

ABSTRACT

The quality of the image produced by Dual Energy Computed Tomography (DECT) is an important concern because the image results are used to diagnose disease, if the image produced is not good it will have an impact on misdiagnosis, so measuring the Contrast To Noise Ratio (CNR) in the Quality Control (QC) of the DECT system is important because CNR is the main factor that determines image quality. The aim of this study was to evaluate the CNR of iodine, calcium and water-based DECT phantoms. Imaging of the phantom material was performed using GE Revolution Ultrafast kV Switching type DECT with a tube voltage of 80/140 kV, and CTDIvol 5.93 mGy, CTDIvol 7.17 mGy, CTDIvol 7.77 mGy. The image was reconstructed to Virtual Monochromatic Image (VMI), Region Of Interest (ROI) was performed on indoQCT software to obtain CNR iodine and calcium values based on energy variations. The results show that the CNR value decreases with increasing energy, but the CNR value increases with increasing contrast of iodine, calcium and 3 levels of CTDIvol. When viewed based on the energy, at low energy (50-70 keV), the CNR value is quite high, when compared to the average value of CNR at high energy (80-100 keV). The highest CNR value was at 50 keV energy, CTDIvol 7.77 mGy especially at concentrations of 15 and 600 mg/ml, while the lowest value was at 100 keV energy, CTDIvol 5.93 mGy, especially at concentrations of 5 and 200 mg/ml. The higher the concentration of iodine, calcium, and 3 levels of CTDIvol, the higher the CNR value at low energy. Based on the result analysis.

Keywords: *Contrast To Noise Ratio (CNR); iodine concentration; calcium concentration; Dual Energy CT;*