

Diagnostic I-131 scintigraphy in patients with differentiated thyroid cancer: no additional value of higher scan dose

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Objective: After initial treatment with total thyroidectomy and radioiodine ablation, most follow-up protocols for patients with differentiated thyroid carcinoma contain cyclic diagnostic I-131 imaging and serum thyroglobulin measurements. The applied diagnostic I-131 doses vary between 37 and 370 MBq. The aim of this study was to determine the yield of a diagnostic scan with 370 MBq I-131 in patients with a negative diagnostic scan with 74 MBq I-131. **Methods:** Retrospective evaluation of 158 patients who received a high-dose diagnostic scan with 370 MBq I-131 because of a negative low-dose diagnostic scan with 74 MBq I-131. Special attention was paid to the patients with positive high-dose diagnostic scanning and undetectable serum thyroglobulin levels after thyroid hormone withdrawal. **Results:** In 127 (80%) of patients the 370 MBq I-131 scan was negative, just like the preceding low-dose scan. In 31 (20%) of patients abnormal uptake was present on the 370 MBq diagnostic scan. In 19 of these 31 patients serum thyroglobulin was undetectable. In 15/19 the high-dose diagnostic scan proved either false positive or demonstrated clinically irrelevant minor ablation rests. In only four patients (2.5%) did the high-dose diagnostic scans reveal possibly relevant uptake caused by residual differentiated thyroid cancer. **Conclusion:** In 98% of patients a 370 MBq dose of I-131 for diagnostic WBS had no additional value. The combination of a low-dose diagnostic I-131 scan using only 74 MBq combined with a serum Tg level measurement proved sufficient for correct clinical decision making regarding whether the patient requires additional I-131 therapy.

Key words: differentiated thyroid carcinoma, diagnostic I-131 scanning, thyroglobulin, follow-up protocol