

ABSTRACT

Quality control (QC) of image quality in SPECT/CT modality can be done by performing Spatial Resolution and Linearity procedures. This test aims to measure spatial resolution to determine the ability of the gamma camera or SPECT to distinguish two nearby objects and see linearity by checking the line pattern on the bar pattern regarding the presence of waves seen in the image acquisition results from the quadrant bar phantom. Based on AAPM TG No. 177, this procedure was carried out using a quadrant bar phantom and Co-57 floodsource. The image acquisition results were observed visually by the researcher, which is subjective. Therefore, quantitative analysis using NMQC ImageJ is required to obtain more objective results. The FWHM value measured using NMQC was then processed using excel and the trend was seen during the study period. The results show that there is no significant change in the spatial resolution measurement based on the FWHM measurement results because the largest value of the average difference between the largest and smallest FWHM values throughout the measurement time is 0,24 and the coefficient of variation (CV) is less than 10% throughout the measurements. The largest deviation in the FWHM results with a barwidth of 3,18 mm is due to the tilt of the phantom bar when rotated to 90° and 270°. Then, the resolution capability of the SPECT system causes the image results at a barwidth of 3,18 mm which has a higher deviation with CV = 5.95% compared to other larger barwidths.

Keywords: SPECT, Spatial Resolution and Linearity, FWHM, NMQC, ImageJ.