

Thyrotropin-Secreting Pituitary Adenoma: A Case in which Postoperative Surveillance made a Difference

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Introduction: Thyrotropin-secreting pituitary adenomas are rare entities in clinical practice (0,5-3% of all pituitary adenomas), in most cases requiring appropriate investigation with exclusion of other differential diagnoses, and documentation of autonomous production of TSH.

Case Report:

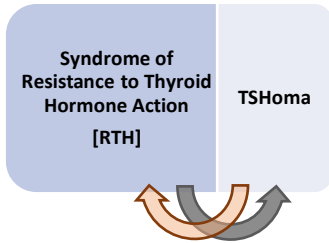
19-year-old male ♂

Depressive syndrome, mood changes and history of previous involuntary weight loss.

Thyrotoxicosis with inappropriately elevated TSH

| 2016 | |
|-------------------------------|----------------|
| Serum cortisol 11.1 µg/dL | |
| Prolactin 13.8 ng/mL | RR [4.04-15.2] |
| TSH 6.83 µU/mL | RR [0.27-4.2] |
| FT3 7.79 pg/mL | RR [2.0-4.4] |
| FT4 1.76 ng/dL | RR [0.93-1.7] |
| Anti-TPO e Anti-Tg | Negative |
| Total testosterona 4.76 ng/mL | RR [2.8-8] |
| SHBG 20.6 nmol/L | RR [13-71] |
| IGF-1 272 ng/mL | RR[243-527] |

RR: Reference Range.



Thyroid ultrasound: "(...) heterogeneous and micronodular echostructure, compatible with Lymphocytic Thyroiditis"

Thyroid Scintigraphy: "High uptake rate with homogeneous distribution"

MRI: "Asymmetry of the pituitary gland clearly higher on the right; this asymmetry is related to a cystic formation of the right half that is progressively uptake in the dynamic acquisition; This **cystic formation/microadenoma** is 8.2mm high by 9.7mm in transverse diameter"

Serum glycoprotein hormone alpha-sub-unit (α-GSU) 1,17 mU/mL [RR 0.00-0.80]
α-GSU/TSH >1

Blunted TSH response in TRH stimulation test.

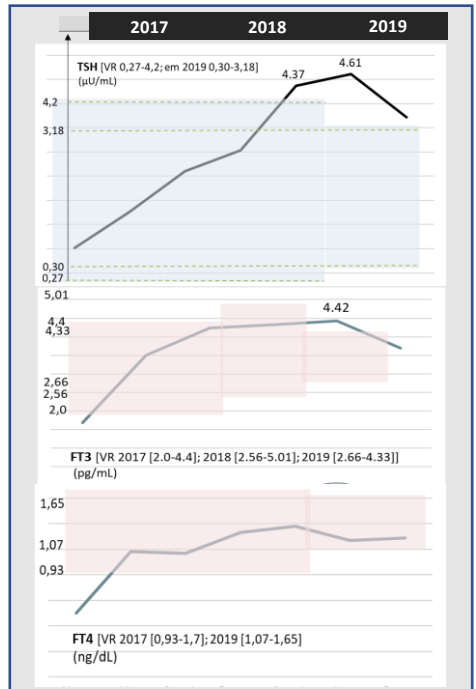
Normal total calcium and phosphorus.
 Negative genetic test for RHT.

| TSHoma | 2016 | | 2017 |
|------------------------------|-------|------|------|
| | Nov | Dez | Fev |
| TSH (µU/mL) RR [0.27-4.2] | 11,61 | 6.86 | 4,27 |
| FT3 (pg/mL) RR [2.0-4.4] | 7,25 | 7.81 | 4,54 |
| FT4 (ng/dL) RR [0.93-1.7] | 2,03 | 2.03 | 1,25 |

Started monthly *Octreotide 20x30mg*

March 2017: Transsphenoidal resection of the pituitary adenoma. Histology: **No neoplasm was identified.** Adeno and neurohypophysis of normal features.

D11 post-surgery: Hypothyroidism with normal TSH
 TSH N 1.02 µU/mL, ↓ FT3 1.69 pg/mL, ↓ FT4 0.50 ng/dL



TSH, FT4 and FT3 values above the normal limit in the 3rd year post-op (TSH 4.62 µU/mL, FT3 4.42 pg/mL) »»» **Recurrence?** MRI with **no imaging evidence of recurrence.**

2021 **Panic attacks + Thyrotoxicosis**
TSHoma recurrence was assumed.

New surgical approach: Pituitary adenoma with expression of PIT1 and positivity for TSH and PRL.
D15 post-surgery: TSH 0.09 RR [0.30-3.18], FT4 1,41 RR [2.66-4.33], FT3 0,34 RR [1.01-1.65].

Discussion: As a rare entity, definitive diagnosis and treatment of TSHoma proved to be challenging. Surgical removal is the first-line treatment. In our case, first surgery allowed clinical and analytical remission, and postoperative surveillance made a difference with timely detection of TSHoma recurrence. Clinical and analytical follow-up was crucial to adequate therapeutic management.