

Estimasi dosis janin pada pemeriksaan radiografi thoraks dan abdomen

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Abstrak

[ABSTRAK

Terdapat kekhawatiran yang tumbuh di masyarakat umum serta bidang medis dan scientist tentang paparan radiasi dari prosedur sinar-x diagnostik dalam kasus wanita hamil yang menjalani pemeriksaan radiografi dimana embrio/janin berada dekat ataupun masuk dalam lapangan radiasi, misalnya pemeriksaan radiografi thoraks dan abdomen. Penelitian ini dilakukan untuk estimasi dosis janin pada pemeriksaan thoraks dan abdomen untuk kepentingan penilaian risiko janin dan manfaat pada review justifikasi. Estimasi dosis janin didapatkan dengan mengalikan antara Normalized Uterine Dose (NUD) dengan Entrance Surface Dose (ESD). NUD didapatkan dari kalkulasi software Xdose, sedangkan ESD didapatkan dari hasil bacaan Thermoluminescence Dosimetry (TLD) yang diletakkan pada titik berkas utama permukaan phantom posterior dengan tebal phantom 17 cm untuk pemeriksaan thoraks dengan arah penyinaran posterior-anterior dan pada titik berkas anterior permukaan phantom untuk pemeriksaan abdomen dengan arah penyinaran anterior-posterior. ESD juga bisa didapatkan dari hasil perkalian antara incident air kerma dengan backscatter factor. Pemeriksaan thorak dilakukan dengan tegangan tabung 55, 60, 66, 70 dan 77 kV dengan beban tabung 10 mAs sedangkan pemeriksaan abdomen dilakukan dengan tegangan tabung 60, 66, 70, 77, 81 dan 85 kV dengan beban tabung 10 mAs. Dosis janin yang didapat pada pemeriksaan thoraks antara $1,92 \times 10^{-5}$? $2,79 \times 10^{-5}$ mGy sedangkan pada pemeriksaan abdomen dosis janin yang didapat antara 0,054 ? 0,975 mGy. Dosis janin yang didapat masih berada dibawah nilai batas dosis menurut The International Commission on Radiological Protection (ICRP) yaitu 100 mGy.

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ABSTRACT

There has been growing concern on public, as well as scientific and medical communities, about radiation exposures from diagnostic X-ray procedures in the case of pregnant women who undergo radiological examinations when the embryo/fetus is near or included in the X-ray field, for example thorax and abdomen radiographic examinations. This research was conducted to estimate fetal doses in thorax and abdomen examination for risk-benefit considerations as justification review. Fetal doses estimation were obtained by multiplying Normalized Uterine Dose (NUD) with Entrance Surface Dose (ESD). NUDs were obtained using calculation software XDose while ESDs were obtained from Thermoluminescence Dosimetry (TLD) placed on the posterior center beam of phantom surface with 17 cm thickness for thorax examinations posterior-anterior projection and on anterior center beam of phantom surface for abdomen examinations anterior-posterior examinations. ESD can also be obtained by multiplying incident air kerma with backscatter factor. Thorax examination performed with a tube voltage of 55, 60, 66, 70 and 77 kV and 10 mas, while the abdominal examination performed with a tube voltage of 60, 66, 70, 77, 81 and 85 kV and 10 mas. From thorax examination fetal doses between 1.92×10^{-5} to 2.79×10^{-5} mGy and from abdomen examination fetal doses between 0.054 to 0.975 mGy. Fetal doses obtained were less than the dose limit value according to The International Commission on Radiological Protection (ICRP) of 100 mGy. , There

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