

Forty-two patients with thyrotropin-secreting pituitary adenomas: clinical characteristics and therapeutic outcomes



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INTRODUCTION

Thyrotropin-secreting pituitary adenomas (TSH-PAs) are a rare entity, being the least prevalent among all PAs, accounting for 2.7% of surgical series. For this reason, each case of TSH-PAs contributes to world practice.

MATERIALS & METHODS

Single-center continuous longitudinal study was carried out. TSH (0.25–3.5 mIU/L), FT4 (9–20 pmol/l) FT3 (2.5–5.5 pmol/l) were measured by Architect i2000SR (Abbott Laboratories, Abbott Park, Illinois, U.S.A). MRI performed on GE Optima MR450w 1.5T. Logistic model was built using Matlab R2021b.

RESULTS

42

patients with TSH-PAs observed from 2010 to 2022 in single center



men and women ratio: 1:3 (31 women)

the median age was 46 [32; 57]

the median years before the TSH-PAs diagnosis was 4 years, maximum – 31



At the **initial examination**:

- 18 patients showed an increase in TSH, FT3 and FT4 levels
- 11 patients had an increase in FT3 and FT4 levels with normal TSH
- 6 patients had an increase in TSH and either FT3 or FT4
- 4 had one of the hormones elevated

Thyroid status (Me [Q1; Q3]):

- TSH 4.3 [2.35; 6.9]
- FT3 7.63 [6.2; 10.72]
- FT4 23.46 [20.34; 29.35]

Sex steroid binding globulin, C-terminal telopeptide and osteocalcin were elevated in 62.86%, 62.07% and 48.15% of cases, respectively



Octreotide test

- The test with short-acting octreotide was performed in 24 patients, with 15 patients leading to full thyroid hormone normalization
- The test with long-acting octreotide was performed in 12 patients; 4 patients showed complete normalization of thyroid hormones



Treatment results

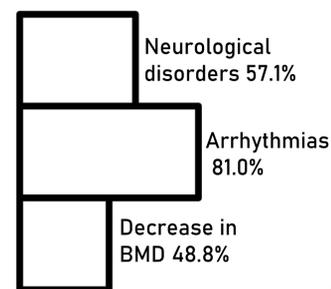
34

achieved remission

- ⊙ 28 after only neurosurgery
- ⊙ 3 received treatment only with somatostatin analogues
- ⊙ 3 required somatostatin analogues after neurosurgery

In 23 patients, diagnosis was confirmed by IHC; all examined PAs (15 cases) for SSTR2 expression were positive

The **most common** clinical manifestations

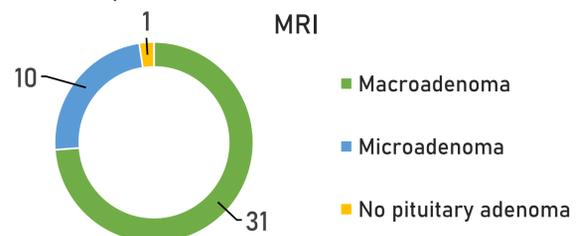


Hypopituitarism appeared in 4 cases before surgery



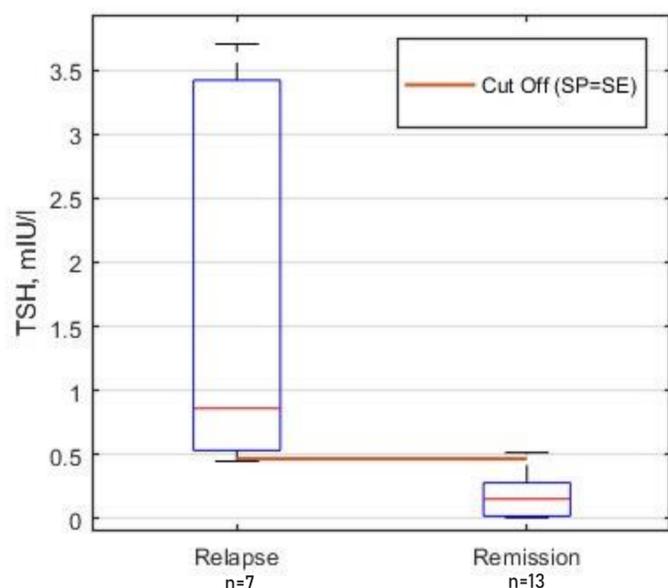
Cosecretion of GH+TSH was detected in 8 cases; hyperprolactinemia due to mass effect was established in 7 cases, 1 patient had TSH+PRL PA.

No patient had cosecretion of TSH and ACTH.



Median of tumor diameter – 15.5 mm [12; 25]

Cut off point for TSH-PAs relapse



Early postoperative TSH cut off point for relapse was > 0.467 mIU/l, SP = 85,7%, SE = 84,6%

CONCLUSION

- ▣ The diagnosis of TSH-PAs should be based on all thyroid hormones assessment, since only 42.86% of patients had all tests elevated
- ▣ At the time of diagnosis 73.81% of patients had macroadenomas and 81% had cardiac arrhythmias, suggesting a long duration of disease
- ▣ The most effective treatment is transphenoidal adenomectomy
- ▣ Possible early postoperative TSH levels model (>0,467) is suggested to predict relapses of TSH-PAs