

عنوان مقاله:

Optimization of Parameters in ۱۶-slice CT- scan Protocols for Reduction of the Absorbed Dose

محل انتشار:

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خلاصه مقاله:

Introduction In computed tomography (CT) technology, an optimal radiation dose can be achieved via changing radiation parameters such as mA, pitch factor, rotation time and tube voltage (kVp) for diagnostic images. **Materials and Methods** In this study, the brain, abdomen, and thorax scanning was performed using Toshiba ۱۶-slice scanner and standard AAPM and CTDI phantoms. AAPM phantom was used for the measurement of image-related parameters and CTDI phantom was utilized for the calculation of absorbed dose to patients. Imaging parameters including mA (۵۰-۴۰۰ mA), pitch factor (۱ and ۱.۵) and rotation time (range of ۰.۵, ۰.۷۵, ۱, ۱.۵ and ۲ seconds) were considered as independent variables. The brain, abdomen and chest imaging was performed multi-slice and spiral modes. Changes in image quality parameters including contrast resolution (CR) and spatial resolution (SR) in each condition were measured and determined by MATLAB software. **Results** After normalizing data by plotting the full width at half maximum (FWHM) of point spread function (PSF) in each condition, it was observed that image quality was not noticeably affected by each cases. Therefore, in brain scan, the lowest patient dose was in ۱۵۰ mA and rotation time of ۱.۵ seconds. Based on results of scanning of the abdomen and chest, the lowest patient dose was obtained by ۱۰۰ mA and pitch factors of ۱ and ۱.۵. **Conclusion** It was found that images with acceptable quality and reliable detection ability could be obtained using smaller doses of radiation, compared to protocols commonly used by operators.

کلمات کلیدی:

Computed Tomography (CT), Absorbed Dose, optimization

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