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Assessment of Brain absorbed X-ray dose during CT- Scan using ImPACT software in Tehran Univeristy hospitals

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Abstract:

Background: CT scan was first introduced into clinical practice in 1972, and since then has grown into one of the predominant diagnostic procedures. In 1998, the UK National Radiological Protection Board reported that 20% of the national collective dose from medical X-ray examinations derived from CT-scans, although it represented only 2% of all X-ray examinations the aim of this study was to determine the X-ray dosage received by patients in brain CT scan.

Methods: In this work, we have estimated patient dose arising from CT examination of brain in five hospitals in Tehran. Organ and effective doses were estimated for 150 patients who underwent CT examination of brain. "ImPACT" version 0.99v was used to estimate organ and effective dose. Brain examinations were performed with fixed Kvp, mAs and T (slice thickness) for each scanner.

Results: Patients, who were scanned by CT of emam Khomeini center (Toshiba Xvision /EX Scanner), received maximum organ dose (brain) and minimum organ dose was delivered to patients who were scanned by CT of amir alam center (Toshiba Xvision /EX Scanner). Maximum effective dose was 1.7 mSv acquired in this study for emam Khomeini hospital, smaller than the corresponding value obtained by National Radiation Protection British (NRPB).

Conclusions: In two research centers with a system, the obtained results of measurement of effective dose and organ dose show utilization method of system and its measure of Kvp & mAs is very important factor in comparison with type of system. Because there are both minimum dose and maximum dose in two different centers.

Keywords:

ImPACT , CT , organ dose , effective dose

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