University of Sharjah
College of Health Science
Medical Diagnostic Imaging Department
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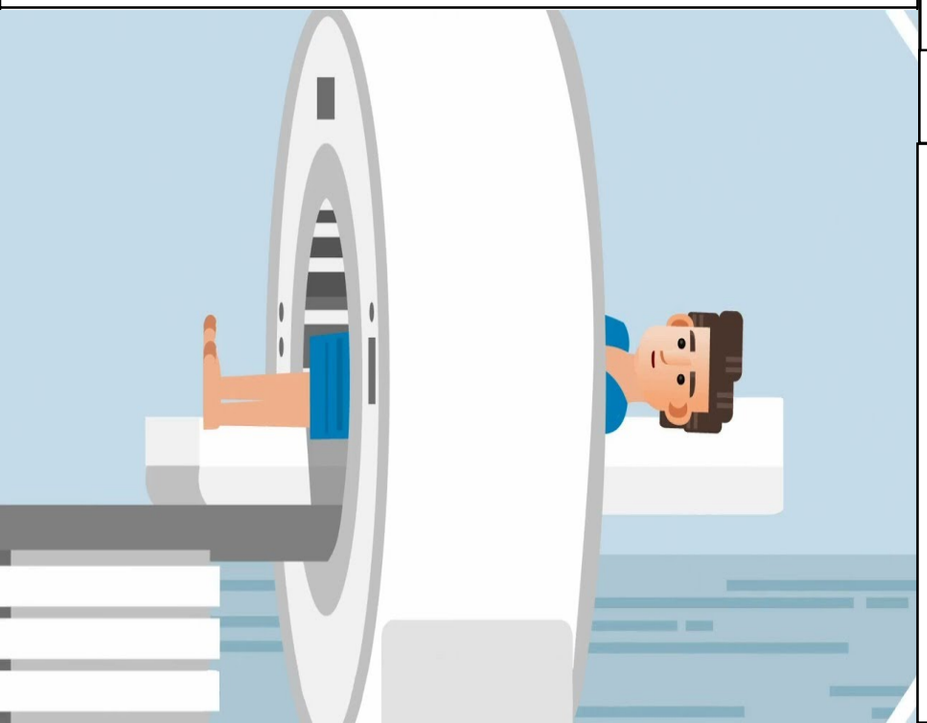
Reduction of CT Pediatric Radiation Dose by Iterative Reconstruction

Introduction:

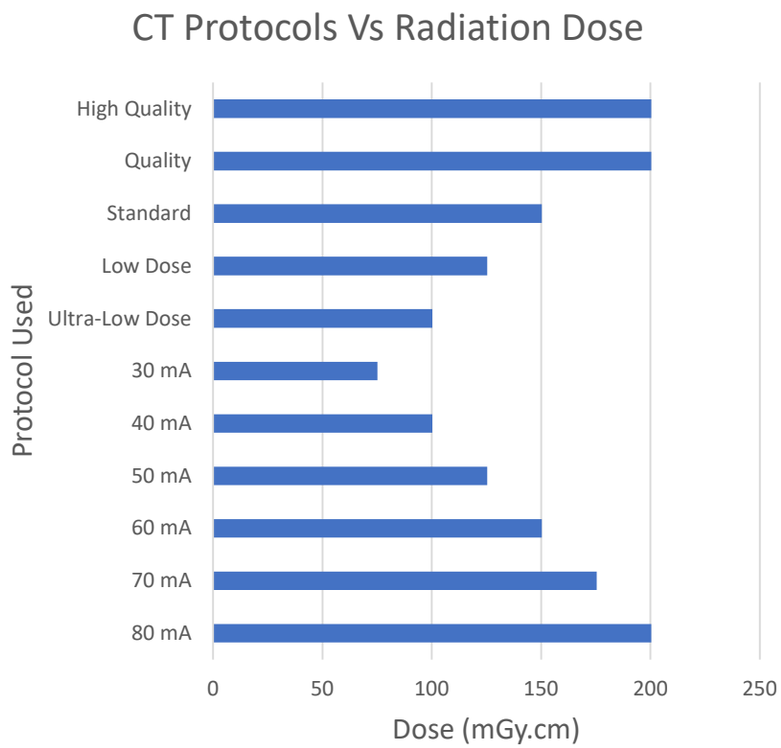
The radiation dose is truly harmful for all human being especially pediatric, but with the benefit of the IR technique there is a huge effect of reducing radiation dose without sacrificing image quality, the IR technique has fantastic fundamental impacts on image quality to reconstruct images with the lowest possible noise.

Objectives:

To chose the best CT protocol with the lowest radiation dose and with acceptable image quality for diagnosis to pediatric patients by comparing 11 different CT protocols and measuring single to noise ratio (SNR) to calculate the radiation dose received.



Results:



Discussion:

IR technique and low tube current have been successfully used to reduce the radiation dose for pediatric patients without affecting the image quality level.

Reaching to low SNR have an effect on the image quality and reducing the radiation dose, although very low SNR can produce poor image quality. By selecting the low-dose and 50 mA protocols provides a good image quality for diagnostic purposes with least possible radiation dose.

Conclusion:

- An average dose reduction of up to 37% with optimum image quality were achieved using low dose and 50 mA protocols.
- Standard, 60 mA and 70 mA protocols provided images with good quality but with higher radiation dose.
- Ultra-low dose, 30 mA and 40 mA protocols provided lower dose but produced poor image quality.

The benefit from the IR technique to reduce pediatric radiation dose with choosing the best protocols: low dose and 50 mA CT protocols.

References:
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