



At least 15mCi radioactive iodine dose should be considered in Graves' disease with larger goiter: A sonographic volumetric study

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INTRODUCTION

- Fixed dose radioactive iodine therapy (RAI) is one of the standard therapy for Graves' disease (GD).
- However, optimal RAI dose to achieve hypothyroidism in GD has been controversial.

METHOD

- Patients: 124 patients with GD treated with a RAI between Apr. 2004 and Dec. 2014.
- Responder group: developed hypothyroidism after RAI treatment

RESULTS

Table 1. General characteristics of patients with GD

Sex (male, %)	42 (33.9)
Age (years)	43.85 ± 13.9
Duration of GD (median, range)	3 (0.1-18)
1 st attack disease (n, %)	92 (74.2)
Recurred disease (n, %)	32 (25.8)
*Thyroid volume n, %	40.7 ± 25.8
0-20 g	20 (16.1)
20-40 g	46 (37.1)
40-60 g	19 (15.3)
60-80 g	13 (10.5)
> 80 g	9 (7.3)
Frequency of RAI (n, %)	
1	75 (60.5)
2	40 (32.3)
3	7 (5.6)
4	2 (1.6)

*Thyroid volume was determined by ultrasonography using ellipsoid formula.

Table 2. Comparison between patients with responder and non-responder groups after 1st RAI treatment

	Responder (n=54)	Non-responder (n=21)	p value
Male (n, %)	19 (35.2)	6 (28.6)	0.585
Age (years)	45.0 ± 14.6	43.0 ± 15.8	0.612
GD duration (y)	4.3 ± 4.5	3.8 ± 3.5	0.661
TBII (IU/L)	8.9 ± 8.5	9.4 ± 11.6	0.910
Thyroid volume	25.1 ± 8.8	42.4 ± 24.6	< 0.001
0-20 g	15 (31.9)	4 (22.2)	
20-40 g	28 (59.6)	6 (33.3)	
40-60 g	4 (8.5)	4 (22.2)	
60-80 g	0 (0)	2 (11.1)	
> 80 g	0 (0)	2 (11.1)	
Follow-up (mon)	42.0 ± 33.4	24.3 ± 23.3	0.075

Table 3. Characteristics of RAI responder group associated with dosage of RAI

	< 15 mCi (n=46)	≥ 15 mCi (n=39)	
Male (n, %)	16 (34.8%)	12 (30.8%)	0.695
Age (years)	46.2 ± 14.8	41.1 ± 11.6	0.081
GD duration (y)	4.2 ± 4.7	4.5 ± 4.4	0.742
TBII (IU/L)	7.1 ± 7.0	18.2 ± 17.8	0.054
Thyroid volume	25.7 ± 11.4	48.4 ± 31.3	< 0.001
0-20 g	13 (33.3)	3 (8.6)	
20-40 g	22 (56.4)	16 (45.7)	
40-60 g	3 (7.7)	7 (20.0)	
60-80 g	1 (2.6)	4 (11.4)	
> 80 g	0 (0)	5 (14.3)	
Follow-up (mon)	46.1 ± 34.0	37.7 ± 31.2	0.241

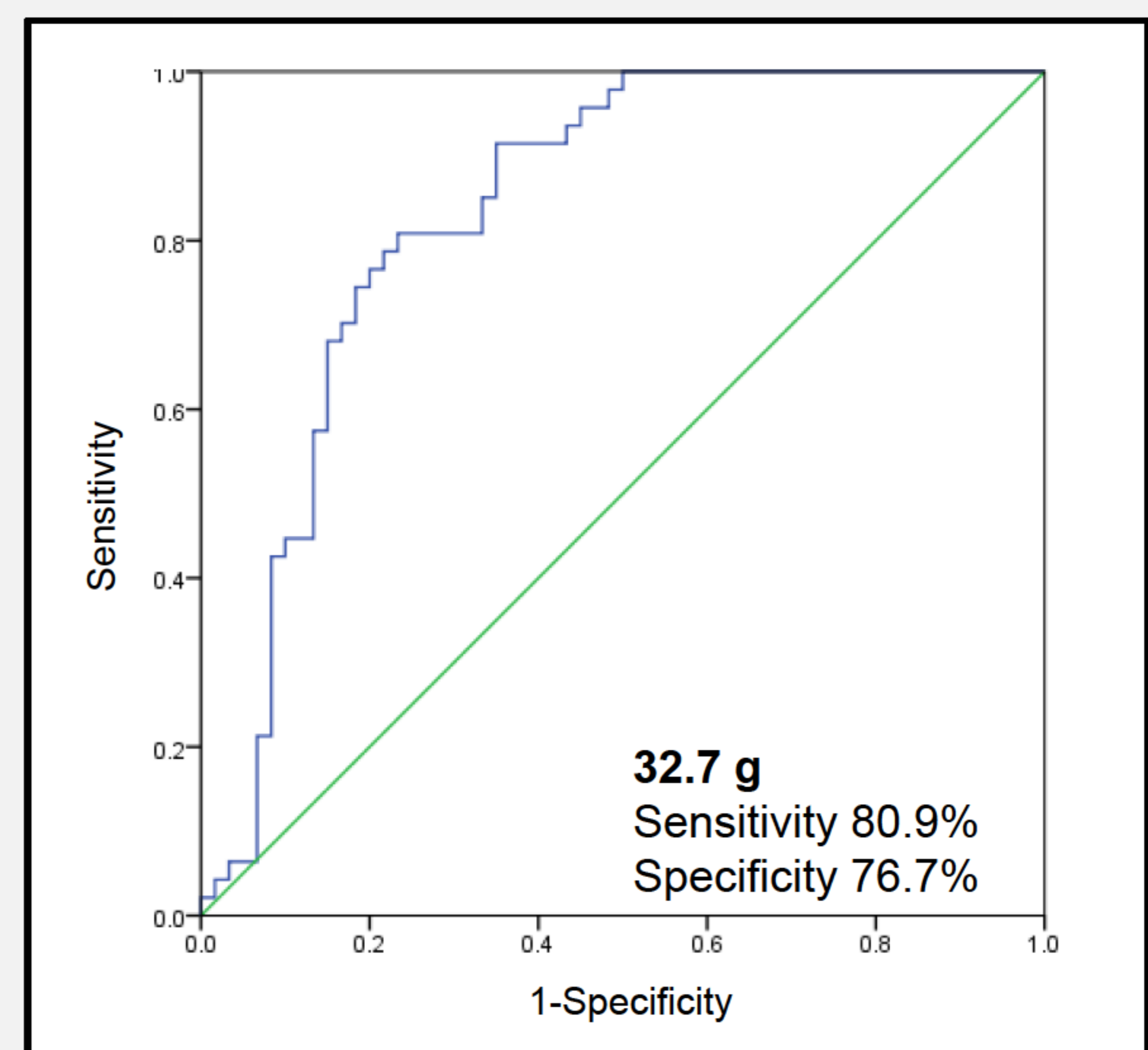


Figure 1. RAI dosage associated with thyroid volume.

SUMMARY & CONCLUSION

- Thyroid volume (TV) with responder group was significantly lower, compared with non-responder group.
- When divided into low dose responder (< 15mCi) and high dose responder (≥ 15mCi) based on total accumulated RAI doses, TV was significantly lower in patients treated with low dose RAI.
- Thyroid volume had a significant effect on the outcome of RAI in GD patients.
- The optimal fixed RAI dose for GD patients with larger goiter (≥ 33 g) should be at least 15 mCi to simplify the therapy and achieve the best outcome in iodine-replete Korea.