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Diagnostic reference levels in plain radiography for paediatric imaging: A Portuguese study (Article)

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Abstract

Objective: To determine diagnostic reference levels (DRLs) for the most frequent paediatric plain radiography examinations in Portugal (chest, pelvis and abdomen) and to characterise a standard paediatric patient for each age group used in literature. Methods: Anthropometric data was collected from 9935 patients. Each age group (<1, 1-<5, 5-<10, 10-<16, ≥16) was categorised by the median values of weight, height and BMI, to define a standard patient. Exposure parameters, kerma-area product (KAP-mGy cm^2) and entrance surface air kerma (ESAK-μGy) were collected. DRLs for KAP and ESAK were defined as the 75th percentile (P75) of dose values and presented by age and weight. Results: In each age group the P75 of KAP varied from 11 to 77 mGy cm^2 for chest; 23-816 mGy cm^2 for pelvis; 25-979 mGy cm^2 for abdomen. The P75 of ESAK varied from 49 to 67 μGy for chest; 98-1129 μGy for pelvis and 70-1060 μGy for abdomen. Conclusion: The P75 of dose values determined in this study were lower than those published in literature. When available, weight is the preferred parameter to categorise paediatric patients. The large ranges of dose values found in this study, demonstrates a clear need for the optimisation and harmonisation of practice. © 2015 The College of Radiographers.

Author keywords

Diagnostic reference levels; Paediatric radiology; Patient dose; Radiation protection

Indexed keywords

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