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Fractionated radioiodine therapy in outpatients

Recommendation by the German Commission on Radiological Protection

Adopted at the 136th session of the Commission on Radiological Protection on
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Ambulante, fraktionierte Radioiod-Therapie

Empfehlung der Strahlenschutzkommission

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In the event of any doubts about the meaning, the German original as published shall prevail.

Given correct indication, radioiodine therapy of benign thyroid diseases (e.g. hyperthyrosis in caused by Graves' disease and autonomy, autonomous struma, recurrent struma) is an efficient and cost-effective method involving a low level of risk for adults of all age groups. It is particulary suitable for elder patients and those subject to a fairly high operation risk.

According to clauses 10.1 and 10.2 of the guideline "Radiation Protection in Medicine", this treatment generally may only be administered on an in-patient basis involving at least two days' stay in the monitoring area of a nuclear medicine therapy ward equipped with storage for waste water. Sensibly, it is supposed to be administered on a single-time basis. According to the dose concept of single-time radioiodine therapy, in-patient admission is imperative, since otherwise the permissible radiation dose limit for other persons cannot be observed.

In radiobiological and clinical terms, the fractionation of an overall activity of, for example, 450 MBq into six single doses of 75 MBq does not make sense. Fractionation necessitates the administration of a higher total activity, since the storage capacity of the thyroid declines from fraction to fraction. This unnecessarily increases the radiation exposure of the rest of the body. In addition, an outpatient, fractionated dose in reputedly "safer, diagnostic" single doses increases the exposure of third persons. More than 90 % of the activity separated with urine is excreted within two days. Furthermore, the required individual dosimetry during radioiodine therapy is only possible under in-patient conditions.

Taking into account the protection of patients and the population at large against radiation, the Commission on Radiological Protection rejects such an outpatient, fractionated radioiodine therapy. Irrespective of this, the dose concept of fractionated radioiodine therapy is also out of keeping with the current state of medical science. Therefore, on radiation protection and medical grounds, there is no justification for the application of such a therapy.

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