



TSH SECRETING PITUITARY TUMORS

Treatment outcomes in patients with TSH-secreting pituitary adenomas

BACKGROUND

Pituitary adenomas are tumors of the pituitary gland. They are relatively common in the population and are generally benign. They cause problems for patients by either disrupting pituitary function (too much or too little hormone production) or causing mass effects such as headaches or vision changes. Individual pituitary adenomas are thought to be a result of one pituitary cell replicating uncontrollably. If the pituitary tumor cell type is derived from a TSH secreting pituitary cell it is called a TSH secreting pituitary adenoma. Patients with this very rare type of pituitary tumor present with signs and symptoms of hyperthyroidism. This type of hyperthyroidism is caused by too much TSH being secreted from the tumor causing the thyroid to make too much thyroid hormone. This is different from the more common hyperthyroidism caused by the thyroid gland acting on its own to secrete too much thyroid hormone. TSH blood levels are used to help differentiate these two causes of hyperthyroidism. Surgery to remove the pituitary tumor is generally the treatment of choice. If surgery is unsuccessful and TSH and thyroid hormone levels do not normalize, radiation therapy may be used. Newer treatments with drugs known as somatostatin analogs also have been shown to decrease tumor growth and TSH secretion in patients with these rare tumors. This study describes the effects of surgery and radiation on thyroid levels and tumor control in 70 patients with TSH secreting pituitary adenomas followed in Italy.

THE FULL ARTICLE TITLE

Malchiodi E et al Thyrotropin-secreting pituitary adenomas: outcome of pituitary surgery and irradiation. *J Clin Endocrinol Metab.* February 19, 2014 [Epub ahead of print].

SUMMARY OF THE STUDY

This study was included 70 patients in Italy with TSH secreting pituitary adenomas. The mean follow up was 64.4 months. The effects of neurosurgery to remove the pituitary adenoma or radiation were described. Most patients (97%) were treated with surgery, with approximately one third also receiving radiation therapy. Approximately 50% (33/70) were treated before pituitary surgery with somatostatin analogs to try to normalize their thyroid hormone levels. Most patients normalized their thyroid function (75% after surgery and 80% at last follow up). Treating patients with somatostatin analogs before surgery did not improve the effect of surgery. Radiation therapy controlled TSH secretion in 37% of patients. Of the patients that received radiation, one third developed a pituitary hormonal deficiency (hypopituitarism). Overall, of the patients who had control of their tumor, 80% had only received surgery and the remaining 20% received surgery followed by radiation.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

TSH secreting pituitary tumors are very rare. The initial treatment of choice is surgery to remove the tumor. If surgery is not curative, patients can be treated with radiation and/or somatostatin analogs. Radiation therapy causes hypopituitarism in approximately one third of patients, so patients must be followed over time to make sure they receive appropriate replacement for any hormonal deficiencies detected.

—Whitney Woodmansee MD

ATA THYROID BROCHURE LINKS

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

ABBREVIATIONS & DEFINITIONS

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.



TSH SECRETING PITUITARY TUMORS, continued

Hypopituitarism: decrease in function of the pituitary gland. Hypopituitarism can be partial (affecting the secretion of 1 or more hormones) or complete (panhypopituitarism, lack of secretion of all of the pituitary hormones). The symptoms of hypopituitarism depend on the gland system affected.

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.

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.

Somatostatin analog: drugs that usually works to inhibit other hormones. It is taken as a daily injection into the skin.

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