

ID: 122

Scientific Abstract

Topics: Pediatric Radiology

Keywords: Computed Tomography (CT), Diagnostic Reference levels (DRLs), Pediatric Population, Dose Length Product (DLP), Volumetric Computed Tomography Dose Index (CTDIvol)

Establishing Diagnostic Reference Levels (DRLs) for Computed Tomography of Head in Pediatric Population

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Objectives:

To establish DRLs for pediatric population undergoing CT head in 128 slice CT and compare them with Internationally recommended DRLs

Materials and Methods:

This is a prospective study. A total 60 pediatric patients referred for CT head for various clinical indications was included in study and were divided into two age groups: < 1 year and 1-5 years. Patients referred for contrast enhanced CT head and uncooperative patients were excluded from study. Informed consent was taken from patients/ guardians. Scanning was performed by 128 slice Philips Incisive CT scanner using standard pediatric head protocol. Dose information such as Volumetric Computed Tomography Dose Index (CTDIvol) and Dose Length Product (DLP) was noted from CT console. Effective dose was calculated by multiplying DLP with conversion factor (k). 75th percentile of CTDIvol and DLP was calculated to establish DRLs and compared them with Internationally recommended DRLs

Results:

75th percentile of CTDIvol and DLP for pediatric CT head was 15.11mGy and 320.76mGy.cm for <1 year and 19.75mGy and 543.59 mGy.cm for 1-5 years age group respectively. The mean effective dose was: 3.52mSv and 3.58mSv for <1 year and 1-5 years age group respectively.

Conclusion:

DRLs for pediatric CT head was higher for both the age groups compared to European and other Internationally recommended DRL's. Therefore, our study concludes that tailored protocol with optimum exposure parameters depending on the patient age and size must be used to obtain optimum diagnostic image quality with minimum radiation dose to the patients.