively, TSH can be increased sufficiently without making you hypothyroid simply by injecting TSH into you! Recombinant human TSH (rhTSH, Thyrogen®) can be given as two injections in the several days prior to radioactive iodine treatment. The benefit of this approach is that you can stay on thyroid hormone and do not become hypothyroid. You may also be asked to go on a low iodine diet for 1 to 2 weeks prior to treatment (see Low Iodine Diet FAQ). This will leave your body iodine depleted which improves absorption of radioactive iodine, and helps maximize the treatment effect.

Once the TSH level is high enough, a pretherapy iodine scan is often done by administering a small dose of radioactive iodine. This scan determines how much thyroid tissue needs to be destroyed and allows the doctor to calculate how large a dose of therapeutic radioactive iodine needs to be administered. When used correctly, radioactive iodine therapy has proven to be safe and well-tolerated and it has even been able to cure cases of thyroid cancer that have spread to other parts of the body like the lungs.

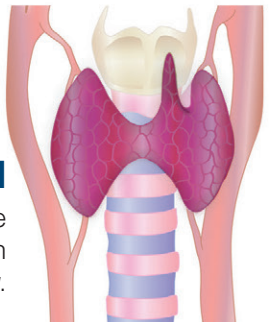
TREATMENT OF ADVANCED THYROID CANCER. Thyroid cancer that spreads (metastasizes) to distant locations in the body occurs rarely but can be a serious problem. Surgery and radioactive iodine remain the best way to treat such cancers as long as these treatments continue to work. However, for more advanced cancers, or when radioactive iodine therapy is no longer effective, other means of treatment are needed. External beam radiation directs precisely focused X-rays to areas that need to be treated—often metastases to bones or other organs. This can kill or slow the growth of specific tumors. Cancer that has spread more widely requires additional treatment.

New chemotherapy agents that have shown promise treating other advanced cancers are increasingly available for treatment of thyroid cancer. These drugs rarely cure advanced cancers that have spread widely throughout the body. However, they can often slow down or partially reverse the growth of the cancer. These treatments are usually given by an oncologist (cancer specialist) and often require care at a regional or university medical center.

WHAT IS THE FOLLOW-UP FOR PATIENTS WITH THYROID CANCER?

Periodic follow-up examinations are essential for all patients with thyroid cancer because the thyroid cancer can return—sometimes many years after successful initial treatment. These follow-up visits include a careful history and physical examination, with particular attention to the neck area. Neck ultrasound is also a very important tool to visualize the inside of the neck and look for nodules, lumps or cancerous lymph nodes that might indicate the cancer has recurred. Blood tests are also important for thyroid cancer patients. All patients who have undergone thyroidectomy require thyroid hormone replacement with levothyroxine once the thyroid is removed (see *Thyroid Hormone Treatment brochure*). The dose of levothyroxine prescribed by your doctor will in part be determined by the extent of your thyroid cancer. More extensive cancers require higher doses of levothyroxine to suppress TSH. In cases of minimal or very low risk cancers, it's safe to keep TSH in the normal range. The TSH level is the most sensitive indicator of whether the levothyroxine dose is correctly adjusted and should be followed regularly by your doctor.

Another very important blood test is measurement of thyroglobulin. Thyroglobulin is a protein produced by thyroid tissue and most types of thyroid cancer and is usually checked at least once annually. Following thyroidectomy and radioactive iodine ablation, thyroglobulin levels should be undetectable for life. Therefore, a detectable thyroglobulin level should raise a suspicion for possible cancer recurrence. Detectable thyroglobulin levels may require additional tests and



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***.

Thyroid Cancer

possible further treatment with radioactive iodine and surgery. Thyroglobulin is generally measured either when you're on thyroid hormone with a low or normal TSH, or after TSH is elevated either by stopping thyroid hormone for 3-6 weeks, or after injection of Thyrogen® (see section on radioactive iodine therapy above). Measurement of thyroglobulin may not be possible in up to 25% of patients who have interfering thyroglobulin antibodies present in their blood. In these patients, other means of follow up are often used.

In addition to routine blood tests, your doctor may want to periodically repeat a whole-body iodine scan to determine if any thyroid cells remain. Whole body scanning is also done after your TSH level is raised, either by stopping your thyroid hormone or by administering Thyrogen® injections. Increasingly, these scans are only done for high risk patients and have been largely replaced by routine neck ultrasound and thyroglobulin measurements that have a higher diagnostic sensitivity especially when done together.

WHAT IS THE PROGNOSIS OF THYROID CANCER?

Overall, the prognosis of thyroid cancer is excellent especially for patients younger than 45 years of age and those with small cancers. Patients with papillary thyroid cancer who have a primary tumor that is confined to the thyroid gland have an excellent outlook. 10 year survival for such patients is 100% and death from thyroid cancer anytime thereafter is extremely rare. For patients over 45 years of age, or those with larger or more aggressive tumors, the prognosis remains very good but the risk of cancer recurrence is higher. The prognosis is not quite as good in patients whose cancer cannot be completely removed with surgery or destroyed with radioactive iodine treatment. Nonetheless, these patients often are able to live a long time and continue to feel well despite the fact that they continue to live with cancer. It is important to talk to your doctor about your individual profile of cancer and expected prognosis. It will be necessary to have lifelong monitoring, even after successful treatment.

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*.