Clinical THYROIDOLOGY FOR PATIENTS

AMERICAN THYROID ASSOCIATION
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Sztal-Mazer S et al Evidence for higher success rates and successful treatment earlier in Graves' disease with higher radioactive iodine doses.

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Radioactive iodine is a common treatment option in patients with hyperthyroidism. Lithium is a medication that works by increasing the time that radioactive iodine is retained within the thyroid and, thus, may improve the effect of the radioactive iodine treatment. This study examined the effect of lithium on the effectiveness of radioactive iodine therapy for hyperthyroidism due to Graves' disease or toxic nodular goiter.

Martin NM et al. Adjuvant lithium improves the efficacy of radioactive iodine treatment in Graves' and toxic nodular disease.

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The evaluation of thyroid nodules frequently involves a fine needle aspiration biopsy of the nodule. In addition to the biopsy results, the size of the nodule is often used to decide whether to refer the patient for thyroidectomy. In this study, the authors evaluated whether nodule size >4 cm affected the accuracy of thyroid biopsy or the incidence of cancer in the nodule.

Burch HB et al The impact of thyroid nodule size on the risk of malignancy and accuracy of fine-needle aspiration: a ten-year study from a single institution.

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Analysis of molecular markers on indeterminate thyroid biopsies may reduce the need for thyroid surgery

The evaluation of thyroid nodules frequently involves a fine need aspiration biopsy of the nodule. While a diagnosis is usually made after a biopsy, the results are indeterminate in up to 30 % of cases and usually lead to thyroid surgery. The company Veracyte unveiled a test for molecular markers for cancer in biopsy specimens. The goal of this study was to determine whether the use of this test with thyroid nodule biopsy is able to prevent unnecessary thyroid surgeries when compared to thyroid biopsy alone.

Duick DS et al. The impact of benign gene expression classifier test results on the endocrinologist-patient decision to operate on patients with thyroid nodules with indeterminate fine-needle aspiration cytopathology.

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Lazard DS et al. Early detection of hypocalcemia after total/completion thyroidectomy: routinely usable algorithm based on serum calcium level.

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Clinical Thyroidology for Patients

CLINICAL THYROIDOLOGY **FOR PATIENTS**

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EDITOR'S COMMENTS

Welcome to our 6th year of Clinical Thyroidology for Patients, bringing to you, the patient, the most up-to-date, cutting edge thyroid research. What you read here as research studies will likely become the accepted practice in the future. *Clinical Thyroidology for Patients* is published on a monthly basis and includes summaries of research studies that were discussed in a recent issue of *Clinical Thyroidology*, a publication of the American Thyroid Association for physicians. This means that you, the patients, are getting the latest information on thyroid research and treatment almost as soon as your physicians.

We will be providing even faster updates of late-breaking thyroid news through Twitter at @thyroidfriends and on Facebook. Our goal is to provide you with the tools to be the most informed thyroid patient in the waiting room. Please feel free to submit questions as well as suggestions as to how we can better serve thyroid patients.

The Calendar of Events highlights educational forums and support groups that are organized around the country by members of 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:

- Is gestational diabetes associated with autoimmune thyroid disease?
- What dose of radioactive iodine is the best for treatment of Graves' disease?
- Does lithium have a role in the treatment of hyperthyroidism with radioactive iodine?
- Do larger thyroid nodules have an increased risk of cancer?
- Can analysis of molecular markers on thyroid biopsies help make a diagnosis?
- Is there a cost-effective way of predicting post-thyroidectomy hypocalcemia?

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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THYROID DISEASE AND PREGNANCY

Thyroid dysfunction and autoimmune thyroid disease may increase risk of gestational diabetes

BACKGROUND

Thyroid hormone is important during pregnancy. It has been established that overt hypothyroidism (elevated TSH and low thyroid hormone levels) during pregnancy is associated with increased risk of premature birth, low infant birth weight, fetal death and miscarriage. There is also an increased risk of high blood pressure in the mother. Some studies have also shown that subclinical hypothyroidism (elevated TSH and normal thyroid hormone levels) is associated with pregnancy complications, especially if there is evidence of thyroid autoimmune disease, which may result in higher miscarriage rates. This study was performed to look at the frequency of thyroid dysfunction and thyroid autoimmune disease in pregnant women and to see if there was a relationship with adverse pregnancy and neonatal outcomes.

