عنوان مقاله:

Radiation Organ Dose Measurement and Cancer Risk Estimation in CT Examination on Trauma Patients

محل انتشار:

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خلاصه مقاله:

Background: This study intended to measure radiation doses to various organs and calculate the risk of cancer incidence from neck computed tomography and head computed tomography scans of trauma patients by using a thermoluminescent dosimeter. Methods:We assessed ۹۳ patients who presented to the Emergency Department. Based on their health conditions, different computed tomography scans were performed. We used a fixed tube current of ۲۰۰ mAs and tube voltage of ۱۲۰ kVp for all patients. Next, we derived the effective radiation dose by multiplying the dose length product and conversion factor of each computed tomography scan based on the International Commission on Radiological Protection ۱۰۳. Organ dose estimations were calculated from the dosimeter readout. We calculated the life attributable risk for cancer incidence based on the Committee on the Biological Effects of Ionizing Radiation VII preferred models. Results: Neck computed tomography scans had a mean effective dose of ۲.۱۸ mSv. The mean effective dose for head computed tomography scans was ۱.۵۳ mSv. The highest mean equivalent organ dose was for the thyroid with the neck computed tomography scan and the lenses of the eyes with the head computed tomography scan. There was no significant difference between scan lengths in each computed tomography acquisition. There was a noticeable correlation observed between effective radiation dose and tube current. As anticipated, young people had a higher life attributable risk of cancer compared to the elderly. This amount was less than ۰.۰۱۱ per ۱۰۰ persons for both computed tomography studies. Conclusion: Our data showed a significant organ radiation dose in both neck and head computed tomography scans, not only for the thyroid and the lenses of the eyes, .but also for the chest

کلمات کلیدی:
Radiation Dose, Emergency care, Computed Tomography, Trauma