Hyperthyroidism Due to *Thyrotropin Secreting Pituitary Adenoma* in a 7-Year-Old Boy

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Background

Pituitary adenomas in childhood are 2-6% of all surgically treated pituitary adenomas at all ages.

It has been estimated that thyrotropin (TSH) secretion is rare (less than 1% of all pituitary adenomas).

Therefore, TSH secreting adenoma is very rare in childhood.

Here, we present the youngest patient with TSH secreting adenoma.

Case

- 7 year old boy
- Presented to the Child Psychiatry clinics with hyperactivity and nervousness and refered to pediatric endocrinology for abnormal thyroid hormone profile
- He had intermitant mild headache for two years
- No growth spurt / no weight loss

Height :124.3 cm (0.5 SD)

Weight :38.2 kg (3.1 SD)

BMI :24.7 kg/m^2 (3.1 SD)

BP: 130/80mmHg (99p: 122/84 mmHg) Hypertension (+)

Heart rate:110 beats/min Mild tachycardia (+)

prepubertal

No thyroid enlargement

No tremor and ophthalmopathy.

Bone age: 8 y

Table 1. Initial Thyroid Function Tests

fT3 (pg/ml) (N:1.8-4.6)	7.5	8.6
fT4 (ng/dl) (N:0.93-1.7)	1.9	2.4
TSH (uIU/ml) (N:0.6-4.84)	10.5	10.2

Table 2. TRH Stimulation Test

	TSH uIU/ml (N:0.6-4.84)	**Prolactin** mg/ml (N:4.8-23.5)
0’	10.5	25.6
30’	47.9	39.4
60’	44.4	30.4
120’	37.2	

Table 3. Other Pituitary Functions

ACTH	<5 pg/ml
Cortisol	7.36 µg/dl (>10 µg/dl)
IGF1	290 ng/ml (+2SD 436)
IGFBP3	10.5 ug/ml (+2SD 6.5)
GH	0.53 ng/ml

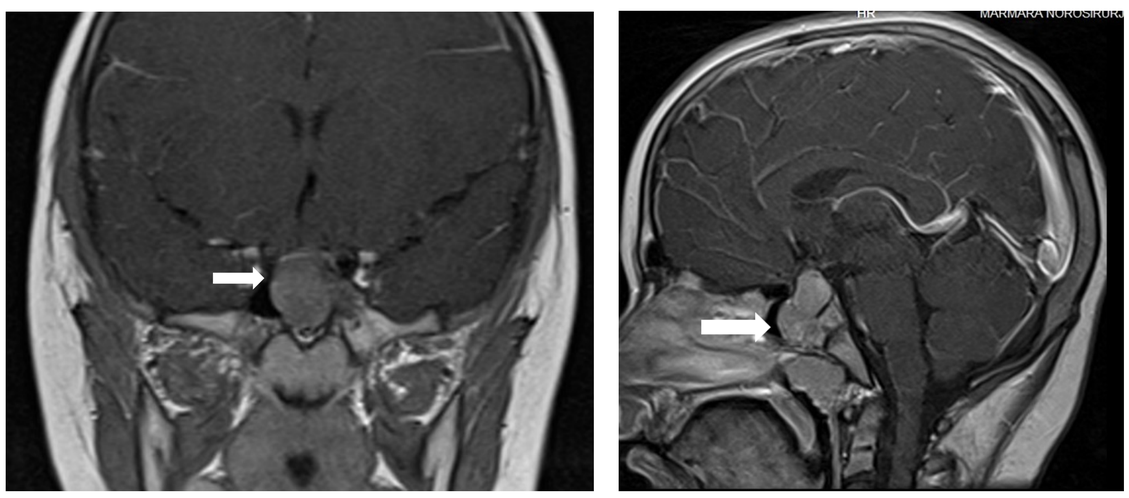

Figure 1. MRI; Macroadenoma, 17x16 mm, Sellar and suprasellar located right cavernous sinus infiltration,

Thyroid hormone resistance

TSH secreting adenoma

α subunit /TSH ratio

(α subunit (ng/ml) /TSH µU/ml)) x10

TSH secreting pituitary tumor >1

Pituitary resistance to thyroid hormone <1

Patient’s ratio: (8.80/10.2) x 10 = 8.6

Transsphenoidal Mass Excision: Pituitary Adenoma

GH : (+)
PRL : (+)
ACTH : (-)
TSH : (+)

Conclusions

- ✓ Although , TSH secreting adenoma is a rare condition in pediatric age group, it should be excluded in children having high or normal TSH level with high serum T4 and T3 levels.