

EVALUATION OF PATIENT DOSES AND IMAGE QUALITY FOR CHEST EXAMINATIONS IN DIGITAL RADIOLOGY

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Medical imaging is undergoing revolutionary changes and use of digital detectors has increased in the past several years and will continue to expand. The application of advanced imaging technology might allow the reduction of the radiation load of patients (up to 50%) due to lower noise, larger dynamic range, etc., but unfortunately in the practice are these advantages used only in a restricted manner and users are relying on the AEC adjustment given by the manufacturer for imaging, which is frequently not needed at all.

Chest X ray examination is one of the most frequently required procedures used in clinical practice. It is because X ray image often provides information in deciding for further step in the establishment of diagnosis and treatment of many diseases. For studying the image quality of different X ray digital systems and for the control of patient doses, the standard anthropomorphic lung/chest phantom RSD 330 is used, where animal lungs simulate the size and structure of lungs of adult male, as well as the left coronary artery.

For comparison of different techniques of chest examination a special software was elaborated which enables to compare DICOM images from different modalities (CR, DR), based on the support of a special viewer of those images. The user of the software can compare different images gained at variable exposure values (kV, mA, etc.) on the screen of their diagnostic station and the values can be changed and set. The software provides standard features of DICOM viewers (enlargement, contrast settings, blackening, etc.) and also gives information about the dose at which the image was gained.

In the paper the physical parameters of imaging will be compared with the subjective evaluation of the images by physicians, in an anonymous correspondence audit. The possibilities of using the software for optimization, education and training of medical students, radiological assistants, physicists and doctors in the field of digital radiology will be described.

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