

AbstractID: 11157 Title: Pediatric CT on 64-Slice MDCT: Radiation Dose and Cancer Risk

Purpose:

To measure the radiation dose from CT scan in children and to calculate the associated cancer risk.

Method and Materials:

Organ absorbed doses were measured with a 5-year-old pediatric phantom and thermoluminescent dosimeters on a 64-slice CT scanner (Discovery VCT, GE Healthcare) with four CT protocols (head, thorax, abdomen and pelvis). Lifetime attributable risk (LAR) of cancer incidence was estimated for 5-year-old children according to the National Academies' Biological Effects of Ionizing Radiation VII Report. In our study the LAR data was updated using the cancer statistics data and life tables in US, as previously reported.

Results:

The effective doses, expressed in mSv, from the four protocols were 0.69, 3.46, 2.92, 1.23 for boys, and 0.7, 3.5, 3.0, 1.3 for girls respectively. The corresponding LARs estimated for 5-year-old boys and girls were 0.015%~0.053% and 0.034%~0.155% respectively. In relation to the total cancer incidence (baseline cancer incidence plus LAR), LAR from radiation exposure contributed up to 0.46% and 1.57% for boys and girls respectively. The LAR of cancer incidence caused to thyroid in head CT scan was 0.015% for girls and 0.003% for boys. For thorax, the organ of highest LAR is lung for boys and breast for girls, with a LAR of 0.014% and 0.069% respectively. For abdomen, the organ of highest LAR is colon for boys and lung for girls with a LAR of 0.017% and 0.016% respectively. For pelvis, the organ of highest LAR is bladder for boys and girls with the same LAR of 0.008%.

AbstractID: 11157 Title: Pediatric CT on 64-Slice MDCT: Radiation Dose and Cancer Risk

Conclusion:

Our results suggest that radiation dose and cancer risk of body CT imaging to pediatric patients are not negligible. Our study provides quantitative information for pediatricians to consider the benefit-risk arising from CT scan before referring the patients for CT imaging.

Conflict of Interest (only if applicable):