THE FULL ARTICLE TITLE

Karakosta P et al. Thyroid dysfunction and autoantibodies in early pregnancy are associated with increased risk of gestational diabetes and adverse birth outcomes. J Clin Endocrinol Metab. September 26, 2012 [Epub ahead of print].

SUMMARY OF THE STUDY

A total of 1170 women who were pregnant with a single baby participated in the study. Elevated TSH levels indicating hypothyroidism were found in 6.8% of the women. Elevated thyroid antibodies (TPO and thyroglobulin antibodies), markers of thyroid autoimmune disease, were detected in 13% and 7% of the women, respectively. The combination of high TSH and positive thyroid antibodies in early pregnancy was associated with a 4-fold increased risk for gestational diabetes in the mother during pregnancy and a 3-fold increased risk for low-birth-weight infants. Women with normal thyroid function, but with the presence of thyroid antibodies, had an increased risk of spontaneous preterm delivery. The authors concluded that high TSH levels and thyroid autoimmunity have a detrimental effect on pregnancy and birth outcomes.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study adds to the large body of studies that indicates that hypothyroidism in pregnancy, especially if untreated, has negative effects on both the mother and child. The major new finding in this study is that hypothyroidism from autoimmune thyroid disease is a risk factor for the development of gestational diabetes in the mother. Although these findings are provocative, they need to be confirmed with a larger study carried out in another group of pregnant women, whose thyroid function and glucose status are carefully monitored throughout pregnancy.

— Glenn Braunstein, MD

ATA THYROID BROCHURE LINKS

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

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

ABBREVIATIONS & DEFINITIONS

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.

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).

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THYROID DISEASE AND PREGNANCY, continued

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.

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.

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.

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

Miscarriage: this occurs when a baby dies in the first few months of a pregnancy, usually before 22 weeks of pregnancy.

Fetal death: this occurs when a baby dies later in pregnancy (usually after 22 weeks of pregnancy) before delivery.

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.

Gestational diabetes: diabetes that occurs during pregnancy in a mother who did not have diabetes before pregnancy and usually does not remain diabetic after pregnancy.

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HYPERTHYROIDISM

Treatment of hyperthyroidism with larger doses of radioactive iodine produces a higher success rate

BACKGROUND

Graves' disease is the most common cause of hyperthyroidism. Radioactive iodine treatment is a frequently used treatment option for hyperthyroidism due to Graves' disease. As a definitive therapy, radioactive iodine treats hyperthyroidism by destroying the thyroid gland. It is difficult, however, to determine the best radioactive iodine dose needed for an individual patient that will result in a normal thyroid function. A large radioactive iodine dose will destroy too much thyroid tissue resulting in hypothyroidism, while a low radioactive iodine dose will not destroy enough thyroid tissue and the patient will remain hyperthyroid. Since we cannot calculate the exact radioactive iodine dose that will result in normal thyroid function, achieving a hypothyroid state is the preferred outcome at present. This study compares the time needed to correct the hyperthyroidism and the success rate of different radioactive iodine doses.

THE FULL ARTICLE TITLE

Sztal-Mazer S et al Evidence for higher success rates and successful treatment earlier in Graves' disease with higher radioactive iodine doses. Thyroid 2012;22:991-5. doi: 10.1089/thy.2011.0362. Epub September 6, 2012.

SUMMARY OF THE STUDY

The study included 258 patients with Graves' disease who received radioactive iodine treatment and had adequate follow up between 1994 and 2009 at a thyroid center in Brazil. The patients group consisted of 85.6% women and the average age was 38.6 years. The average radioactive iodine dose was 21.4 mCi, with a range between 6 and 29.9 mCi. The patients were divided into three groups based on the RAI dose received: I (<15 mCi), II (16 to 20 mCi) and III (>21 mCi). There were 61 patients in group I, 95 in group II, and 97 in group III. The treatment was considered successful if after a single dose of radioactive iodine, the patients ether became hypothyroid or became euthyroid off all antithyroid drugs. The success rate was 73.7% in group I, 84.9% in group II and 89.0% in group III. The average time to achieve hypothyroidism or euthyroidism after the radioactive iodine treatment was 8.1, 4.6 and 2.9 months, respectively.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that the number of patients with Graves' disease who become hypothyroid or euthyroid after receiving radioactive iodine treatment is higher and the time period to achieve a hypothyroid or euthyroid state is shorter with higher radioactive iodine doses. The radioactive iodine doses used in this study are higher than the doses of 10-15 mCi that are recommended in the recent guidelines published by the American Thyroid Association. This study does not address possible side effects from the radioactive iodine treatment, which are related to the radiation dose. One should take into account the cost of lifelong therapy with thyroid hormone for patients who become hypothyroid after the radioactive treatment.

