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# Pengukuran dosis permukaan pada pasien dewasa pemeriksaan kardiologi intervensional = Surface dose measurement for adult patients undergoing interventional cardiology

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Abstrak

Studi dilakukan pada 20 pasien intervensi jantung: 12 coronary angiography (CA) dan 8 percutaneous transluminal coronary angioplasty (PTCA). Dosis permukaan diukur menggunakan DAP (dose-area product) dan gafChromic XR-RV3 yang ditempelkan pada permukaan kulit. Distribusi dosis permukaan dapat digambarkan pada film gafChromic. Selain itu, diukur pula dosis hambur pada tiroid, gonad dan mata. Citra dianalisis menggunakan algoritma In-house pada channel merah RGB standar. Korelasi antara dosis maksimum permukaan (MESD) dan DAP untuk kedua prosedur diinvestigasi. Ditemukan korelasi cukup signifikan (R2 = 0.86) antara DAP and MESD (R2 = 0.96 for CA and R2 = 0.82 for PTCA) sehingga pengukuran DAP tidak bisa dijadikan satu-satunya indicator untuk merepresentasikan dosis kulit pasien.
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Hasil pengukuran film gafChromic menunjukkan bahwa dosis radiasi kulit pada prosedur PTCA lebih besar dibanding CA.Korelasi yang rendah antara MESD dan waktu fluoroskopi total (R2 = 0.44 dengan R2 = 0.26 untuk CA dan R2 = 0.29 untuk PTCA). Untuk dosis hamburan balik pada organ kritis, tiroid mendapat dosis tertinggi (1.45 cGy) diikuti oleh gonad (1.05 cGy) dan mata (0.61 cGy).
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Twenty patients cardiac intervention procedures were studied : 12 coronary angiography (CA) dan 8 percutaneous transluminal coronary angioplasty (PTCA). The entrance skin dose were measure using DAP (dose-area product) and gafChromic XR-RV3 radiochromic film attached to the skin. gafChromic film measurement will be obtain the skin dose distribution on the back area of the coronary area. In addition, we also measure scattered dose on the tiroid, gonad and eyes. Image analysis was performed using red channel component of standart RGB (red, green and blue) color space image. The correlation between maximum entrance surface dose and dose area product for two interventional procedures was investigated. We found a significant correlation R2 = 0.86 of DAP (dose-area product) and MESD (R2 = 0.96 for CA and R2 = 0.82 for PTCA) so that DAP measurement cannot only be the one indicator to represent patient skin dose.
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The gafChromic film results that the radiation dose to the skin for PTCA procedure greater than CA. In this study, we found a poor correlation of maximum entrance surface dose and total fluoroscopy time (R2 = 0.44 which were R2 = 0.26 for CA and R2 = 0.29 for PTCA). The result of gafChromic measurement shows that entrance surface dose for PTCA procedure greater than CA. For backscattering entrance dose, thyroid get the highest dose (1.45 cGy) followed by gonadal (1.05 cGy) and eyes (0.61 cGy).