ABSTRACT

Computed Tomography (CT) is a rapid and accurate medical imaging modality used to evaluate tissue abnormalities and the anatomical details of internal organs in the human body. During CT operations, the tube current parameter (mAs) plays a crucial role in determining the quantity of the generated X-ray photon flux. This parameter directly impacts the radiation dose received by patients expressed in terms of the Volume CT Dose Index (CTDIvol) and Dose Length Product (DLP) while also controlling the balance of image quality, which is measured by the Signal to Noise Ratio (SNR). Therefore, this study aims to analyze the effect of variations in tube current on dosimetry parameters (CTDIvol and DLP) and image quality (SNR). The experiment was conducted using a GE CT scanner and a PMMA phantom by varying the tube current values to 70, 75, and 80 mAs. The results demonstrated that the increase in tube current yielded consecutive CTDIvol values of 28.41, 30.43, and 32.46 mGy. The recorded DLP values were 426.08, 456.51, and 519.41 mGy.cm, while the SNR values were 0.272, 0.282, and 0.302. In conclusion, an increase in the tube current value is directly proportional to the radiation dose received by the patient; however, it simultaneously results in improved image quality.

Keywords*: CT Scan, Current Strength, Signal-to-Noise Ratio (SNR), CTDIvol, DLP*