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Radiation Protection Dosimetry

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Transition from screen-film to computed radiography in a paediatric hospital: The missing link towards optimisation (Article)

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Abstract

In paediatrics, the risks associated with ionising radiation should be a major concern, due to children's higher susceptibility to radiation effects. Measure entrance skin dose (ESD) in chest and pelvis X-ray projections and compare the results with the 'European guidelines on quality criteria for diagnostic radiographer images in paediatrics' in order to optimise radiological practice. ESD values were obtained using an ionisation chamber Diamentor M4 KDK (PTW) in 429 children, who underwent chest X-ray or pelvis X-ray in a Computed Radiography system. In the first phase of the study, data were collected according to protocols used in the department; in a second phase different tube voltage values were used according to patient weight. A third phase was carried out, only for chest X-ray, using the exposure parameters of phase 2, plus activating lateral ionisation chamber. Three paediatric radiologists blindly assessed image quality of chest X-ray, using a validated assessment available in the 'European guidelines on quality criteria for diagnostic radiographer images in paediatrics'. Considering all the patients submitted to chest X-ray, the average ESD was 0.22, 0.16 and 0.08 mGy, for phases 1, 2 and 3, respectively. For pelvis X-ray, the average ESD decreased from 1.18 mGy in phase 1 to 0.78 mGy in phase 2. Dose optimisation was achieved. ESD was reduced 63.6 and 33.9 % in chest and pelvis X-ray, respectively. © The Author 2011. Published by Oxford University Press. All rights reserved.

Indexed keywords

EMTREE medical terms: adolescent; article; child; comparative study; computer assisted tomography; hospital; human; image quality; infant; newborn; pelvis; practice guideline; preschool child; radiation dose; radiation exposure; radiography; skin; thorax radiography; utilization review; X ray film

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