— Alina Gavrila, MD

ATA THYROID BROCHURE LINKS

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

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

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

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

ABBREVIATIONS & DEFINITIONS

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

Hypothyroidism: a condition where the thyroid gland is underactive and does not produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

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HYPERTHYROIDISM, continued

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid medications medication that block the thyroid from making thyroid hormone (Methimazole, Propylthiouracil), radioactive iodine that destroys the thyroid gland 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.

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).

mCi: millicurie, the units used for I-131.

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HYPERTHYROIDISM

Lithium improves the effect of radioactive iodine treatment in patients with Graves' disease or toxic nodular goiter

BACKGROUND

Graves' disease and toxic nodular goiter are two common causes of hyperthyroidism. Radioactive iodine is a common treatment option for patients with both of these disorders. Radioactive iodine is given by mouth and works by destroying the overactive thyroid cells slowly over several months. Lithium is a medication that works by increasing the time that radioactive iodine is retained within the thyroid and, thus, may improve the effect of the radioactive iodine treatment. Patients who are given lithium before radioactive iodine may require less radioactive iodine and/or have higher success rates in having their hyperthyroidism treated. This study examined the effect of lithium on the effectiveness of radioactive iodine therapy for hyperthyroidism due to Graves' disease or toxic nodular goiter.

THE FULL ARTICLE'S TITLE:

Martin NM et al. Adjuvant lithium improves the efficacy of radioactive iodine treatment in Graves' and toxic nodular disease. Clin Endocrinol 2012;77:621-7.

SUMMARY OF THE STUDY

This was a study of 204 patients with either Graves' disease or toxic nodular goiter who were treated with radioactive iodine between 2000-2002 in London, England. Half of the patients received radioactive iodine alone and the other half received lithium in addition to radioactive iodine therapy. At one year after treatment, there was a higher rate of euthyroidism (normal thyroid function) in those who took lithium and radioactive iodine (93%) as compared to those who received radioactive iodine alone (84%). Those who took lithium also achieved euthyroidism slightly faster than those who did not.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This is the largest study that has been published examining the use of lithium with radioactive iodine. Most of the patients in the study had Graves' disease and the findings are most pertinent to this group. Overall, the results suggest that lithium may be a useful medication in some patients with Graves' disease or toxic nodular goiter treated with radioactive iodine.

— Angela Leung, MD

ATA THYROID BROCHURE LINKS

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

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

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

ABBREVIATIONS & DEFINITIONS

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

Toxic nodular goiter: characterized by one or more nodules or lumps in the thyroid that may gradually grow and increase their activity so that the total output of thyroid hormone in the blood is greater than normal.

Radioactive iodine (RAI): this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (Thyroid Scan) or to take pictures of the whole body to look for thyroid cancer (Whole Body Scan).

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THYROID NODULES

Thyroid nodule size larger than 4 cm does not increase the risk of false negative biopsy results or the risk of cancer

BACKGROUND

Thyroid nodules are very common, occurring in up to 50% of the population as determined by neck imaging. Thyroid nodules are concerning due to their risk for thyroid cancer, which occurs in 5-8% of nodules. The evaluation of thyroid nodules frequently involves a fine need aspiration biopsy of the nodule. In addition to the biopsy results, the size of the nodule is often used to decide whether to refer the patient for thyroidectomy. In this study, the authors evaluated whether nodule size >4 cm affected the accuracy of thyroid biopsy or the incidence of cancer in the nodule.

THE FULL ARTICLE TITLE

Burch HB et al The impact of thyroid nodule size on the risk of malignancy and accuracy of fine-needle aspiration: a ten-year study from a single institution. Thyroid September 10, 2012.

