

Clinical THYROIDOLOGY FOR THE PUBLIC



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Levy-Shraga Y et al Follow-up of newborns of mothers with Graves' disease. *Thyroid* . March 17, 2014

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Zhang B et al. Shear wave elastography for differentiation of benign and malignant thyroid nodules: a meta-analysis. *J Ultrasound Med* 2013;32:2163-9.

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Thyroid nodules are found in up to 25% of patients with Graves' disease. In these patients, there is a much greater frequency of papillary thyroid cancer, which may be more aggressive. This study attempts to evaluate the incidence, clinical behavior and outcome of papillary thyroid cancer in patients with Graves' disease who have undergone surgery.

Boutzios G et al. Higher incidence of tall cell variant of papillary thyroid carcinoma in Graves' disease. *Thyroid* 2014;24:347-54. Epub September 11, 2013; doi:10.1089/thy.2013.0133.

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Tall-Cell Variant of papillary microcarcinoma is more aggressive than the classic type

The most common type of thyroid microcarcinoma is papillary microcarcinoma. The tall-cell variant of papillary thyroid cancer makes up only about 1% of papillary thyroid cancers and is reported to be more aggressive than classic type of papillary thyroid cancer. The authors of this study tried to determine if tall-cell variant of microcarcinoma is more aggressive than the classic type of papillary microcarcinoma.

Bernstein J et al. Tall cell variant of papillary thyroid microcarcinoma: clinicopathologic features with BRAFV600E mutational analysis. *Thyroid* 2013;23:1525-31. Epub September 3, 2013.

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Clinical Thyroidology for the Public

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CLINICAL THYROIDOLOGY FOR THE PUBLIC

A publication of the American Thyroid Association

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EDITOR'S COMMENTS

Welcome to *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](https://twitter.com/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*, the *Graves' Disease and Thyroid Foundation*, the *Light of Life Foundation*, *ThyCa: Thyroid Cancer Survivors Association*, *Thyroid Cancer Canada* and *Thyroid Federation International*.

In this issue, the studies ask the following questions:

1. Does having thyroid problems affect your risk of death or heart problems?
2. What is the risk of hyperthyroidism in babies of women with Graves' disease?
3. Can shear wave elastography improve the diagnosis of thyroid nodules using ultrasound alone?
4. Do patients with Graves' disease have an increased risk for aggressive thyroid cancer?
5. Is Tall Cell variant of papillary cancer more aggressive than usual papillary cancer?

We welcome your feedback and suggestions. Let us know what you want to see in this publication. I hope you find these summaries interesting and informative.

— Alan P. Farwell, MD



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Volume 7 • Issue 7 • 2014 • 2

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HYPER- AND HYPOTHYROIDISM

Thyroid dysfunction and risk of death and cardiovascular events

BACKGROUND

Studies that have examined the all-cause death rate and cardiovascular risks of overt or subclinical hyperthyroidism or hypothyroidism have shown differing results, with some showing increased risk, some no risk, and others reduced risk (for hypothyroidism). In an effort to answer the question, this study was designed to examine the association between thyroid disease and death and cardiovascular risk in a large Danish population.

THE FULL ARTICLE TITLE

Selmer C et al. Subclinical and overt thyroid dysfunction and risk of all-cause mortality and cardiovascular events: a large population study. *J Clin Endocrinol Metab.* March 21, 2014 [Epub ahead of print].

SUMMARY OF THE STUDY

Several Danish national registries provided information on 563,700 residents of Copenhagen at least 18 years old (mean age 48.6 years; 61% women) who had thyroid function tests run between 2000 and 2009. Patients taking thyroid hormones or antithyroid drugs or had had a heart attack, stroke, heart failure, or cancer were excluded. Overt hyperthyroidism was defined as a low TSH with elevated free thyroxine (total 3902 individuals [0.6%]); subclinical hyperthyroidism as a low TSH with normal free thyroxine (5972 individuals [1.06%]); euthyroidism as a normal TSH (540,710 individuals [95.9%]); subclinical hypothyroidism as a high TSH with normal free thyroxine (11,560 individuals [2%]); and overt hypothyroidism as an elevated TSH with a low free thyroxine level (1549 individuals [0.3%]). The major outcomes were death from any cause and major adverse cardiovascular events (MACE), which included cardiovascular death, nonfatal heart attack and nonfatal stroke. Other outcomes were heart attack, stroke, heart failure, and cancer as individual problems. Comparisons were made between individuals with abnormal thyroid function tests and those with normal thyroid function tests and the data was adjusted for confounding variables such as age, sex, calendar year and several other variables.

