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Evaluation of ^{99m}Tc-DTPA Renal Scanning for Localization and Shielding of the Kidneys in Patients Candidate for Abdominal Radiotherapy

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Abstract:

Introduction: Clinical radiation nephropathy can result in considerable morbidity and/or mortality. Renal tolerance (TD5/5) has been stated to be 20 Gy when irradiation has been delivered to both kidneys in 3-5 weeks. Therefore to minimize renal toxicity in these patients, localization and shielding of the kidneys are essential. This study was carried out to evaluate the role of ^{99m}Tc-DTPA renal scintigraphy in renal localization for perfect shielding. Methods: From April 2000 to March 2001, thirteen patients had complete history, physical examination, serum creatinine level, complete blood count, urinalysis and abdominal sonography. Then the patients were referred to nuclear medicine department. After I.V. injection of 10 mCi ^{99m}Tc-DTPA, the kidneys were localized by gamma camera and marked on skin. All patients received abdominal radiation with A-P and P-A fields with cobalt 60 machine up to 3000-5000cGY. Kidneys were shielded posteriorly after 1500cGY with 5 HVL (Half value layer) blocks. Results: After minimum follow-up of 24 months, no evidence of increasing blood pressure, edema, proteinuria, rising in serum creatinin or changing in kidney size was found. Conclusion: The results show that localization of kidneys by ^{99m}Tc-DTPA is a useful, easy and safe method to shield kidneys in these patients.

Keywords:

[^{99m}Tc-DTPA Renal Scanning](#) . [Abdominal Radiotherapy](#) . [Kidney Shielding](#)

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