SUMMARY OF THE STUDY

Between 2001 and 2011, 3013 patients had a biopsy of thyroid nodules at the Walter Reed Army Medical Center. Those who had surgery were included in the analysis. The nodule size was determined by the largest diameter measured by ultrasound and classified into 3 groups according to nodule size: Group A - 0.5 to 0.9 cm; Group B - 1 to 3.9 cm and Group C - ≥ 4 cm. The analysis included 540 patients with 695 nodules. Of these, 417 (60%) were benign; 22 (3.2%) were atypical; 122 (17.6%) showed follicular neoplasm; 77 (11.1%) were suspicious for malignancy and 57 (8.2%) were classified as malignant. There were 35 nodules in group A, 533 nodules in group B and 127 nodules in group C. Based on surgical pathology there were 129 cancerous nodules (18.6%) and the cancer rate was similar between all size categories

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Previous studies had shown that between 11- 20% of cancerous nodules ≥ 4 cm may be misclassified as benign (false negative) and this has led to recommendations that all nodules > 4 cm should be removed. The results of this study, however, show that thyroid nodule size ≥4 cm does not increase the risk of false negative biopsy results or the overall risk of cancer.

— 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

ABBREVIATIONS & DEFINITIONS

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

Thyroid Ultrasound: a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure of the thyroid gland and accurately identify and characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

Thyroid 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.

Follicular cell lesion: follicular cells are normal cells found in the thyroid. Current analysis of thyroid biopsy results cannot differentiate between follicular cell cancer from noncancerous adenomas. This occurs in 15-20% of biopsies and often results in the need for surgery to remove the nodule.

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THYROID NODULES, continued

Atypical thyroid biopsy: this happens when there are some abnormal/atypical cells in the biopsy sample but not enough to diagnose a cancer. However, because there are abnormal cells in the biopsy sample, the specimen cannot be called benign. Sometimes a repeat biopsy may be helpful but often surgery is recommended to remove the nodule.

Suspicious thyroid biopsy: this happens when there are atypical cytological features suggestive of, but not diagnostic for malignancy. Surgical removal of the nodule is required for a definitive diagnosis.

False negative results: this happens when the thyroid FNAB is consistent with a benign nodule, however, the surgical pathology reveals a malignant thyroid nodule.

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THYROID NODULES

Analysis of molecular markers on indeterminate thyroid biopsies may reduce the need for thyroid surgery

BACKGROUND

Thyroid nodules are very common, occurring in up to 50% of the population as determined by neck imaging. Thyroid nodules are concerning due to their risk for thyroid cancer, which occurs in 5-8% of nodules. The evaluation of thyroid nodules frequently involves a fine need aspiration biopsy of the nodule. While a diagnosis is usually made after a biopsy, the results are indeterminate in up to 30 % of cases. This means that it cannot be determined if the patient has a thyroid cancer that requires surgery or a benign nodule that can be simply watched. The risk for thyroid cancer in these situations is 20-40%, meaning that the majority of patients with indeterminate biopsies have what may be termed "unnecessary" thyroid surgery which is often associated with lifelong need for thyroid hormone replacement. It is clear that thyroid cancers express some unique genes that serve as molecular markers for cancer and which can be analyzed on cells removed during a biopsy. The company Veracyte unveiled this year the Affirma Gene Expression Classifier (AGEC) to test for these molecular markers. Veracyte claims that the AGEC test can predict a benign nodule in 95% of the cases when the test is read as negative for cancer. The goal of this study was to determine whether the use of the AGEC test with thyroid nodule biopsy is able to prevent unnecessary thyroid surgeries when compared to thyroid biopsy alone.

THE FULL ARTICLE TITLE

Duick DS et al. The impact of benign gene expression classifier test results on the endocrinologist-patient decision to operate on patients with thyroid nodules with indeterminate fine-needle aspiration cytopathology. Thyroid 2012;22:996-1001. Epub August 8, 2012; doi: 10.1089/thy.2012.0180.