During the study, 47,327 patients died. Both overt and subclinical hyperthyroidism was associated with an increased risk of all-cause mortality, MACE and heart failure. Isolated heart attack and stroke risk were not increased in comparison to those individuals with normal thyroid function. Patients with subclinical hypothyroidism had lower all-cause mortality than those with normal thyroid function and the risk for MACE did not differ for those with overt or subclinical hypothyroidism as compared with those with normal thyroid function.

When examined by sex and age, the reduced risk for all-cause mortality was present only in women with subclinical hypothyroidism and in subjects over age 65. Heart attack risk was increased in those with subclinical hypothyroidism, and cancer rates were lower in those with either subclinical or overt hypothyroidism.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The major conclusions were that cardiovascular death and all-cause mortality were increased in both overt and subclinical hyperthyroidism, with heart failure being the specific cause for the increased risk. In contrast, subclinical hypothyroidism was associated with decreased all-cause mortality risk in women and those over 65 years. These results are consistent with the current American Thyroid Association guidelines for the management of hyperthyroidism and hypothyroidism.

— Glenn Braunstein, MD

ATA THYROID BROCHURE LINKS

Thyroid and the Elderly: <http://www.thyroid.org/hypothyroidism-elderly/>

Thyroid Function Tests: <http://www.thyroid.org/blood-test-for-thyroid>

Hypothyroidism: <http://www.thyroid.org/what-is-hypothyroidism>

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



HYPER- AND 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.

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

Overt Hypothyroidism: clear hypothyroidism an increased TSH and a decreased T_4 level. All patients with overt hypothyroidism are usually treated with thyroid hormone pills.

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone.

Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

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

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.

Thyroxine (T_4): the major hormone produced by the thyroid gland. T_4 gets converted to the active hormone T_3 in various tissues in the body

Thyroid Awareness Monthly Campaigns Announced in Cooperation with PuraVida

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for PuraVida bracelets will be donated to the ATA. The month of July is **Differentiated Thyroid Cancer Awareness** and a bracelet is available through the **ATA Marketplace** to support thyroid cancer awareness and education related to thyroid disease.





HYPERTHYROIDISM

Thyroid tests on newborns within the first five days will detect neonatal hyperthyroidism

BACKGROUND

Graves' disease, the most common cause of hyperthyroidism, is caused by the body making an antibody (thyroid stimulating immunoglobulin) that turns on the thyroid. One complication of Graves' disease in women during pregnancy is the possibility that this antibody crosses from the mother to the developing baby and causes hyperthyroidism. Graves' disease in newborns is very rare, but can be severe and life threatening and have major effects on development. This study was performed to examine the levels of TSH and free T₄ in babies born to women with Graves' disease to determine how often the thyroid function of the baby is affected.

THE FULL ARTICLE TITLE

Levy-Shraga Y et al Follow-up of newborns of mothers with Graves' disease. *Thyroid*. March 17, 2014

SUMMARY OF THE STUDY

This study examined the records of 96 newborns born to mothers with Grave's disease (49 boys, 46 girls). This study took place at Sheba Medical Center in Ramat Gan, Israel between January 2007-December 2012. All mothers with a history of Grave's disease were supervised closely after delivery. Blood tests for TSH and Free T₄ were performed on babies who were 3-4 days old. If there was no evidence of neonatal hyperthyroidism, the babies were discharged to have outpatient follow up and labs in the following week.

Out of 96 babies, four (4%) had clear neonatal Grave's disease. In the 77 other babies, FT₄ levels were above the 95th percentile during days 3 to 6. From day 5 on, the proportion of TSH measurements below the 5th percentile increased to more than 60%. Some TSH levels remained below normal for a few weeks. After day 14 all FT₄ levels returned to normal range, however TSH did remain low in some patients until 3 months of age.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Most babies born to mothers with Graves' disease had evidence of mild hyperthyroidism for a few days following delivery. This study confirms that overt neonatal hyperthyroidism is rare. Based on these results, this study recommends checking thyroid function tests between postnatal days 3 to 5 to detect neonatal hyperthyroidism. If the FT₄ level is normal at day 14 and the baby does not manifest symptoms of hyperthyroidism, then further testing is not indicated.

— Heather Hofflich, DO

ATA THYROID BROCHURE LINKS

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

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

Thyroid and Pregnancy: <http://www.thyroid.org/thyroid-disease-and-pregnancy>

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.

