

Radiation Dose and Associated Exposure Parameters in Selected MDCT Scanners in Multiphase Scan of Abdomen-Pelvic Region: A Clinical Study

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Abstract : Over two thirds of medical radiation can now be attributed to Computed Tomography (CT). There is little information on amount of radiation received from multiphase CT scan of abdomen- pelvic region in clinical practice. We sought to estimate the radiation dose and associated exposure parameters in the multiphase abdomen - pelvic scan of Multidetector Computed Tomography (MDCT) studies in clinical practice. This was a retrospective cross sectional studies describing radiation dose associated with main exposure parameters in diagnostic multiphase abdomen - pelvic scans performed on 152 consecutive patients by two different sixteen slice CT scanners. Patient information, exposure parameters of CTDI (volume), DLP, kVp, mAs and pitch were recorded for every phases of abdomen- a pelvic study from dose report of MDCT scanners (MDCTs). Age of patients range from 14 years to 87 years in both MDCT scanners. Overall CTDI (volume) median was 63.8 (± 10.4) mGy for a multiphase abdominal-pelvic scan with scanner A while it was 35.4 (± 15.6) mGy for scanner B. Patients' effective dose for multiphase abdomen - pelvic CT scan range from 8.2 mSv to 58 mSv. Median effective dose for patients, who underwent multiphase abdomen- pelvis scan with scanner A and B were 38.5 (± 8.2) mSv and 21.3 (± 8.6) mSv respectively. Median value of exposure parameters of mAs, kVp and pitch, were 150 (± 29.7), 130 (± 15.3) and 1.3 (± 0.1) respectively in scanner A. In scanner B; they were 60 (± 14.5), 120 and 1. The median effective dose for patients between multiphase abdomen-pelvic scan of both MDCT, a significant different ($P < 0.05$) was observed. Multiphase abdomen - pelvic scan of clinical study shows significant different of effective dose with reference level of phantom studies (8-14mSv) and it depends on the type of vendors.

Keywords : abdomen-pelvic region, computed tomography, exposure parameters, radiation dose

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