

Clinical approach to renal study incidental to ^{99m}Tc -MDP bone scintigraphy

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In order to investigate the feasibility of the assessment of renal function with ^{99m}Tc -MDP, we compared renographical images, renogram patterns and the glomerular filtration rate (GFR) obtained by means of a modified Gates' method and 200 MBq of ^{99m}Tc -MDP with those obtained by means of ^{99m}Tc -DTPA. Because 19 of 20 patients had malignant tumors in the genitourinary tract, there was no difference between the two tracers in identifying a parenchymal defect corresponding to renal cancer. Of eight patients with hydronephrosis, four had a defect or decreased uptake with a dilated pelvis, whereas the other four had marked radioisotope retention in the renal pelvis or the whole kidney on serial images. There was also no difference between the two tracers in identifying hydronephrosis. Of 38 paired renograms 35 showed the same renogram patterns with both tracers. Of three patients with different renogram patterns, two had hydronephrosis. In 20 patients including three patients with bone metastasis, total GFR and split GFR obtained with both tracers correlated with a correlation coefficient of $r = 0.920$ ($p < 0.001$) and $r = 0.944$ ($p < 0.001$), respectively. Excluding bone metastasis from the analysis, a linear-regression analysis showed excellent agreement between the two measurements with a correlation coefficient of $r = 0.960$ ($p < 0.001$) and $r = 0.963$ ($p < 0.001$), respectively. The linear regression equations were $Y = 1.009X - 0.111$ and $Y = 1.034X - 0.714$, respectively. In conclusion, ^{99m}Tc -MDP can be used as a supplement to evaluate renal function incidental to the survey of bone metastases in patients with malignant tumor.

Key words: ^{99m}Tc -DTPA, ^{99m}Tc -MDP, glomerular filtration rate (GFR), split GFR