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The Dose to Organs in Lumbar-Abdominal Computed Tomography Imaging Using TLD

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Abstract : The introduction of CT scans has been a great improvement in diagnosis of different diseases. However, this imaging modality can expose the patients to cumulative radiation doses which may increase the risks of some health problems like cancer. In this study, the dose delivered to different organs in lumbar-abdominal imaging was measured by putting the TLD-100, and TLD-100H chips inside the Alderson Rando phantom. The lumbar-abdominal image of the phantom was obtained, while TLD chips were inside the holes of the phantom. According to the results obtained in this study using TLD-100 chips, the average dose received by liver, bladder, rectum, kidneys, and uterus were found to be 12.9 mSv, 8.9 mSv, 10.1 mSv, 11.0 mSv, 11.2 mSv, and 10.5 mSv respectively, while the measurements performed by TLD-100H show that the average dose to liver, bladder, rectum, kidneys, and uterus were found to be 12.4 mSv, 9.2 mSv, 9.5 mSv, 10.5 mSv, 10.7 mSv, and 9.9 mSv respectively. The results of this study indicates that the dose measured by the TLD-100H chips are in close agreement with those obtained by TLD-100.

Keywords : CT scan, dose, TLD-100, diagnosis
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