

excretory segment, which may probably indicate the glomerular function is maintained almost normally compared with the tubular function.

The absorbed radiation doses of ^{99m}Tc -DTPA

were total body 0.011, kidneys 0.029, male gonads 0.020 and female gonads 0.021 rad/mCi respectively.

^{99m}Tc -DTPA was stable and the labeled ratio was over 99% after 6 hours of preparation.

Comparison of ^{99m}Tc -EDTA, -DTPA and ^{131}I -Hippuran in Renoscintigraphy

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Recently ^{99m}Tc -compounds are used as renal scanning agent in many laboratories. We compared the renoscintiphotos using ^{131}I -hippuran, and other ^{99m}Tc -chelates, DTPA and EDTA.

Before clinical study, whole body distributions of ^{99m}Tc -DTPA and -EDTA were investigated by macroautoradiography which was revealed efficient accumulation to the kidneys and not to the liver. Two were accumulated mainly to the renal cortex in the early time after injection, 2-3 minutes after they moved to the medulla. Same as other experiments which we had carried out few years ago with canine kidneys by ^{51}Cr -EDTA, 10-15 minutes after injection ^{99m}Tc -EDTA appeared again in the cortex. This mechanism was not clearly explained, but it was supposed to be caused by recirculation or chemical transformation of these substances.

The instrumentation used included a Pho/Gamma HP camera (Nuclear Chicago) interfaced with a CDS 4096 computer and a magnetic tape system. With it we can obtain sequential scintiphotos and simultaneously store

numerical information on magnetic tape. 2-4 millicuries of ^{99m}Tc -DTPA and -EDTA, 300-500 microcuries of ^{131}I -hippuran were rapidly injected. Sequential scintiphotos (DTPA, EDTA) were obtained every 5 seconds for the first 2 minutes, and 8 scintiphotos every 2 minutes after injection. Area of interest renograms were obtained from the data which were stored on magnetic tape.

30 cases in which we had 3 allografts, 6 tumors and 6 cysts were studied. In the case with moderately impaired kidneys, especially acute-rejected allografts, ^{131}I -hippuran was more effective substance to obtain slight change of images than other two chelates. In these cases we could not get the fine vascular images using ^{131}I -hippuran. Because of the low patient dosage of ^{99m}Tc -DTPA and -EDTA, substantially larger amounts of activity can be given and short interval serial images, vascular images, can be obtained. The images of ^{99m}Tc -EDTA which delineated the thickness of renal parenchyma most clearly showed us the reversibility of hydronephrotic kidneys.