

323

EVALUATION OF RENAL FUNCTION DAMAGE IN EXPERIMENTAL OBSTRUCTIVE UROPATHY BY Tc-99m DTPA RENOSCINTIGRAPHY. K.Suzuki, M.Mashimo, K.Nishimura, and T.Miyamae (Dept. of Radiol.) H.Numata, S.Hiraga, and K.Okada (Dept. of Urology) Saitama Medical School. Saitama.

We attempted to evaluate change of renal function in obstructive uropathy. Unilateral ureters of 18 dogs were ligated completely by 2 hemoclips. These dogs were classified into 5 groups by ureter obstruction periods (1W-5W). We evaluated the grade of renal function damage after ureter was ligated by Tc-99m DTPA renogram pattern on the each groups. And also we evaluated the grade of functional return after ureter was released. The renogram pattern was classified by Machida's classification (N, M1, M2, & L pattern). And we added a new M3 pattern that was the pattern between M1 and L. Pathological examinations of obstructive kidneys were also performed at the time of ureter release operations.

1. All cases, that ureter obstruction periods were longer than 3 weeks, showed L pattern. 2. The renal function could be returned in all groups. Even 5W group, renogram patterns were returned from L to M3 by 80 days after ureter was released. Also non-visualized kidneys, which were included L pattern, could be returned to M3 pattern. 3. The pathological examination showed no damage of glomerulus even 5W group.

324

RADIONUCLIDE RENAL STUDIES IN OBSTRUCTIVE UROPATHY. T.Aburano, A.Tada, T.Michigishi, N.Tonami, K.Hisada, M.Matsudaira. Kanazawa University School of Medicine. Kanazawa.

Diuretic Tc-99m DTPA renography assisted with furosemide was performed in addition to the routine radionuclide studies of Tc-99m DTPA and Tc-99m DMSA, in order to improve the diagnostic efficacy in obstructive uropathy. After hydration of 300ml of water, 20mg of furosemide was injected i.v. 15min. following 8mCi of Tc-99m DTPA administration. Serial dynamic images were obtained using scintillation camera every 3 minutes up to 30min. And data were recorded on to a minicomputer system for 30 min. in 90 frames. To evaluate the effect of furosemide on urinary excretion, the excretion half time (T1/2) was obtained from the faster component on the Tc-99m DTPA excretion curve by two compartment analysis. T1/2 of upper limit of normal value was 2.5min. 80% of patients with obstruction showed a prolonged T1/2. And 57% of patients with non-obstructive renal parenchymal damage also showed a prolonged T1/2. However, radionuclide retention in the pelvicalyceal system and obstructive renogram were rarely seen in the patients with renal parenchymal damage, although frequently seen in patients without obstruction. With the combined criteria of obstructive findings and prolonged T1/2, 71% of obstructive patients were correctly detected, and only 5% of false positives were observed.

327

RENAL DYNAMIC STUDY BY USING I-123-HIPPURAN. K.Sueyoshi, T.Takase, H.Ishida, S.Shirakawa, M.Takeuchi, M.Sekimoto, H.Akagi. Osaka Medical College, Takatsuki.

Renal dynamic study by using 1mCi of I-123-Hippuran was performed in 60 various renal diseases. Each T_{max}, T_{3/4} max, and T_{1/2}max on regional renogram curve of renal parenchyma, pelvis and whole kidney was calculated in normal cases, and evaluated its usefulness with renal dynamic images. Each parameter was compared with conventional renogram's parameter using I-131-Hippuran. Each parameter using I-123-Hippuran was more accurate than the conventional method using I-131-Hippuran.

Renal hypofunctions were classified into two types, a type of damaged parenchyma and of mild obstruction, by each parameters and dynamic images. In severe urinary obstructed type, renal parenchymal disfunction was estimated.

328

CLINICAL EVALUATION OF SCINTILLATION CAMERA RENOGRAPHY WITH I-123-OIH. J.Ishimura, K.Tachibana, H.Kitani, A.Kido, M.Hara, T.Morita, M.Fukuchi and K.Nagai. Division of Nuclear Medicine, Hyogo College of Medicine. Nishinomia.

Scintillation camera renography with I-123-Orthoiodohippurate (I-123-OIH) was performed in 50 patients for clinical evaluation. The instrument was a gamma camera with a 3,300-hole HEHS parallel collimator and a computer on-line system. Each patient received 700 µCi of I-123-OIH intravenously by bolus injection. The data were accumulated on disk for renograms of whole kidney, dynamic images, regional renograms and functional images. The analysis of renograms of whole kidney was possible as well as I-131-hippuran. Dynamic images with 2 minutes intervals were indicated morphological information of shapes of kidney and urinary tract. Regional renograms on cortex and pelvis were useful to make the diagnosis of the obstructive portion. Functional images were made by 7 data formats i.e. CM, TM, T1, HT, A1, A2 and AT. The images of HT were useful to follow up the clinical courses of glomerulonephritis. The images of CM and TM were observed characteristically in hypofunctional kidney and renosclerosis. The studies in this series suggested dynamic images, regional renograms and functional images with I-123-OIH provide more clinical utility than I-131-hippuran.