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Thyroid Hormone Resistance and its Diagnostic Challenges

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Introduction
Resistance to thyroid hormone (RTH) is a rare condition in which the responsiveness of end organ tissue to thyroid hormone is reduced. We hereby describe a case outlining the diagnostic challenges and add to existing literature.

Materials and method
A 42 year old female first presented with chronic fibromyalgia, occasional palpitations and mild heat intolerance. She had normal body mass index, was clinically euthyroid and had no goitre. Her pulse rate was normal at 80 beats per minute. The thyroid function test (TFT) showed elevated free fT4 of 25pmol/L (8-21) and fT3 of 6.5pmol/L (3.5 - 6.0) with an inappropriately normal thyroid stimulating hormone (TSH) of 1.68U/L (0.35 – 5.6). Repeated thyroid tests showed similar results on 3 different laboratory platforms. Her lipid profile was normal and sex hormone binding globulin (SHBG) was normal at 58nmol/L. Although the magnetic resonance imaging of her pituitary gland showed a 7mm microadenoma, the rest of the pituitary hormones were normal. T3 suppression test was also partially suppressed. Finally, patient's daughter's TFT was similarly elevated at fT4 of 30.4pmol/L and normal TSH levels of 1.26U/L.

Results
She was diagnosed to have thyroid hormone resistance and treated symptomatically.

Conclusion
The diagnosis of RTH as well as TSH-producing adenoma should be considered when TFTs are discordant. In the absence of genetic testing, the diagnosis is clinched clinically with supporting investigations such as finding similar thyroid profile in first-degree relatives, partially suppressed T3 levels on suppression and normal SHBG levels.