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Effective Radiation Doses for Head and Neck Multi-Slice Computed Tomography (MSCT) Protocols

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Computed tomography (CT) is known as a standard imaging modality prescribed for the head and neck diagnostic imaging. The introduction of multi-detector row CT (MDCT) has enabled imaging of the entire neck region within 2–4 seconds. However, over-ranging due to helical scanning, 3D-volume imaging, and small detector size lead to increased radiation dose in MDCT scans. The International Commission on Radiological Protection (ICRP) recommended that the protection of specific tissues, particularly the lens of the eye, should be a priority. The objective of this study was to evaluate the radiation dose in MDCT for different head and neck protocols. The Effective Dose (ED) of ten head and neck CT examinations from 214 adult patients (mean age 49.2 ± 15.9 years) were evaluated. The median ED values for sinuses:non contrast (NC)+contrast enhanced (CE), sinuses:NC, Petrous bone (PTB)/Internal auditory meatus (IAM):NC+CE, PTB/IAM:NC, or bit:NC+CE, orbit:NC, brain with orbit:NC, brain CT angiography (CTA) subtraction, neck:NC and brain/neck:NC were 1.616 mSv, 0.821 mSv, 2.434 mSv, 0.932 mSv, 1.696 mSv, 0.825 mSv, 3.546 mSv, 6.249 mSv, 2.193 mSv and 5.285 mSv respectively. These values can be considered as typical values for the given institution. Moreover, overall radiation doses of this present institution is well below the values suggested by similar studies. However, brain CTA needs dose optimization since it is higher than the values suggested by similar literature.

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