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Audit of use of radioactive iodine (RAI) in the treatment of thyrotoxicosis at the Bristol Royal Infirmary (January 2008 – March 2009)

Introduction

There remains a lack of consensus regarding the ideal management pathway for radioactive iodine (RAI) treatment of thyrotoxicosis and of the impact that such variations have on subsequent outcomes.

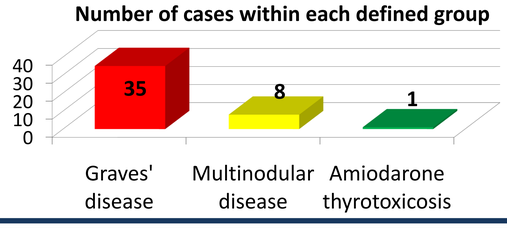
Audit methodology

The aim was to identify outcomes for patients with all causes of thyrotoxicosis referred for RAI within the remit of our endocrinology service between January 2008 and March 2009. Follow up data of at least 6 months was required for inclusion.

Results

Forty-eight patients were identified, however four patients were excluded due to insufficient follow up information. Two of these patients had Graves' disease and two had toxic multinodular disease (MND).

Overall 34 were female, and 10 were male.

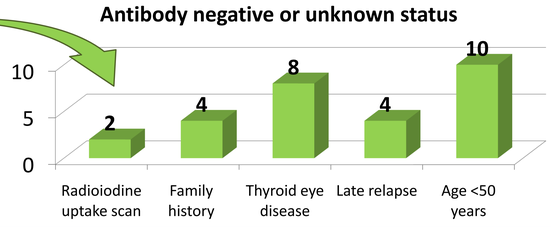


Graves' disease diagnosis

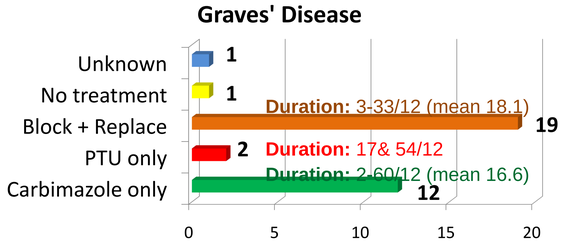
Anti-TPO Antibody status:

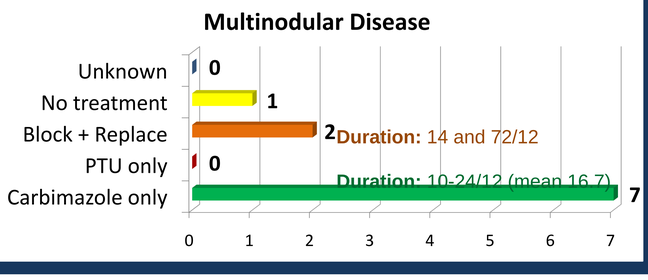
- 15 positive
- 6 negative
- 14 unknown

Of those that were TPO-antibody negative or unknown clinical diagnosis was reviewed, and one or more clinical features were present.



Antithyroid Drug Therapy (ATD) prior to RAI

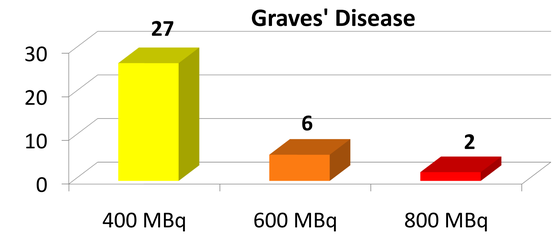


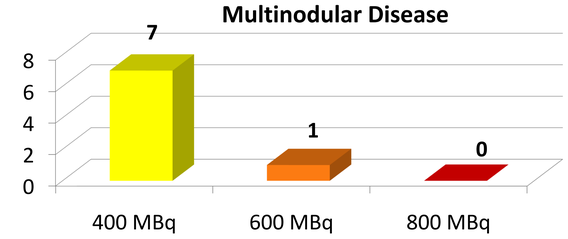


RAI Doses Used

400 MBq = Standard dose

800 MBq = Dose with ablative intent





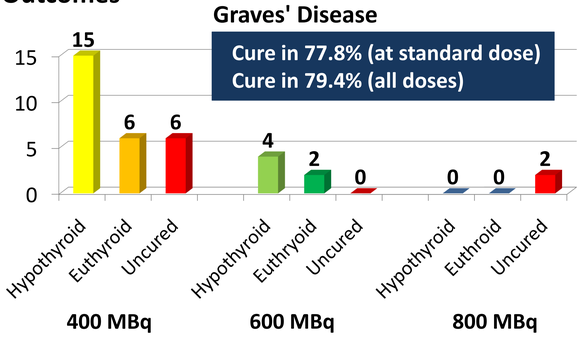
Total of 14 cases with documented Thyroid Eye Disease

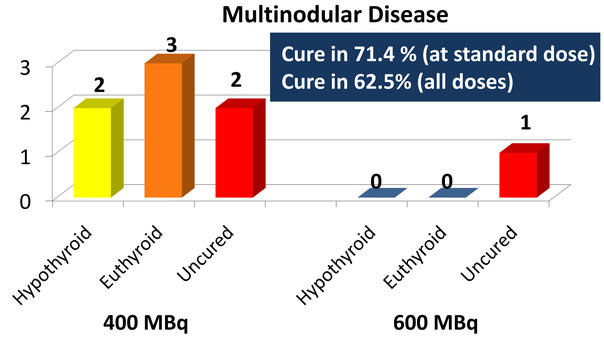
- 3 severe enough to warrant concomitant steroids before RAI
- No documentation of worsening TED in any patient

Amiodarone thyrotoxicosis (n=1):

- Carbimazole only pre-RAI, duration unclear
- RAI 800MBq administered. Patient rendered euthyroid.

Outcomes





Of uncured Graves' disease group:

- 2x thyroidectomy (both in 800MBq group)
- 3x further RAI
- others on antithyroid drugs

Of uncured MND group:

- 2x repeat RAI
- 1x Carbimazole titration

Discussion and Conclusions:

1. No single toxic nodules identified during our audit period.
2. Reassuring low use of PTU (audit preceded FDA warning). Current local practice is to use PTU only immediately pre-conception, in the first trimester of pregnancy or where severe Carbimazole intolerance is encountered.
3. The mean time of antithyroid therapy in Graves' disease was 16-18 months. Patient factors will influence treatment periods. Evidence suggests that shorter treatment periods may be associated with higher rates of relapse.
4. Overall cure rate after first dose 400 MBq (our fixed standard) = 73.5% (Graves' = 77.8%; MND = 57.1%). Despite attempts to reduce long term hypothyroidism rates, there is no difference in outcomes between fixed and variable (based on thyroid size and uptake) doses of RAI. The Royal College guidelines state fixed doses of RAI should be 400-550MBq for Graves' disease and at least 550MBq for patients with multinodular disease and cardiac complications.
5. No complications observed (thyroid storm, worsening TED); 1 death (elderly patient 2 months after treatment, but documented euthyroid on last inpatient admission).