

# Graves' disease refractory to radio-iodine

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## BACKGROUND

We report a rare case of hyperthyroidism secondary to Graves' disease which failed to respond to three consecutive therapeutic doses of radioactive iodine 131.

## CASE STUDY

This 62 year old gentleman with a history of ischaemic heart disease was first referred to endocrine services in September 2014 with classical symptomatic hyperthyroidism. He described fatigue, significant weight loss of 3.5 stones, sweating, palpitations and heat intolerance over a three month period. On examination he had a moderately enlarged, symmetrical, non-tender goitre and no ophthalmopathy. Blood tests confirmed hyperthyroidism (TSH <0.05 mU/L, fT4 47 pmol/L, fT3 23.5 pmol/L) with positive autoimmune indices (TBII 10.4 U/L) and uniform iodine uptake confirming Graves' disease.

After a year of titrated carbimazole therapy he elected for treatment with radio-active iodine I-131 and was administered 489 MBq. He relapsed within six months and re-presented in atrial fibrillation with rapid ventricular response, and with severe left ventricular diastolic dysfunction. TBII level was now markedly raised at >100 U/L. A second dose of radio-iodine (499 MBq) was administered at 8 months, followed by a third (664 MBq) four months later when this was unsuccessful, resulting eventually in hypothyroidism.

Now nine months after completing treatment he has developed T3 toxicosis (TSH <0.05 mU/L, fT4 18 pmol/L, fT3 9.3 pmol/L) indicating a third relapse.

## DISCUSSION

Radio-iodine renders 60-90% of patients euthyroid or hypothyroid after the first treatment. We describe a very rare case which has failed to respond after three. Multiple factors have been associated with poor patient response<sup>1</sup>, and in this case male gender, large goitre, high TBII and relatively low iodine uptake may all be contributing.

TBII was seen to rise following treatment in this case, which is an observed phenomenon after radio-iodine.

## REFERENCES

1. De Bruin DWA et al. 1994 **Standardized radioiodine therapy in Graves' disease: the persistent effect of thyroid weight and radioiodine uptake on outcome.** *J Intern Med* 236:507-513