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STUDY OF THE RENOSCINTIGRAPHY IN THE CASES WITH UROLITHIASIS

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In the 30 cases of unilateral urolithiasis, renoscintigrams and several parameters on the ROI curves were studied. Before this investigation IVP's were performed on each case and no pathological findings were obtained on the contralateral non-affected side. As one of the parameters in the excretory phase, $Tl/2$ was studied on the non-affected kidneys. We analysed the $Tl/2$ in the 39 normal cases on the control study and obtained that the normal value of the $Tl/2$ was 519.6 ± 233.4 sec.. In the 29 of 30 cases, on the non-affected kidneys, delayed excretion or pyeloureterectasis was demonstrated in the images and prolonged $Tl/2$ in the ROI curves. In unilateral urolithiasis contralateral urine flow might be modified by the ipsilateral urinary stasis and possible functional disorder of renal cortex, however, it is possible that the urinary stasis may play a great role in the primary cause of urolithiasis as a predisposition or an inducement. In the cases of unilateral urolithiasis it would be suggested that great attention should be paid to the occurrence of urolithiasis on the contralateral non-affected side in the following-up.

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RADIONUCLIDE STUDY OF THE RENAL FUNCTION

DURING THE COLIC ATTACK INDUCED BY UROLITHIASIS. N.Hirao, H.Washida, M.Tsugaya, Y.Hachisuka, F.Tanaka, H.Fujii and T.
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We have attempted to evaluate the renal function during colic by the dynamic renoscintigraphy, using Tc-99m DTPA.

This study was performed in 15 patients whose affected kidneys were not visualized on intravenous urography. For the dynamic studies, 10mCi of Tc-99m DTPA was injected intravenously as a rapid bolus, and sequential images of the kidney were recorded one second for 72 frames and 6 seconds for 244 frames by using a gamma scintillation camera and on-line micro-computer system. The parameters of the renal function were calculated from the serial images and the dynamic curves of the radio-activity.

The results were as follows: 1. The renal blood flow on the affected kidney was decreased in 13 of 15 cases. 2. In all of the affected kidney, the uptake of Tc-99m DTPA was decreased. 3. The transportation of Tc-99m DTPA from glomerulus to renal tubuli was remarkable delayed in all cases. 4. The renograms showed a particular pattern. 5. The renoscintigram of all cases became normal, when the attack was disappeared.

In conclusion, it is suggested that the renal function of the kidney affected with colic attack is temporarily decreased according to the decrement of renal blood flow.

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Tc-99m DTPA RENOSCINTIGRAPHY IN ACUTE TUBULAR NECROSIS. K.Suzuki, M.Mashimo, T. Miyamae, K.Ishibashi, Y.Yoshikawa, K.Shibata.
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We performed Tc-99m DTPA and I-131 hippuran renography to a acute renal failure patient due to cephalosporin administration. We found from the Tc-99m DTPA renoscintigram that, although the renal perfusion and secretion are normal and the renal activity decreased gradually, urinary bladder was not visualized. These renoscintigram pattern may be caused from the back leak phenomenon in acute tubular necrosis. On the contrary, I-131 hippuran showed flat pattern. We investigate the relation between Tc-99m DTPA renoscintigraphy and renal tissue findings. Acute renal failure were created in mongrel adult dogs by intravenous injection of kanamycin & low molecular weight dextran. Pathological study proved that the dogs whose renoscintigram pattern are the same as the above clinical case had almost normal glomerulus but damaged tubule. We consider that the acute tubular necrosis leads to the clinical finding of the Tc-99m DTPA renography.

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EVALUATION OF DOUBLE ISOTOPE RENOGRAM.

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Double isotope renogram has been performed at Kyoto University Hospital since October 1979 using conventional renogram apparatus. After administration of 400 ml of water, patient was injected the mixture of I-131 Hippuran and In-111 DTPA (both about 25 μ Ci) intravenously and renogram was recorded for 10 min on supine position. Patient was asked to void urine 25 min after the injection and the urine specimen was served to measure the excretion rate of the two radiopharmaceuticals respectively. Radioactivity of I-131 in the urine sample was counted in the region of 280 through 420 KeV, and In-111 180 through 280 KeV. Twenty five min. excretion rates of the two radiopharmaceuticals in the urine sample were calculated semiautomatically using a computer. Experimental measurements of various combinations of the two RIs proved that the procedure was highly reliable over a wide range. RPF, GFR, mean transit time and R/L ratio were determined by computer simulation based on a physiological model. Multivariate analysis was performed on cases with various diseases and it was concluded that the mean transit time was a very important parameter to evaluate renal performance as well as renal blood flow.