Two treatment patterns of thyrotropinomas with over 3-year follow-up

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Thyrotropinomas are rare pituitary adenomas (~1% of pituitary tumors). Most of them are macroadenomas. Clinical features of hyperthyroidism are usually present. Neurosurgery is considered the first-line treatment, followed by medical therapy with somatostatin analogues or radiotherapy. We present 2 cases of TSH-secreting pituitary macroadenomas with different therapeutic approaches.

**Case 1:** 63-years old man presented with severe weight loss (25 kg in 6 months), atrial fibrillation and congestive heart failure.

**Diagnostic evaluation:**
- TSH: 7.5 mIU/L, FT4: 45.5 pmol/L (9-19 pmol/L) → thyrotoxicosis with inappropriate TSH secretion
- Negative thyroid antibody screen (Anti-TPO: 5.6 U/L, TRAb: 0.1 U/L)
- Pituitary function tests: gonadotropin insufficiency (LH: 0.86 U/L, FSH: 1.05 U/L, testosterone: 0.11 ng/mL)
- Thyroid ultrasound showed no abnormalities
- Normal visual field

**Pituitary CT scan** showed a macroadenoma (2.37/2.56 cm) with suprasellar extension

**Post op CT scan** showing no residual tumor

**Treatment and follow-up**
He received somatostatin analogues (Lanreotide 30 mg i.m. every 2 weeks after acute Ocreotide test 0.1 mg sc every 8 hrs for 3 days, showing good response) and antithyroid drugs (methimazole 60–5 mg daily) for 3 months before transphenoidal tumor removal.

**IHC:** α and β TSH subunits – positive; negative for GH, PRL, FSH, LH → pure thyrotropinoma

After neurosurgery, he had complete tumor removal and disease remission without any antithyroid medication and no signs of recurrence after 7-year follow-up.

**Case 2:** 36-years, with a history of total thyroideectomy for thyroid follicular adenoma presented postoperative high TSH although he received daily substitution with 100 - 175 μg of levothyroxine and serum thyroid hormones were in high-normal concentrations. T3 (20-30 μg/day) was added to T4 treatment, but TSH remained high (between 41-18.4 mIU/L for FT4 between 16.5-25.8 pmol/L), showing inadequate TSH secretion.

**Laboratory findings at diagnosis:**
- TSH = 22.4 mIU/L, T4 = 10.8 μg/dL (4.5-13) → inappropriate TSH secretion
- **Acute octreotide suppression test** showed decreasing of TSH after Octreotide s.c. (100 μg every 8 hrs) by 97.8% with no significant change in serum T4 level (under LT4 substitution)

**Other findings:**
- OGTT 75 g: 0 min 0.09, 30 min 0.05, 60 min 0.05, 120 min 0.05
- Prolactin: 3.42 ng/mL. No clinical signs or laboratory tests of pituitary insufficiency. Thyroid ultrasound showed thyroid ablation.

**CONCLUSION**
Neurosurgery is the treatment of choice in thyrotropinomas but when surgery is refused somatostatin analogues are an efficient alternative for long-time disease control.

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