Mkimel Mounir, J Nucl Med Radiat Ther 2017, 8:4 (suppl)
DOI: 10.4172/2155-9619-C1-011

Evaluation of the dose delivered to patients in CT using the platform (GEANT4/GATE)

Mkimel Mounir
Laboratory of Technology and Medical Science, Morocco

Nowadays, medical physics becomes a research field of a growing importance at Moroccan universities. This fact can be explained on one hand by the increasing number of purchases in medical imaging devices by the hospitals and of the number of PhD students and researchers becoming interested to medical physics studies on the other hand. Computed tomography (CT) is a medical imaging modality that produces cross-sectional images representing the X-ray attenuation properties of the body. However, it still represents the most irradiating technique used in radio-diagnostic that can increase cancer likelihood. It is therefore imperative to have a good estimation of the dose based on the acquisition parameters and the morphology of the patients (diameter). To achieve this goal, a CTDI phantom was used to calculate the doses. This phantom represents a standard PMMA phantom for head and body. Monte Carlo simulation methods represent an important tool for the study of processes involved in emission tomography and the development of devices dedicated to this purpose. GATE (GEANT4 Application for Tomographic Emission) is a Monte Carlo based platform which allows simulating accurately a large range medical applications. In this paper, we exhibit the validation of a GATE model of CT Siemens SOMATOM Emotion 16 Slices using the CTDI phantom. In one hand, the comparison between the simulated and experimental data shows a good agreement. On the other hand, we observe that the values of CTDI increase when the kV and mAs increase. However when we increase the phantom diameter the CTDI values decrease.

Biography

Mkimel Mounir has research interest in Medical/Radiation Physics and Dosimetry for Radiotherapy. He has attended many scientific meetings with publications in conference proceedings and journals.

mkimel1986@gmail.com

Notes: