

عنوان مقاله:

Reducing radiation doses in female breast and lung during CT examinations of thorax: A new technique in two scanners

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خلاصه مقاله:

Background: Chest CT is a commonly used examination for the diagnosis of lung diseases, but a breast within the scanned field is nearly never the organ of interest. Objective: The purpose of this study is to compare the female breast and lung doses using split and standard protocols in chest CT scanning. Materials and Methods: The sliced chest and breast female phantoms were used. CT exams were performed using a single-slice (SS)- and a ۱۶ multi-slice (MS)- CT scanner at ۱۰۰ kVp and ۱۲۰ kVp. Two different protocols, including standard and split protocols, were selected for scanning. The breast and lung doses were measured using thermo-luminescence dosimeters which were inserted into different layers of the chest and breast phantoms. The differences in breast and lung radiation doses in two protocols were studied in two scanners, analyzed by SPSS software and compared by t-test. Results: Breast dose by split scanning technique reduced ۱۱% and ۳۱% in SS- and MS- CT. Also, the radiation dose of lung tissue in this method decreased ۱۸% and ۵۴% in SS- and MS- CT, respectively. Moreover, there was a significant difference ($p < ۰.۰۰۰۱$) in the breast and lung radiation doses between standard and split scanning protocols. Conclusion: The application of a split scan technique instead of standard protocol has a considerable potential to reduce breast and lung doses in SS- and MS- CT scanners. If split scanning protocol is associated with an optimum kV and MSCT, the maximum dose decline will be provided.

کلمات کلیدی:

Breast Dose, Lung Dose, Split Protocol, Chest CT

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