CLINICAL THYROIDOLOGY **FOR PATIENTS**

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HYPERTHYROIDISM

Updating the diagnostic criteria of thyroid storm

BACKGROUND

Hyperthyroidism is a condition where the thyroid gland is overactive and produces too much thyroid hormone. Symptoms may include weight loss, nervousness, irritability, increased sweating, a racing heart, hand tremors, anxiety, difficulty sleeping, increased bowel movements, fine brittle hair and muscular weakness—especially in the upper arms and thighs. The most extreme form of hyperthyroidism is termed thyroid storm. This is a medical emergency and may be fatal. Fortunately, thyroid storm is rare. The key to survival in thyroid storm is early diagnosis and early treatment. The difficulty in diagnosis is that thyroid storm is a clinical diagnosis – there is no diagnostic lab test and the increased levels of the thyroid hormones T_4 and T_3 are not significantly different from those seen in routine hyperthyroidism. This study was performed to assess and develop diagnostic criteria for thyroid storm to enable the rapid identification and treatment of patients and to decrease the risk of death.

THE FULL ARTICLE TITLE

Akamizu T et al. Diagnostic criteria and clinico-epidemiological features of thyroid storm based on a nationwide survey. Thyroid. April 11, 2012 [Epub ahead of print]. doi: 10.1089/thy.2011-0334.

SUMMARY OF THE STUDY

This study surveyed all Japanese university hospitals for all cases of thyroid storm seen from 2004-2008. A total of 541 possible cases of thyroid storm were analyzed and 356 patients met the criteria for the diagnosis. They also studied 133 patients with hyperthyroidism but not thyroid storm. As noted above, thyroid storm is a clinical diagnosis. The cardinal feature of thyroid storm involves the Central Nervous System (CNS) with restlessness, delirium, psychosis, seizures and a change of mental status. If CNS features were present, the presence of only 1 of the following conditions made the diagnosis: fever >100.4F, increased heart rate >130, severe congestive heart failure or a gastrointestinal issue (diarrhea, nausea/vomiting). If patient did not have CNS features then they had to have 3 of the above conditions.

As seen previously, levels of thyroid hormones did not differ between patients with hyperthyroidism and those with thyroid storm. A total of 38 patients died of thyroid storm, a mortality rates of ~10%. The most common cause of death was multiple organ failure. Common triggers for thyroid storm were: 1. Irregular use of thyroid medicine or stopping thyroid medication, 2. Infection, 3. Diabetic ketoacidosis, 4. Emotional stress and 5. Trauma.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study updated the diagnostic criteria for thyroid storm and showed that patients with CNS features only need 1 additional feature to make the diagnosis. This hopefully will assist in making the diagnosis quicker and allow earlier treatment to be started. Given the high mortality rate of thyroid storm, using updated diagnostic criteria can hopefully help identify thyroid storm patients earlier and prevent complications.

— Heather Hofflich, DO

ATA THYROID BROCHURE LINKS

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

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

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.

Thyroxine (T_4): the major hormone secreted by the thyroid gland. Thyroxine is broken down to produce Triiodothyronine which causes most of the effects of the thyroid.

Triiodothyronine (T_3): the active thyroid hormone, usually produced from thyroxine.

Thyroid storm: thyroid storm, also referred to as thyrotoxic crisis, is an acute, life-threatening, hypermetabolic state induced by excessive release of thyroid hormone in individuals with thyrotoxicosis.