

AN UNUSUAL CASE OF RESISTANCE TO THYROID HORMONE BEHAVING AS TSH-SECRETING PITUITARY ADENOMA

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Case Report:

A 74 years old man was referred to endocrine clinic with abnormal TFTs with raised free T4, FT3 but normal TSH which were done on routine testing by his GP. His past medical history included COPD and B12 deficiency and he was on inhalers, omeprazole and vitamin B12. He had no symptoms suggestive of thyrotoxicosis and was clinically euthyroid.

Assay interference was excluded with negative anti-heterophil antibodies and the similar TFT results using several different assays. Further investigations showed elevated SHBG and alpha-subunit which are usually raised in TSHoma. Subsequent CT pituitary gland surprisingly showed an empty Sella. The rest of the pituitary profile including prolactin, LH, FSH, IGF-1 and testosterone were normal. TRH stimulation showed a reasonably robust response which can be seen in some TSHomas. The octreotide suppression test showed a reduction of TSH, FT3 and FT4. Considering the possible underlying diagnosis to be TSHoma he was commenced on Lanreotide 90mg monthly but after two doses there was no biochemical improvement in his TSH or FT4. At this stage genetic testing was considered and this confirmed THR beta-gene mutation consistent with Thyroid Hormone resistance.

Discussion:

Both RTH and TSHoma are rare conditions and both can be completely asymptomatic. None of the biochemical tests are entirely pathognomonic but a combination of tests can be suggestive of either of these two conditions. A high SHBG and alpha-subunits favours TSHoma together with blunted TSH response to TRH and good response to octreotide. This case was unusual in that RTH behaved biochemically as a TSHoma. Genetic testing for RTH is not always positive with 10-15% of cases having no demonstrable mutation on the TR beta-gene. Therefore, physicians need to be cautious in the interpretation and be aware of the limitations of these tests in differentiating between RTH and TSHoma.

SHBG	84 nmol/L (12-78)
Alpha-subunits	3.72 IU/L (< 1.00)
LH	5.4 U/L (1.5 - 9.3)
FSH	10.9 U/L (1.4 - 18.1)
IgF-1	10.1 nmol/l (4.0 – 25.0)
Prolactin	147 micro IU/ml (60 - 315)
Testosterone	10.7 nmol/l (6.1 – 27.1)

Time	TSH	Prolactin
0 Min	1.86mU/L	152 microIU/ml
20 min	8.20	538
60 min	7.58	312

TRH stimulation test

Time	TSH	FT4	FT3
0 minutes	3.12 mU/L	45.5 pmol/L	6.5 pmol/L
60 min	1.68	42.8	5.9
120 min	1.50	41.0	5.9
180 min	1.10	37.0	5.3
240 min	1.00	37.0	5.1
300 min	0.93	36.3	5.3

Date	TSH	FT3	FT4
20/4/2015 First Injection	2.29	6.5	40.1
23/4/2015	1.20	5.5	31.5
18/5/2015 Second injection	1.79	5.9	36.8
17/8/2015	2.90		36.7
5/1/2015	2.26		43.7

Response to Lanreotide 90mg monthly

Octreotide suppression test