SUMMARY OF THE STUDY

The study included patients of 51 endocrinologists with thyroid biopsy results read as indeterminate and AGEC test negative for cancer. Only 28 (7.6 %) such patients were referred to surgery for either 1) a large nodule, 2) a rapidly growing nodule, 3) having symptoms related to their nodules or 4) based on suspicious appearance of the nodules by ultrasound. However, the final pathology for the patients that had surgery was not stated, so it is unknown of any cancers were actually in this group.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that the use of the AGCE test resulted in a marked decrease in the number of unnecessary surgeries. However, there are several limitations to this study so the results still need to be validated with other studies. The Veracyte AGEC test does hold promise to aid in making a diagnosis and avoiding unnecessary surgery in patients with indeterminate biopsies.

— Mona Sabra, 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

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: 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 NODULES, continued

Indeterminate thyroid biopsy: this happens usually when the diagnosis is a follicular or hurthle cell lesion. Follicular and hurthle cells are normal cells found in the thyroid. Current analysis of thyroid biopsy results cannot differentiate between follicular or hurthle cell cancer from noncancerous adenomas. This occurs in 15-20% of biopsies and often results in the need for surgery to remove the nodule.

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.

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.

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THYROID SURGERY

Is there a cost-effective way of predicting post-thyroidectomy hypocalcemia?

BACKGROUND

The parathyroid glands sit next to the thyroid gland and secrete parathyroid hormone (PTH) that regulates blood calcium levels. The parathyroid glands are often bruised and don't work well for a period of time after thyroid surgery. This can lead to low calcium levels (hypocalcemia), which may occur in up to 30% of patients after total thyroidectomy. Hypocalcemia is the most common complication of thyroid surgery. This study examined calcium levels in patients before and after total thyroidectomy and created an algorithm to detect patients at risk of hypocalcemia.

THE FULL ARTICLE TITLE

Lazard DS et al. Early detection of hypocalcemia after total/completion thyroidectomy: routinely usable algorithm based on serum calcium level. World J Surg. August 2, 2012 [Epub ahead of print]. doi: 10.1007/s00268-012-1727-5.

SUMMARY OF THE STUDY

A total of 136 patients who underwent total thyroidectomy were studied. Serum calcium and phosphorus were measured before surgery and at 6, 12, 20 and 48 hours after surgery. Hypocalcemia was defined as a calcium level of ≤7.6 mg/dl or symptoms of hypocalcemia any time after surgery. In this group, 24% of patients had hypocalcemia by this definition. The lowest level of calcium occurred at 12 and 20 hours after surgery.

A decrease of ≥1.2 mg/dl between the preoperative calcium level and the value at 20 hours after surgery was the best predictor of hypocalcemia. None of the patients with a calcium level >7.6 mg/dl at 20 hours after surgery had hypocalcemia. This combination of calcium levels before surgery and 20 h after surgery predicted 79% of the patients in whom hypocalcemia eventually developed.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Mild hypocalcemia is very common after thyroid surgery. This study suggests a method to identify those patients that are at risk for severe hypocalcemia that can either prolong hospitalization or result in re-admission to the hospital. Once identified, these patients can then be treated more aggressively with calcium replacement and better manage their post-operative course.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

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

ABBREVIATIONS & DEFINITIONS

Hypocalcemia: low calcium levels in the blood, a complication from thyroid surgery that is usually short-term and relatively easily treated with calcium pills. If left untreated, low calcium may be associated with muscle twitching or cramping and, if severe, can cause seizures and/or heart problems.

Parathyroid glands: usually four small glands located around the thyroid that secrete parathyroid hormone (PTH) which regulates the body's calcium levels.

Parathyroid hormone (PTH): the hormone that regulates the body's calcium levels. High levels of PTH cause hypercalcemia, or too much calcium in the blood. Low levels of PTH cause hypocalcemia, or too little calcium in the blood.

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

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ATA Alliance for Thyroid Patient Education

WELCOME

The American Thyroid Association is pleased to welcome our two newest members, **Thyroid Federation International** and **Thyroid Cancer Canada**, to the 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 Patients*. 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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AMERICAN THYROID ASSOCIATION FOUNDED 1923

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

GRAVES' DISEASE & THYROID FOUNDATION

Thyroid Cancer Canada
Cancer de la thyroïde Canada

Light of Life Foundation
checkyourneck.com

Thyroid Federation International

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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