ABSTRACT

INFLUENCE OF ROTATION TIME VARIATION FOR DLP (DOSE LENGTH PRODUCT) AND IMAGE NOISE ON AIRCRAFT MSCT 128 SLICE (CASE STUDY)

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Dose of radiation dose especially Dose Length Product (DLP) and image noise in the plane Toshiba Aquilion to do tests using variations of rotation time. Based on the research showed that increasing the value of rotation time will increase the dose of radiation and at the same time will reduce noise. This study aims to determine the effect of variations in rotation time against the value of the dose length product and the value of image noise.

This research is a experiment research. There are two steps of research that measurement DLP estimation and measurement noise value in scanning acrilyc phantom, using conformance test parameters. Variations rotation time on CT imaging scan that can be selected that the value range 0.35s, 0.375s, 0.4s, 0.45s, 0.5s, 0.6s, 0.75s, 1.0s but the others parameters are make konstant. Of each rotation time value will be obtained value of the dose value on the monitor screen DLP CT Scan (Summary). The results of the scanning performed by ROI measurement noise values on the central area of the area around the diameter of 2-3 cm^2. The measurement results are recorded and put into the form of tables, graphs and test statistics, and examine the effect (regression) as hypothesis testing with significant values (α) <0.05.

Obtained the lowest radiation dose at 0.35 second namely 14.2 mGy.cm and 1.0 second is the largest at 37.3 mGy.cm, with a regression coefficient 1,785 + 35 507 with the value ρ = 0,000 so its influence is very significant. In this case shows that the influence of rotation time contribution to the optimization DLP estimated value of 100%. Value of noise on the variation of the rotation time 0.35 second got that produces optimum noise 5.6 HU and 1.0 second 3.4 HU produce the smallest noise. This is seen from the regression coefficient of 6637 - 3344 with a value (α) <0.05. In this case shows that the influence of rotation time contribution to the value of image noise by 97.8% while the remaining 2.2% is influenced by other variables included in the model. The results of the two types of research is to accept and reject H_0 H_1, that there is significant influence of the rotation time of the radiation dose and image noise.

The use of rotation time slower is still recommended for optimal image quality in some cases CT, because the noise value is close to zero and still within normal limits noise value. However there was no significant difference in radiation exposure between the use of rotation time is faster and slower.

Keywords : *rotation time, dose length product, image noise, MSCT*