

学位請求論文の内容の要旨

領 域	医療生命科学領域	分 野	放射線生命科学分野
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(論文題目) ACCUMULATED EXPOSURE DOSE OF MULTIPLE RADIOLOGICAL EXAMINATIONS AT AN EMERGENCY CENTER (救命救急センターにおける複数放射線検査の累積被ばく線量)			
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<p>The International Commission on Radiological Protection (ICRP) recommends that the exposure dose from radiological examinations should be as small as possible (as low as reasonably achievable, ALARA). However, some patients transported to the emergency center were subject to multiple radiological examinations such as mobile X-ray, computed tomography (CT) examination and angiography examination. We experienced the number of radiological examinations conducted at the emergency center over approximately 3 months, from July to September 2013. There were 50 CT cases in 302 total cases, and most examinations were plane head CT. There were 120 cases that received two imaging types using mobile X-ray and CT; 13 cases received mobile X-ray, CT, and angiography, which have a large radiation exposure dose.</p> <p>Increased radiation exposure is a concern for patients. By inserting a thermoluminescent dosimeter (TLD) into a tissue-equivalent phantom, the equivalent dose and effective dose of each radiological examination were determined at each anatomical region. According to the total equivalent doses of radiological imaging (mobile X-ray, head to pelvis CT, head angiography), the lens equivalent dose was 30-56.99 mGy. This value is lower than the threshold (500 mGy) for cataract proposed in ICRP Publication 118. The head effective dose was 0.05 mSv for head mobile X-ray, 60.43 mSv for head to pelvis CT, and 8.42 mSv for head angiography. The total</p>			

(注) 論文題目が外国語の場合は、和訳を付すこと。

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effective dose was 68.9 mSv.

The results of this study, it is considered that there is a low possibility of radiation injury, there is a possibility that whole-body CT examination may be additionally performed, in which case the effective dose may exceed 100 mSv. In order to get maximal benefit and minimal harmful effects, it is necessary to examine appropriate imaging sections and imaging conditions when scanning.

To optimize ALARA measurements as well as the radiation dose, it is necessary to know the exposure dose of radiological examination. The dose data evaluated in this study will be useful for the estimation of radiation risks for patients of emergency centers who undergo multiple radiation examinations.

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学位論文のもととなる研究成果としての筆頭著者原著

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