Volume 42 · Supplement 3 · May 2012

Pediatric Radiology

Official Journal of the
European Society of Paediatric Radiology
Society for Pediatric Radiology
Asian and Oceanic Society for Pediatric Radiology
Latin American Society of Pediatric Radiology

ESPR 2012

Springer

handling. However, concerns have been raised as to whether using the tray requires increased exposure values. Our aim is to evaluate the dose and image quality when using the incubator tray compared to placing the detector directly underneath the child.

Material and methods. An Anthropomorphic NeoNatal Chest Phantom, Model 610, Gammex-RMI LTD, with normal lung and IRDS, with and without pneumothorax, will be used. Image quality, degree of magnification and dose will be evaluated for 200 x-rays using Canon wireless portable detector, CXDI-80C and combinations of kV (40–80) and mAs (0,32–2,5) with constant focus-to-patient distance, in two situations: I. Detector placed directly under the phantom II. Detector placed in the X-ray tray, with the phantom in a standard 'nest' of blankets and mattress using a Giraffe Omnibed, GE Healthcare, 2006. Dose will be measured with an Unfors Xi-detector. Two radiologists, blinded for image settings, will evaluate the image- quality independently, according to the quality criteria in Gammex-users Guide.

Results. Our study is ongoing and we wish to present the results at ESPR 2012.

Discussion and conclusions. To date, systematic evaluations of the incubator-trays are lacking.

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Pediatric radiation doses from multi-detector CT exams: preliminary results from the first 2011 Italian national survey

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Purpose - Objective. To provide the first nation-wide evaluation of exposure levels from pediatric examinations with multi-detector computed tomography (MDCT) scanners in Italy.

Material and methods. All Italian radiology departments executing MDCT studies in children were asked to collect data from typical scanning investigations (trauma, infection, staging) in three anatomical regions (head, thorax, abdomen). For each examination, the participating centers recorded the delivered dose in term of CTDIvol and DLP, previously verified with standard quality assurance tests. The main scanning parameters (tube voltage, current, tube rotation time, slice thickness, beam collimation, scan length, pitch, filtration) were also collected to check dosimetric data consistency and for future detailed analysis. The survey was endorsed by SIRM (Società Italiana di Radiologia Medica).

Results. We show preliminary results from 908 pediatric examinations performed from January to June 2011 with MDCT scanners (16 to 64 slices) in 25 radiology units. Dividing the data by three age groups (1–5, 6–10 and 11–15 years) the 75th percentiles of CTDIvol (mGy) and DLP (mGy*cm) distributions, respectively, are: 30, 56, 56 and 494, 964, 985 for the "head" protocol; 2.9, 3.8, 6.4 and 72, 124, 196 for "thorax"; 5.8, 7, 14 and 195, 396, 725 for "abdomen". Data exhibit high inter-center discrepancy.

Discussion and conclusions. The current pediatric MDCT imaging practice in Italy was evaluated. These results allow the development of diagnostic reference levels and optimization of dose delivered to children.

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Overscanning in Pediatric Chest CT—an unrecognized source of excess radiation

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Purpose - Objective. Computed Tomography (CT) is regarded as high dosage examination in which several dose-increasing factors are known. Overscanning, meaning that some of the area scanned is not necessary for reporting (eg in chest neck and abdomen area), has not yet been recognized as a source of excess radiation. The aim of the study is the quantify and analyze the amount of overscanning in pediatric chest CT.

Material and methods. Seven hundred thirty-nine chest CTs from 90 patients (mean age 14.9, 1,18–24.7 years) were analyzed. Total scan length was calculated as the difference of CT table positions at the start and end. The table position of lung apex and basis was determined, and the difference to the scan start and end postition calculated to the sum of both represented the overscanned length. For normalization, the overscanned length was expressed as percentage of the total scan length. Using ANOVA factors such as team (1: more CT experience, 2:less CT experience), scoutview (one or two planes) and patients age were investigated.

Results. Overscanning was 14.5±6.9 % (1.02–43.5 %) in all examinations, (team1: 12.96±6.9 %, team2: 14.99±6.9 $p<0.05$). ANOVA identified age (overscanning decreased with age) and team as statistically significant factors.

Discussion and conclusions. Overscanning represents an avoidable source of considerable excess radiation in pediatric chest CT. A mean of about 15 % of dose can be saved. Patient age and radiographer experience are important factors.