



Factors affecting the efficacy of radioiodine therapy in patients with Grave's disease

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Introduction

In the treatment of hyperthyroidism, the optimum activity of radioiodine is yet to be established. We analysed factors affecting the efficacy of ¹³¹I radiotherapy in Graves' disease (GD) patients.

Materials and Methods

Table 1. General characteristics of the studied group (N=362 patients)

Age years - median [IQR]	53.0 [25]
Gender: females (%) /males (%)	293 (80.9%) / 69 (19.1%)
1st treatment with ¹³¹ I (%)	309 (85.4%)
Successive administration of ¹³¹ I (%)	53 (14.6%)
Patients treated with first onset of hyperthyroidism	22 (6.1%)
Patients treated at first recurrence of hyperthyroidism	174 (48.1%)
Patients treated at successive recurrence of hyperthyroidism	165 (45.8%)
ATD before ¹³¹ I treatment	
No (%)	53 (14.6%)
Yes(%)	309 (85.4%)
Graves orbitopathy	
Absent (%)	334 (92.3%)
Present before ¹³¹ I treatment (%)	28 (7.7%)

Table 2. Results of laboratory tests in studied group (N=362 patients)

Thyroid volume (ml)		24.9 ml [22.80]
Median [IQR]		
Focal lesions in thyroid on USG	Present	164 patients [45.3 %]
N [%]	Absent	198 patients [54.7%]
131-I uptake (%)		52 % [46.10]
Median [IQR]		
TSH (μIU/ml)	Prior to ¹³¹ I treatment	0.036 μIU/ml [0.03]
	6 weeks after ¹³¹ I treatment	0.6 μIU/ml [5.50]
	6 months after ¹³¹ I treatment	2.8 μIU/ml [13.25]
Median [IQR]		
¹³¹ I activity (MBq)		575 MBq [157]
Median [IQR]		

Ranges of applied ¹³¹I activity were:

- below 555 MBq,
- 555-800 MBq,
- above 800 MBq.

Results

The median thyroid volume was significantly larger in men (30 ml [18.95-52.75]) than in women (24 ml [16.1- 37]) (p=0.006). No significant differences in efficacy related to ¹³¹I activity applied were stated six months post treatment.

Six months post ¹³¹I treatment, in 72% of patients, euthyroidism or hypothyroidism was stated.

In the group of patients treated with ¹³¹I activity less than 555 MBq or in the range 555 - 800 MBq, 76% or 68.5% of patients were cured, respectively, .

Presence of focal lesions did not affect the efficacy of ¹³¹I treatment.

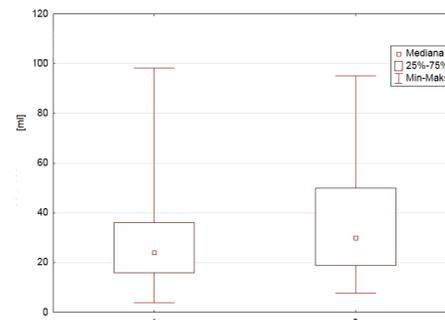


Figure 1. Thyroid volume in female (1) or male (0) patients treated with ¹³¹I (U Mann-Whitney test, p=0.006).

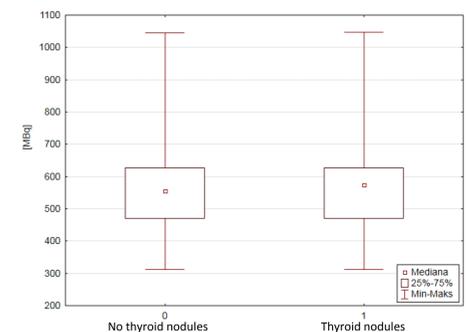


Figure 2. Median values of ¹³¹I activity delivered to patients with or without thyroid nodules (U Mann-Whitney test, p=0.0014).

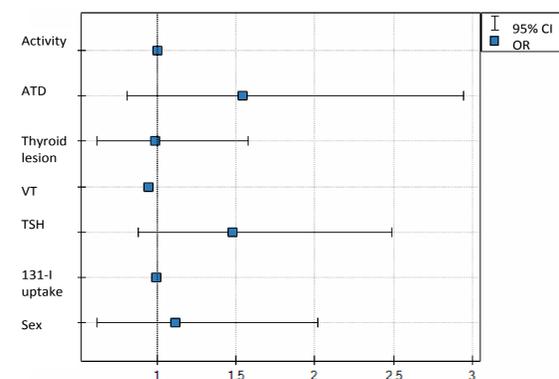


Figure 3. Factors affecting ¹³¹I therapy efficacy - 6 weeks after treatment (logistic regression, N=356).

