

# THYROTOXICOSIS RESISTANT TO TREATMENT - GRAVES' DISEASE OR FACTITIOUS THYROTOXICOSIS: A PUZZLE!

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**Introduction:** We describe an interesting case of a man who poses a significant ongoing management challenge.

**Clinical Presentation:** Patient presented with mild biochemical evidence of T<sub>3</sub> thyrotoxicosis (FT<sub>3</sub> 8.2, FT<sub>4</sub> 13.6, TSH 0.02). Carbimazole 20 mg was started and despite increasing dosage, he deteriorated significantly. He was alleged to be concordant with medication.

TBII and thyroid auto-antibodies were negative. A Tc uptake scan showed reduced uptake. Prednisolone was added, thinking that he may have thyroiditis as underlying cause of thyrotoxicosis. He denied eating burgers everyday (Hamburger toxicosis) and was never treated with Amiodarone. Despite continued treatment with high dose Carbimazole and 60 mg of prednisolone, he failed to respond. RAI was not considered to be a treatment option due to poor radioisotope uptake. Therefore he was referred for consideration to have near total thyroidectomy.

After a very short period of euthyroidism, lasting few days after surgery, he became thyrotoxic. A further radioiodine uptake scan showed no uptake in the thyroid bed or any ectopic thyroid tissue. A review of thyroid histology showed no features of Grave's disease. A diagnosis of exogenous thyroxine intake was suspected.

## Discussion:

- Continuing thyrotoxicosis despite having no thyroid tissue has been an enormous challenge.
- The lack of response to high dose Carbimazole and Prednisolone, should have raised alarm bells, which could have avoided the need for a surgical operation.
- We would urge caution, in proceeding to surgery especially where the underlying cause of thyrotoxicosis is unclear and there is little to suggest, Graves' disease or a Multinodular goitre.
- Factitious thyrotoxicosis needs to be considered when clinical judgment and investigations do not conform to known causes of thyrotoxicosis.

**Follow up and Progress:** He continues to be thyrotoxic (Table 1) and subsequently developed hypogonadism (Table 2) with a suppressed FSH/LH, consistent with exogenous administration of anabolic steroids. An MRI showed no pituitary lesion and a normal looking pituitary gland. The patient denies taking any exogenous medication either known or unknown to him, and continues under endocrine follow-up. We feel that this case is likely to represent a case of severe factitious thyrotoxicosis, on the basis of a poor initial response to high dose Carbimazole and Prednisolone; lack of biomarkers of autoimmune thyroid disease; no evidence of Graves' disease or other thyroid pathology on review of histology. A negative RAI uptake scan post-surgery and an undetectable thyroglobulin confirm total thyroidectomy. Patient has denied taking exogenous thyroxine, and has defaulted from follow up since.

**Table 1: TFT's over the course of his presentation and Follow up, on Medical treatment before and after Near total thyroidectomy.**

	FT <sub>4</sub> (pmol/L) (normal 9-19)	FT <sub>3</sub> (pmol/L) (2.5-5.7)	TSH (mU/L) (0.20-4.00)
Baseline 01/12/2011	14.3	7.1	<0.02
26/02/2014	13.6	8.2	<0.02
Carbimazole 20 mg daily 29/04/2014	19.4	21.4	<0.02
10/06/2014	15.5	16.4	<0.02
02/09/2014	14.8	33.1	<0.02
Carbimazole 60 mg daily 14/10/2014	15.4	22.3	<0.02
11/11/2014	32.5	23.7	<0.02
24/11/2014	33.0	24.1	<0.02
01/12/2014	24.6	18.3	<0.02
08/12/2014	21.9	16.3	<0.02
15/12/2014	29.1	>46.1	<0.02
22/12/2014	24.5	39.7	<0.02
29/12/2014	27.9	20.5	<0.02
Carbimazole 60 mg + Prednisolone 60 mg daily 11/02/2015	16.3	2.8	<0.02
05/03/2014	24.7	4.9	<0.02
27/03/2014	26.3	16.6	<0.02
09/04/2014	21.3	13.6	<0.02
17/04/2014	19.7	14.0	<0.02
08/05/2014	20.0	14.7	<0.02
18/05/2014	27.4	9.4	<0.02
Immediate Post Surgery 13/7/2015	9.5	14.4	<0.02
After 3 months and onwards 03/08/2015	13.2	7.9	<0.02
15/09/2015	9.5	29.8	<0.02
19/02/2016	22.5	4.8	<0.02

**Table 2: Recent endocrine investigations suggestive of exogenous anabolic steroid intake**

	03/11/2015	16/12/2015	19/02/2016
Testosterone (8.0-30.0 nmol/L)	0.4	1.9	11.9
SHBG (18-54 nmol/L)	8	10	10
Prolactin (0-400 mIU/L)	193		
FSH (1.5-12.4 iU/L)	0.8	3.2	<0.5
LH (1.7-8.6 mIU/L)	1.0	2.8	0.5

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