Pengaruh keberadaan film gafchromic xr rv3 terhadap kualitas citra pada prosedur kateterisasi jantung = Effect of gafchromic xr rv3 film existence to image quality in cardiac catheterization procedure

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Abstrak

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Dosimeter film Radiochromic XR-RV3 merupakan salah satu tipe dosimeter yang dapat digunakan untuk mengukur dosis pasien pada prosedur kateterisasi jantung dengan fluoroskopi sebagai pemandu. Namun, perlu dipastikan pengaruh keberadaan film Radiochromic XR-RV3 terhadap kualitas citra. Penelitian ini menggunakan fantom Kat Ped sebagai representasi jantung dewasa dan membandingkan secara kuantitatif kualitas citra fantom yang diekspos dengan menggunakan film dan tanpa menggunakan film GafChromic XR-RV3. Kuantitasi kualitas citra yang digunakan sebagai pembanding adalah Signal to noise ratio (SNR) dan resolusi kontras tinggi. Signal to noise ratio (SNR) yang diperoleh dianalisa menggunakan statistik t-test dengan confidence level 95%. Hasil analisa menunjukkan tidak terdapat perbedaan SNR yang signifikan dengan menggunakan film dan tanpa menggunakan film pada mode fluoroskopi low dose, normal dose dan high dose dengan diskrepansi SNR <10%. Pada mode cine 15 fps low dan 15 fps normal, terdapat kenaikan SNR dengan menggunakan film dengan diskrepansi <13% sedangkan pada mode cine 15 fps boost dan 25 fps coronary tidak terdapat perbedaan signifikan SNR dengan diskrepansi rerata < 7%. Pada high contrast analisa t-test untuk kedua mode fluoroscopy dan Cine tidak menunjukkan adanya perbedaan signifikan dengan hasil non rejected pada confidence level 95%.
ABSTRACT
Radiochromic XR-RV3 film dosimeter is a type of dosimeter that can be used to measure patient dose on cardiac catheterization procedure with fluoroscopy as a guide. However, it is necessary to ensure the effect of Radiochromic XR-RV3 film to image quality. This study used a Kat Ped phantom as a representation of the adult heart and quantitatively compare the image quality by using a phantom that exposed with film and without using film GafChromic XR-RV3. Quantitation of image quality used for comparison is the signal to noise ratio (SNR) and high contrast resolution. Signal to noise ratio (SNR) obtained statistically analyzed using t-test with 95% confidence level. The analysis results showed no significant difference in SNR using film and without using film on a low dose mode, the normal dose, and high dose flouroscopy with SNR discrepancy <10%. In the cine mode of 15 fps low and 15 fps normal, there is an increased SNR by using film with discrepancy <13%, while in the cine mode of 15 fps boost and 25 fps coronary there are no significant differences with mean SNR discrepancy <7%. At

high contrast t-test analysis for both Fluoroscopy and Cine mode, result showed no significant difference with the results of non-rejected at the 95 % confidence level., Radiochromic XR-RV3 film dosimeter is a type of dosimeter that can be used to measure patient dose on cardiac catheterization procedure with fluoroscopy as a guide. However, it is necessary to ensure the effect of Radiochromic XR-RV3 film to image quality. This study used a Kat Ped phantom as a representation of the adult heart and quantitatively compare the image quality by using a phantom that exposed with film and without using film GafChromic XR-RV3. Quantitation of image quality used for comparison is the signal to noise ratio (SNR) and high contrast resolution. Signal to noise ratio (SNR) obtained statistically analyzed using t-test with 95% confidence level. The analysis results showed no significant difference in SNR using film and without using film on a low dose mode, the normal dose, and high dose flouroscopy with SNR discrepancy <10%. In the cine mode of 15 fps low and 15 fps normal, there is an increased SNR by using film with discrepancy <13%, while in the cine mode of 15 fps boost and 25 fps coronary there are no significant differences with mean SNR discrepancy <7%. At high contrast t-test analysis for both Fluoroscopy and Cine mode, result showed no significant difference with the results of non-rejected at the 95 % confidence level.]