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Purpose-Objective. Are Paediatric CT Heads performed in our hospital within the UK National Radiation Protection Board Dose limits?

Material and methods. We looked at the DLP values of acute paediatric CT heads of the last fifty patients up to June 2012. Age ranges were from birth to fifteen. Results were grouped into birth to 1 year old, 1 to 5 years old, 5 to 10 and 10 to 15. The results were referenced against the National Radiation Protection Boards 2005 standards.

Results. We only achieved 100% compliance in the 5–10 age group. Our compliance rates in the other groups were 20% in the birth to one, 93% in the one to five and 94% in the ten to fifteen age groups.

Discussion and conclusions. Several factors lead to none compliance including improper protocols during CT scanning and lack of awareness. The department staff were re-educated on using the proper protocols and keeping radiation as low as reasonably possible. A repeat audit performed 6 months later showed an overall improvement in all groups although we were still below 50% compliance in the birth to 1 age group. This audit highlights the importance using the right protocols when scanning different paediatric age groups. The need to keep paediatric radiation doses low cannot be highlighted enough as the paediatric population are more at risk of radiation-induced cancer.

054 – SP

Radiation risks in major trauma: cervical spine CT & the lifetime associated risk of malignancy in children

Shema Hameed, Sylwia Niewiarowski, May-Ai Seah, Joanna Danin, Afshin Alavi
St. Mary's Hospital, Imperial College NHS Trust, London, (United Kingdom)

Purpose-Objective. Major trauma centres are well established in the UK, with the majority receiving both children and adults. With this comes the increasing demand for imaging with computed tomography, and the associated radiation risks. The purpose of our study is to analyse our paediatric CT cervical spine data over a two-year period. Cumulative effective doses (CED) and subsequent life-time associated risk (LAR) of cancer will be presented.

Material and methods. Data is being collected for a two-year period (2010–2012). All children aged 16 and under are included. Age, sex and injury severity score (ISS) is recorded. CT study parameters are collated, including mA, kV and DLP. The CED is calculated and analysed to assess LAR. The study particularly focuses on the risks of thyroid malignancy.

Results. Over a two-year period 150 studies were performed. Initial data from a 1 year period of 70 CT C-spines show that 30% of patients were under 10 years old. mA ranged between 5 and 25 with kV's of 120, and DLP ranged between 32 and 480 mGy.cm². Average CED was 1.6 mSv. Complete CED and LAR data will be presented.

Discussion and conclusions. The benefit of performing a CT C-spine in a child should be weighed against the radiation risks carefully. Our study presents the CED and LAR of cancer and cancer-associated mortality in different age-groups, demonstrating the potential associated risks of major trauma imaging in children.

055 – LP

Cumulative radiation CT dose in non-oncological patients: a single centre 5 years retrospective review

Sergio Salerno¹, Claudia Geraci¹, Maurizio Marrale², Giuseppe La Tona¹, Antonio Lo Casto¹
¹University Hospital Policlinico, Palermo, (Italy); ²University of Palermo Department Physic, Palermo, (Italy)

Purpose-Objective. CT scans represent the major source of radiation in paediatric patients. Patients referred for cancer are submitted to multiple CT scan for diagnosis and follow-up. Non oncological patients should have less occasion to be submitted to more than one CT scan. To monitor the number of CT scans and cumulative radiation doses for non oncological pediatric patients, a 5 year single centre retrospective review was performed.

Material and methods. We identified 14 non-oncological patients from the Radiology information system (RIS), with a mean age of 11.9 years (range 0–16 years, 6 females and 8 males) who were submitted to more than one CT scan. The diagnosis at hospital admission, clinical query for CT were recorded with the estimated effective doses (mSv) obtained from the published literature and institutional records.

Results. 8/14 patients were referred for trauma, 6/14 for surgical complications (2 abdominal complications, 2 thoracic complications and 2 neurological complications) and were submitted to a mean of 3 different scans. The estimated effective dose values for various body regions was: brain and cervical spine about 4 mSv, thorax about 3 mSv, and abdomen about 9 mSv.

Discussion and conclusions. The usefulness of CT scans in diagnosis and management of trauma and complicated patients is well known; however, the risks of cumulative radiation dose should be considered better in pediatric patients and risk-benefit considerations should be underlined to decrease exposure.