Radiation Dose to Patients Undergoing Interventional Radiological Procedures in Selected Hospitals in Malaysia: Retrospective Study

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ABSTRACT
Objective: To study doses received by patients undergoing various interventional radiology (cardiac and non-cardiac) procedures.
Patients and Methods: A total of 310 patients undergoing cardiac procedures in 6 selected hospitals in Malaysia between July 2000 and May 2001 were studied retrospectively. Thermoluminescent dosimeters were used to measure the entrance surface air kerma on the areas most likely to receive the highest dose, and a kerma-area product meter was used to measure the integral dose for the whole procedure.
Results: Mean kerma-area products for coronary angiography, percutaneous transluminal coronary angioplasty with stent implantation, and both these procedures were 48.6, 147.2, and 153.0 Gy·cm², respectively. Mean kerma-area products for nephrostomy, lower-limb angiography, chemoembolisation, and abdominal angiography were 31.5, 109.4, 127.7, and 88.5 Gy·cm², respectively. Entrance surface air kerma values for these non-cardiac procedures were 100.4, 64.9, 107.0, and 135.3 mGy, respectively and the estimated effective dose for whole procedures ranged from 5.0 to 28.0 mSv. These findings generally agreed with those from international studies.
Conclusions: Doses were within the range prescribed in local guidelines. However, we need to create awareness among interventionists about the potentially high radiation doses used and to educate them about dose-reducing strategies.

Key Words: Radiation dosage; Radiology, interventional; Thermoluminescent dosimetry