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Estimation of the Radiation Dose to Thyroidectomized Patients with Differentiated Thyroid Cancer after I-131 Therapy

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Objectives. The purpose of this study was to estimate the radiation dose to thyroidectomized patients with differentiated thyroid cancer after I-131 therapy. **Methods.** The absorbed dose delivered by I-131 to a thyroid remnant was estimated by Monte Carlo code EGS4. Using the HPGe whole body counter (GC2520, Canberra 1997), we estimated the whole body dose to the 30 postsurgical patients with remnants (7) or without remnants (23) after administration of I-131 (1.85~7.40 GBq). We acquired the whole body count of I-131 thyroid therapy patients in 8 minutes, and was calculated the effective whole body dose using CINDY(Code for Internal Dosimetry) code (ver1.4). We used the revised the I-131 kinetic model in thyroidectomy. **Results.** Estimated initial dose rate 2.78 Gy/hr to 5 g, 4.13 Gy/hr to 10 g of tissue. To the patients without remnants, whole body dose was 1.89 ± 0.59 rem/GBq. **Conclusions.** These results are different to those derived from the ICRP-54 for euthyroid model (3.39 ± 1.08 rem/GBq). In the case of thyroidectomy, the ICRP-54 Iodine kinetic model may not be appropriate. So the additional studies are in progress to revised I-131 kinetic model to thyroidectomized patients.