Thyroxine (T₄): the major hormone produced by the thyroid gland. T₄ gets converted to the active hormone T₃ in various tissues in the body.

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.

Thyroid stimulating immunoglobulin (TSI): antibodies often present in the serum of patients with Graves' disease that are directed against the TSH receptor, that cause stimulation of this receptor resulting in increased levels of thyroid hormones in the blood and hyperthyroidism



THYROID NODULES

Shear wave elastography will differentiate benign from cancerous thyroid nodules

BACKGROUND

Thyroid nodules represent a common endocrine condition, being found in up to 50% of individuals on ultrasound. Most thyroid nodules are small and only 5-10% of thyroid nodules are cancerous. It is important to differentiate benign from cancerous thyroid nodules, and to avoid unnecessary surgery. Ultrasound-guided thyroid biopsy is currently the best choice to evaluate thyroid nodules. Thyroid biopsies can be easily and safely performed in the office. However, this procedure does result in local discomfort (usually minor) and it is costly, given the large number of procedures performed on a daily basis. Several studies have evaluated whether shear wave elastography, a non-invasive ultrasound method that measures tissue stiffness, can be used to differentiate between benign and cancerous thyroid nodules and avoid unnecessary thyroid biopsies. This study is a meta-analysis of studies using shear wave elastography (SWE) to differentiate benign from cancerous thyroid nodules.

THE FULL ARTICLE TITLE

Zhang B et al. Shear wave elastography for differentiation of benign and malignant thyroid nodules: a meta-analysis. *J Ultrasound Med* 2013;32:2163-9.

SUMMARY OF THE STUDY

An extensive medical literature search for studies published between September 2009 and September 2012 found five studies which met the criteria to be included in this meta-analysis. The meta-analysis included a total of 469 subjects with 698 nodules. Based on the biopsy and/or surgical pathology results, 568 nodules were

benign, while 130 nodules were cancerous. Three studies included patients who underwent thyroid surgery and had a final pathologic diagnosis. In two studies, those patients with suspicious or malignant biopsy results underwent thyroid surgery. SWE had a pooled sensitivity of 84% and specificity of 90% with a diagnostic accuracy of 92% to differentiate benign from cancerous thyroid nodules. There was a wide range for the cutoff values, therefore, a threshold recommendation between benign and cancerous thyroid nodules could not be provided from this study. However, 3% of nodules that SWE classified as benign were misdiagnosed nodules representing papillary cancers.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

SWE is a non-invasive ultrasound method that can be used to complement conventional ultrasound to differentiate benign from cancerous thyroid nodules and avoid the more invasive and costly biopsy in a large number of patients. Further large studies to determine the threshold and efficacy of this method between benign and cancerous thyroid nodules are needed.

— Alina Gavriila, MD, MMSC

ATA THYROID BROCHURE LINKS

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

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

Thyroid Surgery: <http://thyroid.org/patients/patient-brochures/surgery.html>

ABBREVIATIONS & DEFINITIONS

Meta-analysis: a study that combines and analyzes the data from several other studies addressing the same research hypothesis.

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 (malignant).

Thyroid ultrasound: a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses sound waves 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 NODULES, continued

Shear wave elastography: an ultrasound technique used to measure the stiffness of a thyroid nodule. Cancerous nodules are stiffer than benign nodules.

Thyroid fine needle aspiration biopsy (FNA): 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.

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

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THYROID CANCER

Patients with Graves' disease have a higher incidence of tall-cell variant of papillary thyroid carcinoma

BACKGROUND

Thyroid nodules are very common and are found in up to 50% of the general population. The likelihood any one nodule is a thyroid cancer is in the range of 6-8%. Thyroid nodules are also found in up to 25% of patients with Graves' disease, the most common cause of hyperthyroidism. In these patients, there is a much greater frequency of papillary thyroid cancer and may be as high as 42%. Further, papillary thyroid cancer is found in up to 17% of patients who undergo surgery for regardless of whether there is a nodule present. Some studies suggest that papillary thyroid cancer is more aggressive in patients with Graves' disease, but this is controversial. This study attempts to evaluate the incidence, clinical behavior and outcome of papillary thyroid cancer in patients with Graves' disease who have undergone surgery.

THE FULL ARTICLE TITLE

Boutzios G et al. Higher incidence of tall cell variant of papillary thyroid carcinoma in Graves' disease. *Thyroid* 2014;24:347-54. Epub September 11, 2013; doi:10.1089/thy.2013.0133.