Only two factors were effective: thyroid volume: the smaller was the thyroid volume, the more effective was the treatment (OR = 0.95, p<0.001, 95% CI=0.31-0.66) , and the activity of radioiodine delivered (OR = 1.003, p=0.004; 95%CI=1.001-1.005).

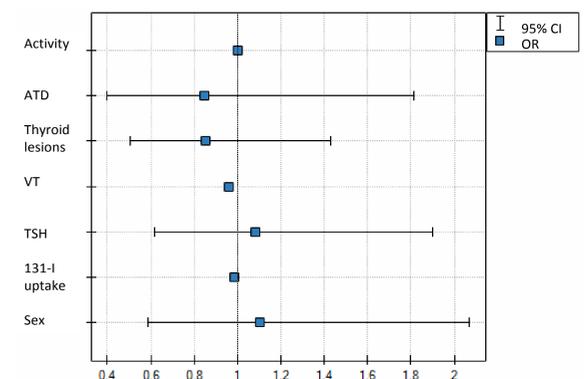


Figure 4. Factors affecting ¹³¹I therapy efficacy - 6 months after treatment (logistic regression, N=356).

Only one factor was effective: thyroid volume - the smaller was the thyroid volume, the more effective was the treatment (OR = 0.96, p<0.001; 95%CI=0.944-0.977).

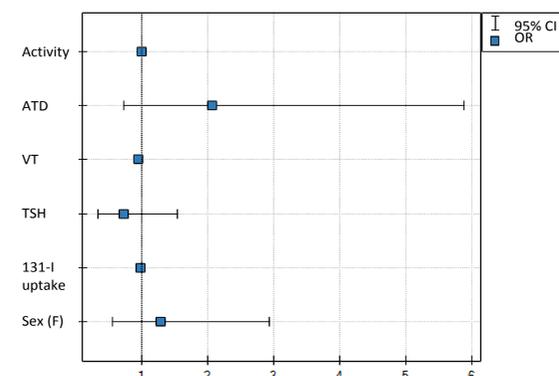


Figure 5. Factors influencing ¹³¹I therapy efficacy in patient group without focal lesions in thyroid as evidenced by USG 6 months after treatment (logistic regression, N=198; 95%CI=0.923-0.975).

Only one factor was effective: thyroid volume - the smaller was the thyroid volume, the more effective was the treatment (OR=0.95, p<0.001; (95%CI=0.923-0.975).

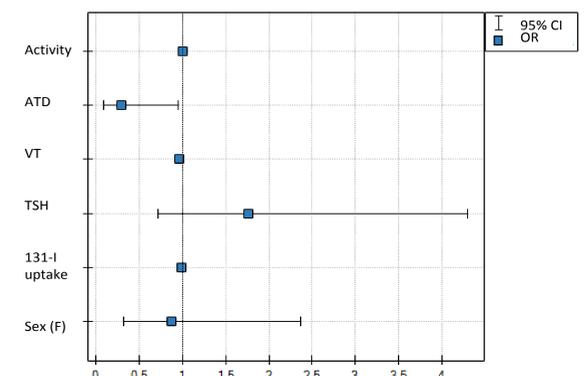


Figure 6. Factors influencing ¹³¹I therapy efficacy in the patient group with focal lesions in thyroid as evidenced by usg 6 months after treatment (logistic regression, N=164).

Only two factors were effective: thyroid volume - the smaller the volume the more effective was the treatment (OR=0.97, p<0.003; 95%CI=0.951-0.989). ATD reduced the chances of successful radioiodine therapy by 30% (OR = 0.3, p<0.04; 95%CI=0.094-0.957).

Conclusions:

The efficacy of ¹³¹I treatment in GD patients with or without focal lesions evaluated after 6 months was negatively affected by larger thyroid volumes.

The efficacy of ¹³¹I treatment in GD patients with focal lesions evaluated after 6 months was negatively affected by anti-thyroid medication.

