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CORRELATION OF EFFECTIVE RENAL PIASMA FIOW(ERPF) AND MEAN TRANSIT TIME(MTT) ON THE RENOGRAM USING I-131-HIPPURAN.
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We reported a method to estimate ERPF of a singie kidney from the renogram and 30 minute excretion rate on bladder by external counting using I-131-hippuran in the previous meeting of this society.

Recently,MTT calculated by deconvolution analysis is considered to be a favorable parameter of a kidney,because the influence of the input curve is overcome.

According to A.Piepsz et al(Brit.J.Radiol.55:419,1982),H(1) and MTT were calculated in our hospital since last year.The aorta was used as an input curve and the renogram curve was corrected by subtraction of tissue background.

MTT correlates with ERPF in cases from normal to hypofunctional kidneys and H(1) also shows a good correletion with ERPF.

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DYNAMIC URINARY FLOW IMAGES IN PATIENTS WITH ILEAL LOOP DIVERSION ASSESSED BY I-123 HIPPURAN SCINTIGRAPHY.
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To evaluate upper urinary tract and ileal loop functions, dynamic urinary flow studies using I-123 hippuran were performed in 10 patients with ileal loop urinary diversion. After 1 mCi of I-123 hippuran were given iv, sequential images of the kidney and ileal loop were taken and recorded in an interval of 20 sec/frame for 30 min. Hippuran activity curves were derived from the whole kidney, cortex, pelvis and ileal loop. IVP, ileal loopography and intraluminal pressure study of the loop were carried out in the different period.

In the normal upper urinary tract, cortical peak time was followed by the pelvic peak time, which was followed by the peak time of the loopogram. Irregular oscillations in the loopogram accompanied by delayed excretion and/or increased activity of the pelvic area indicated ileo-uretero-pelvic backflow in 5 of 10 cases. This was evident in 8 of 10 cases on the retrograde loopography. Most of such cases revealed hydronephrotic changes on IVP.

I-123 hippuran urodynamic study made feasible to observe urinary flow in the kidney, ureter and ileal loop under physiological circumstances, and to detect complications in the upper urinary tract early.

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FACTORS AFFECTING DEPOSITION OF Tc-99m-DMSA IN THE LIVER (II).
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It is not infrequent that the liver and spleen are depicted in renal imaging with Tc-99m-DMSA. In the 22nd annual meeting, we reported the degree of accumulation in the liver and spleen corresponded well to the elevation of Complex I/Complex II(C·I/C·II) in Tc-99m-DMSA solution. This study was undertaken to know the difference in the degree of delineation of the liver when Tc-99m pertechnetate(2 kinds) was matched against DMSA(2 kinds). The combination caused the significant increases of C·I/C·II value and of frequency of liver-depiction. In the combination, C·I/C·II value changed markedly with time. Another study on the formation of C·I was performed using homemade Tc-99m-DMSA. When the concentration of Tc-99m pertechnetate and $SnCl_2$ were kept constant and the concentration of DMSA was increased, C·I/C·II value decreased. In addition, when the concentration of $SnCl_2$ was increased, C·I/C·II was increased exponentially. On the other hand, the concentration of Tc-99m pertechnetate did not affect C·I/C·II. From these studies, C·I/C·II appeared to depend largely on the concentration of DMSA and $SnCl_2$ as well.

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STUDIES ON RENAL SCANNING AGENTS(PART 8). PRECLINICAL STUDIES ON A NEW RENAL SCANNING AGENT, Tc-99m DMP.
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In connection with the development of a excellent renal scanning agent, which gives clear images with low radiation doses and is easily prepared, we prepared a new agent, Tc-99m dimercaptopropionic acid(DMP) and carried out preliminary tests using rats and rabbits. The maximum renal uptake(51%) was observed 3 hr after i.v. injection to rats. About 38% of the dose was excreted in the urine for 24 hr. The renal excretion of this agent seemed to be a little faster than Tc-99m DMS. DMP was capable of forming complexes with Tc-99m in a good yield in the presence of stannous chloride in acidic media.

Rabbits gave also excellent renal images with Tc-99m DMP. The chemical structure of DMP suggests a minimum requirement for renal imaging agents, that is two mercapto groups must be neighbours, secondly, one bite such as carboxy group is necessary at the alpha position to the mercapto group.

This agent with the simplest chemical formula seems to be promise for clinical studies judging from the above-mentioned animal experiments.