PATIENT AND PERSONNEL EXPOSURE DURING CT FLUOROSCOPY

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The purpose of this study was to evaluate the radiation exposure to patients and personnel during interventional CT fluoroscopy. Our initial experience with this system included 73 abdominal biopsy and drainage procedures performed over 3 months on a total of 73 patients where the mean fluoroscopy time was 88.3 ± 107 secs.

Patient dose was estimated using the dose rate (CTDI) measured at 1 cm depth on a cylindrical lucite phantom (20 cm diameter), and scattered radiation exposure was measured at various distances from the phantom. Patient skin dose rates were 0.31, 0.72, and 1.38 rad/sec. at (80 kVp, 75 mA), (120 kVp, 50 mA), and (120 kVp, 90 mA) respectively. Slice thickness was 10 mm.

Maximum and minimum scattered exposure rates (technique: 120 kVp, 50 mA) were 3.2 mR/sec. (at 10 cm from phantom), and 0.12 mR/sec. (at 1 m from phantom) respectively. Reduction of scattered radiation was also investigated by placing 0.5 mm lead equivalent shield on top of the phantom adjacent to the slice plane. Scattered exposure was reduced by approximately 74%.

In conclusion, we determined that there is a potential for significantly high exposures to occur during CT Fluoroscopy. Methods of reducing exposures to both patients and personnel include modification of CT technique, limiting fluoroscopic time, decreasing proximity to patient by using needle holders, and using lead shields adjacent to the scan plane to reduce scattered radiation.