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Radiation dose associated with common computed tomography examination

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Aim: Aim of this study is to survey computed tomography (CT) radiation dose associated with non-contrast spiral multislice computed tomography exam in our institute.

Methods: Survey radiation dose for non-contrast scan of abdomen and pelvis was retrospectively evaluated at Urology Nephrology Center (UNC), Mansoura University using a 64-detector CT scanner. Detailed parameters for 362 consecutive examinations, including the patient weight, height, CTD volume (CTDIvol), scan length, and dose length product (DLP) were recorded from the dose report. Effective dose (E) was estimated for each patient. The differences between E doses were statistically analyzed using SSPS.

Results: Patients body mass index (BMI) was 13.4-51.42 (average BMI 29.5 kg/m). Patients dose data (one scan phase for each patient) from dose information: the median value of DLP was 586.45 mGy-cm (83.30 mGy-cm-1179.70 mGy-cm), median value of CTDI was 12.07 (2.20 mGy-23.9 mGy), median value of mAs used was 186.50 (34 mAs-334 mAs). According to international commission of radiological protection (ICRP), effective dose range was (1.1-16.5 mSv) 106 and according to ICRP60, the range was (1.3 to 18.93 mSv). Maiden value of frequent CT examinations for the same patient was 2 (min one scan/year & max 11 scan/year). CT dose variation was highly significant (p value<0.01) depending on high variation on mAs with (r=0.98). CT dose was moderate depending on MBI (r=0.55).

Conclusion: There was statistically highly significant variation in effective radiation doses associated with non-contrast CT scan of abdomen and pelvis. The reason for this variation must be avoided.

Biography

Ayman Mokhtar completed his Master's degree, Medical Physics, Health/Medical Physics 2004 – 2009 and his working as a medical physicist in Urology and Nephrology Center- Mansoura University

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