vided between right and left kidney according to the initial height of the transfer function of each kidney, which is assumed to be proportional to the blood flow.

Functional Image of the Kidney Using on-Line Minicomputer System in Obstructive Uropathies

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Functional image of the kidney, the parametric map of the regional renal function were developed using ^{131}I-hippuran sequential scintigram data. An Anger camera and on-line minicomputer system were employed for the data processing.

A dynamic curve in each element of the digitalized image was extracted and the pertinent parameters (T-max, C-max, UP SLOPE, DOWN SLOPE, and COMPARTMENT) were calculated to display as parametric map on a CRT.

In this study, 47 cases of obstructive uropathy including renal stone p-u junction stenosis etc, were studied using these functional imaging and were compared with the findings of renogram, renal scintigram, intravenous pyelography and laboratory data.

Classifications of obstructive uropathy were divided into 4 groups of hydronephrosis by I.V.P. (Oka, Otnes), 11 cases of dilated pelvis, 8 cases of atrophy of papillae, 16 cases of large global calyces, 8 cases of huge hydronephrosis.

In generally, in the case of hydronephrosis, significant delay of T-max and increase of number of COMPARTMENT were demonstrated at the hydronephrotic portion, especially, image of DOWN SLOPE in the hydronephrotic portion were expressd as defect, which the remaining cortex with normal excretroy function is clearly discriminated from the impaired portion.

According to the degree of hydronephrosis (1–4), each parametric map showed the characteristic image which reflect clinical significance in obstructive uropathy, and the size and the degree of hydronephrotic change are estimated in the functional images. Moreover, the functional images of the hydronephrosis were proved to be useful for the evaluation of regional distribution of the renal function and were applied to the indication of operation of hydronephrotic patients.

Follow up by Using ^{99m}Tc-DTPA after Operation of Urinary Diversion with the Ilial Conduit and the Ureterosigmoidostomy

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We tried to analyse of dinamics of urine stream in ileum and colon after operation of urinary diversion by using ^{99m}Tc-DTPA and γ-camera with computer system.

Collimeter is high-analysable with 2 million hole for low energy. 5–7 mCi of ^{99m}Tc-DTPA was injected intravenously, patient was lay supinely, and image of intestine was obtained clearly by polaroid camera timely from about 5 or 6 minute after injection in normal case of renal function. Simultaneously collecting curve and them avoiding curve of radioactivity in the intestine by direct counting was recorded continuously. It's able to compare with normal collecting curve of radio-

activity to abnormal collecting curve by computer analyse about region of interest in the intestine and to estimate of renal function disturbance.

Collecting curve of ileal conduit and uretero-sigmoidstomy, which showed similarly.

This comparison has been difficult by X-P examination such as infravenous pyelography or usual radioisotope renogram.

Radioisotope renal Angiography with ^{99m}Tc-DMSA.: Computer Analysis of Renal Vascular Phase

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^{99m}Tc-DMSA is a suitable substitute for organomercurial renal imaging agents. Static imaging and dynamic renal vascular flow studies with ^{99m}Tc-DMSA, were performed to evaluate renal hypertension.

1. Methods.

After bolus injection of 10 mCi of ^{99m}Tc-DMSA, early rapid-sequential images were stored on the computer system at interval of 1 second for 60 seconds. An early image was displayed on a color TV monitor and superimposed on the static image. Time-activity curves, corresponding to ROI (region of interest) over kidneys and aorta, were obtained and 4 parameters were calculated.

1) Peak to peak time indicating passing time, was calculated by time activity curve of each kidney and aorta.

2) Peak to peak ratio (affected kidney/normal kidney) was obtained.

3) Transit time indicating interval from maximum descending portion to maximum descending portion of first peak, was calculated by differential curve which was obtained by processing time-activity curve.

4) Transit time ratio (kidney/aorta) was calculated.

2. Results.

1) Diagnostic informations were increased by displaying superimposed images.

2) Transit time ratio and peak to peak ratio were increased in the patients with reno-vascular hypertensions.

3. Conclusion.

Our analytical methods of radioisotope renal angiography with ^{99m}Tc-DMSA were found to be usefull aid for differential diagnosis of the reno-vascular hypertension.

Pelvic RI-angiography by ^{99m}Tc-Pertechnetate in Urology

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Pelvic RI angiography was performed in the cases of bladder tumor, prostatic carcinoma and benign prostatic hypertrophy to evaluate tumor gross and tumor state. After rapid injection of ^{99m}Tc-pertechnatate, tumor image was tried to visualize with scinticamera, then analyzed with minicomputer. 35 of 50 cases with bladder tumor showed positive tumor image, which was related to the tumor gross, but not to the tumor stage. Prostatic image was demonstrated in 2 untreated cases of 5 with prostatic carcinoma and in 2 of 10 with benign porstatic hypertrophy. Useful results were also obtained from a few cases of testicular tumors, tuberculosis of the epididymis, mumps orchitis and scrotal hematoma.

Therefore, this simple method would be not