SUMMARY OF THE STUDY

The authors reviewed the medical records of 2188 patients who had a thyroidectomy at a single institution in Crete (Greece) over an 8 year period. They recorded demographic, clinical features and pathology findings. The authors compared patients who had papillary thyroid cancer and Graves' disease to those who had papillary thyroid cancer but no Graves' disease. A total of 66.7% of cancers were not suspected before surgery. A total of 687 patients that underwent surgery (31.4%) were found to have thyroid cancer. The majority were papillary thyroid cancers (570; 26.1%) and 60% of those were cancers

smaller than 1 cm. Spread of the cancer outside the neck were found at the time of diagnosis in 4.9% of patients with papillary thyroid cancer. The overall incidence of papillary thyroid cancer in Graves' disease was 33.7% as compared with other studies (7%-17%). Patients with papillary thyroid cancer and Graves' disease were older, had larger thyroid glands and were more likely to have spread of the cancer to the lymph-nodes in the neck at the time of diagnosis. Tall Cell Variant of papillary thyroid cancer (a more aggressive form of cancer) was significantly more common in patients with Graves' disease. Spread of the cancer to the lymph-nodes in the neck were found in 55% of patients with Tall Cell Variant and Graves' disease compared to 29% of patients with Tall Cell Variant but not Graves' disease.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

An increased risk of thyroid cancer in Graves' disease has been observed in many studies, particularly when patients with Graves' disease have thyroid nodules. Because of the high frequency of papillary thyroid cancer and a greater percentage of the more aggressive Tall Cell Variant, prompt and careful evaluation of nodules should be performed in any patient with Graves' disease.

— M. Regina Castro, MD

ATA THYROID BROCHURE LINKS

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

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

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

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.

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



THYROID CANCER, continued

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.

Tall Cell variant: A variant of papillary thyroid cancer with cells that are twice as tall as wide and represent 50% of the cancer. These cancers are usually more aggressive and comprise 4-10% of papillary thyroid carcinomas

**THYROID CANCER****Tall-Cell Variant of papillary microcarcinoma is more aggressive than the classic type****BACKGROUND**

Microcarcinoma refers to a cancer that is < 1 cm in size. The most common type of thyroid microcarcinoma is papillary microcarcinoma. In general these patients are at low risk for cancer recurrence and very few patients die of their cancer. However, in a small number of patients with papillary microcarcinoma the cancer spreads outside of the thyroid or spread to the lymph nodes. Thus, it is important to find out what clinical features in patients with microcarcinoma may cause the cancer to come back or to spread the cancer and how aggressively these patients should be treated. The tall-cell variant of papillary thyroid cancer makes up only about 1% of papillary thyroid cancers and is reported to be more aggressive than classic type of papillary thyroid cancer. The authors of this study tried to determine if tall-cell variant of microcarcinoma is more aggressive than the classic type of papillary microcarcinoma.

THE FULL ARTICLE TITLE

Bernstein J et al. Tall cell variant of papillary thyroid microcarcinoma: clinicopathologic features with BRAFV600E mutational analysis. *Thyroid* 2013;23:1525-31. Epub September 3, 2013.

SUMMARY OF THE STUDY

In this study, the authors compared 27 patients with tall-cell papillary with 26 patients with classic papillary microcarcinoma. The cancer characteristics such as spread of the cancer outside of the thyroid, spread to the lymph

nodes and BRAF-mutation were compared between both groups. All 27 patients with tall-cell microcarcinoma underwent total thyroidectomy. The average size of the cancer was about 7 mm and the average age of the patients was 53-56 years, neither of which was different between both groups. Spread of the cancer outside of the thyroid was seen in 33% of tall-cell cancers but in none of the classic microcarcinomas. Tall-cell type and spread of cancer to the lymph nodes were slightly higher in males than in females. The BRAF mutation was found in 93% of the tall-cell microcarcinomas and in 77% of the classic papillary microcarcinomas.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that the tall-cell variant of papillary microcarcinoma is more aggressive and the management should be differentiated from other papillary microcarcinomas. The authors suggest that all patients with tall-cell papillary thyroid cancer should have the thyroid should be removed by surgery, even when it occurs as a microcarcinoma.

— 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>

ABBREVIATIONS & DEFINITIONS

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

Papillary microcarcinoma: a papillary thyroid cancer smaller than 1 cm in diameter.

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.

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.

BRAF gene: this is gene that codes for a protein that is involved in a signaling pathway and is important for cell growth. Mutations in the BRAF gene in adults appear to cause cancer.



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

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.

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.

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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...

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.

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



Thyroid Cancer Canada
Cancer de la thyroïde Canada

