

MEASURED AND CALCULATED ABSORBED DOSE OF ¹³¹I IN GRAVES' PATIENTS TREATED WITH FIXED ACTIVITY OF 550 MBq¹³¹I

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BACKGROUND: ¹³¹I is extensively used for treatment of hyperthyroidism in patients with Graves' disease. The success of ¹³¹I treatment is influenced by the absorbed dose. At our department we use fixed activities of ¹³¹I, while some authors recommend individually calculated activities with target absorbed dose of 150 – 200 Gy.

AIM: The aim of our prospective clinical study was to compare the relationship between measured and calculated dose of ¹³¹I in Graves' patients treated with fixed activity of 550 MBq ¹³¹I.

METHODS: 142 consecutive Graves' patients, 118 females and 24 males, aged 17 to 80, were treated with 550 MBq of ¹³¹I. Before therapy thyroid volume and ¹³¹I uptake after 24 hours with tracer activity of 1.85 MBq were measured. Absorbed dose was measured using the method of cumulated activity. Additionally, we calculated absorbed dose using Marinelli's formula. The relation between measured and calculated absorbed dose was compared using Spearman's rank correlation procedure.

RESULTS: The measured absorbed dose was 142.4 ± 96.9 (SD) Gy, while calculated absorbed dose was 261.9 ± 121.6 (SD) Gy. The correlation we found between measured and calculated absorbed dose was excellent ($R=0.733$, $p<0.0001$). However, in 130 patients the calculated absorbed dose was greatly overestimated and only in 12 patients underestimated.

CONCLUSIONS: The measured absorbed dose and the calculated dose of ¹³¹I are in good correlation, but in most patients calculated dose is strongly overestimated. We believe that this observation is influenced by shorter biological half life of ¹³¹I in our Graves' patients.