

RADIATION SAFETY CULTURE IN THE INTENSIVE CARE DEPARTMENT

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Abstract

The aim of this commentary review was to summarize the main research evidences on radiation exposure and to underline the best clinical and radiological practices to limit radiation exposure in intensive care unit (ICU) patients. Radiological imaging is essential for management of patients in an ICU despite the risk of ionizing radiation exposure in monitoring critically ill patients, especially in those with prolonged hospitalization. In optimizing radiation exposure reduction for ICU patients, multiple parties and professionals must be considered, including hospital management, clinicians, radiographers, and radiologists. Modified diagnostic reference levels for an ICU patients, based on UK and USA guidance, may be proposed, especially considering the frequent repetition of X-ray diagnostic procedures in an ICU patients. Best practices may reduce radiation exposure in ICU patients with particular emphasis on justification and radiation exposure optimization in conventional radiology, interventional radiology and CT. CT contributes most predominately to radiation exposure in an ICU patients.

In the present some cases report, we demonstrate high specificity (>94%) of individualized ultra-low-dose CT (ULDCT) in detecting infiltrative changes. The radiation dose of ULDCT was more than 10 times lower than that of standard CT scans and some time for chest Area significantly lower than traditional X-rays. While the visualization quality for mediastinal structures and the skeletal system was reduced, the assessment of lung tissue remained precise and reliable. Its high sensitivity, specificity, and minimal radiation exposure make it particularly advantageous for patients requiring multiple follow-up scans. Implementing targeted protocols based on individual patient needs is recommended to increase ULDCT usage in daily working in an ICU also.