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PRACTICAL ATTEMPTS OF AUTOANALYZING RENOSCINTIGRAM USING A MICROCOMPUTER SYSTEM. T.FUKUSHIMA, F.TANAKA, H.FUJII, Y.TAKAYAMA, H.WASHIDA, M.TSUGAYA, N.HIRAO and Y.HACHISUKA. Anjo Kosei Hospital, Anjo.

We have been analyzing about 2,500 cases of renoscintigrams using Tc-99m DTPA for 3 years. In early time, we had used macro-command and language for data acquisition and the analysis of renoscintigram. The method had some disadvantages. For example, it spented about 80 minutes and was needed some photographs using x-ray film for analyzing a data of one patient. Therefore, it is necessary for saving time and money. We have been developing the night-autoanalyzing methods of the renogram using a microcomputer system. The methods are as follows; 1. The examination is performed in the daytime. 2. After this, all of the operations are automatically performed using a microcomputer system during the night. The data are feeded into the computer. 4. The results of curves, ROI, and images are stored to the image memory with the large capacity and the results of patients ID and values are stored in the floppy disk. 5. The results are processed by the bit image and are printed out using line-printer. We have been using VIP 460 (CPU 6800), MT (45 IPs), Winchester hard disk with 10 megabit, floppy disk and line-printer (MP-82). In conclusion, we could develop programs of a microcomputer for automatic analysis of renoscintigram at night.

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QUANTITATIVE EVALUATION OF RENAL FUNCTION IN OBSTRUCTIVE UROPATHY BY Tc-99m-DTPA ECT IMAGING. S.Toyota, K.Takeda, H.Maeda, T.Nakagawa and T.Ito. Mie University School of Medicine. M.Kakegawa and S.Matui Toshiba corporation, Nasu.

25 cases of normal and 23 cases with hydronephrosis were studied. Following intravenous bolous injection of 10mCi of Tc-99m-DTPA, sequential ECT data were obtained by rotating opposed gamma cameras. Attenuation corrected coronal section for 1-2 min was used for uptake imaging. The uptake ratio for total kidney (TUR) and partial mean uptake ratio (PUR) were calculated by the quotient of respective total and regional mean counts over the kidneys devided by the injected dose.

Normal values for TUR and PUR ranged $3.22 \pm 0.94\%$ (mean $\pm 2SD$) and 421 ± 94 ($\times 10^{-3}$), respectively. A combination of these two values for each diseased kidney introduced the classification of the following three groups. 1) Normal group in which both TUR and PUR are within normal ranges. 2) Group of compensatory increased volume in which TUR is normal and PUR is decreased. 3) Group of contracted kidney in which both TUR and PUR is decreased.

The quantitative analysis of Tc-99m-DTPA ECT images was considered to be useful for evaluating regional and total renal function.

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CLINICAL EVALUATION OF RENAL FUNCTION STUDY USING I-123-ORTHOIODOHIPPURATE (I-123-OIH) IN PATIENTS WITH OBSTRUCTIVE UROPATHY. J.Okada, G.Uchiyama, K.Uno, S.Uematsu, H.Katsuragi, N.Arimizu, T.Miyauchi, J.Shimzaki and H.Ikehira. Yamanashi Univ. School of Med. Tamaho Yamanashi. Chiba Univ. School of Med. Chiba. National Institute of Radiological Sciences. Chiba.

Functional images and regional renograms using I-123-OIH were evaluated by comparing with patients' clinical courses, intravenous pyelographies (IVP) and Creatinine clearances. 21 patients with obstructive Uropathy, mainly with renal and ureteral stones were studied. Functional images were processed in three parameters of Tmax, T1/2 and ERBF (effective renal blood flow). ERBF images were composed of regional counts in early blood flow phase of renograms. Regional renograms were produced on renal parenchyma and pelvis. ERBF images represented the functioning distributions of renal tissue after the surgery and the recoveries in the renal parenchyma from the operation. Tmax, T1/2 images and pelvic regional renograms showed good correlations with IVP findings which presented the dilatation of pelvis and the delay of excretion. Parenchymal regional renograms showed poor correlations with Creatinine clearances and caused sometimes errors in ROI settings, therefore the evaluation of renal function only by the parenchymal regional renogram seemed inappropriate.

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FUNCTIONAL EVALUATION OF RENAL PARENCHYMAL IMPAIRMENT IN OBSTRUCTIVE UROPATHY BY Tc-99m DTPA RENOGAM WITH DECONVOLUTION ANALYSIS. T.Aburano, K.Nakajima, N.Tonami, K.Hisada, M.Yamada, K.Naito and H.Hisazumi. Kanazawa University. Kanazawa.

Deconvolution analysis of whole kidney and renal parenchym on conventional Tc-99m DTPA renography was examined to evaluate the functional impairment of the renal parenchym secondary from the obstruction in the urinary tract. The deconvolution analysis was done with the metho of matrix algorithm by Diffey et al. (J.N.M. 17:352, '76). The mean transit time (MTT) and maximum transit time (T20%) in normal renal parenchym was 2.46 ± 0.47 min. and 3.48 ± 1.00 min., respectively. Therefore, the prolonged MTT more than 3.5 min. was accepted to be an impairment of renal parenchymal function secondary from the urinary tract obstruction. Although the measurement of transit time was unreliable in the severe functional impairment, the transit time study was the most sensitive for the evaluation of functional impairment in obstructive uropathy. Moreover, the relative GFR ratio obtained from the ratio of retention function at zero time of each kidney was well correlated with that from the ratio of integral activity of whole kidney from 60sec. to 140sec.

From the present results, the deconvolution analysis of Tc-99m renography was one of the useful study for the evaluation of renoparenchymal functional impairment secondary from obstruction.