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CLINICAL VALUES OF RENAL FUNCTION STUDY WITH I-123-ORTHOIODOHIPPURATE ( I-123-OIH ). M. Ishine, K. Murase, M. Koizumi, H. Itoh, S. Nakata, S. Manabe, M. Kimura, M. Kawamura, A. Iio, K. Hamamoto. Ehime University School of Medicine. Ehime.

Renography was performed with I-123-OIH using a gamma camera and digital data acquisition system for the evaluation of renal structure and function. As for sequential renal scintigrams, both high-quality parenchymal and excretory images were simultaneously obtained, so they were assessed to be useful in morphological evaluation of not only renal parenchymal disease but also obstructive nephropathy. Regional renograms and functional images derived with image processing were useful in the evaluation of regional function and extension of the functional disorder. Furthermore, calculation of renal Mean Transit Time (M.T.T.) was applied by means of determining transfer function by using the direct operational method and the values of M.T.T. were compared in various renal disorders. The mean value of M.T.T. in healthy cases was  $2.99 \pm 1.72$  (mean  $\pm$  S.D.) minutes. The mean values of the cases with hydronephrosis and diffuse parenchymal disease were significantly prolonged. It was thought that estimation of M.T.T. was useful quantitative assessment of renal function.

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RENAL DYNAMIC STUDY WITH I-123-ORTHOIODOHIPPURATE. K. Itoh, I. Narabayashi, R. Matsui, C. Takemura, K. Sugimura, R. Ohnishi, Y. Inoue, T. Fukukawa, S. Nishiyama, S. Kimura. Department of Radiology, Kobe University School of Medicine. Kobe.

Clinical usefulness of renal dynamic study with I-123-orthiodohippurate (I-123-OIH) were investigated in 37 cases which included 6 cases of hypertension and 5 cases of bladder cancer. On thin layer chromatogram with 90 % chloroform and 10 % acetic acid, I-123-OIH in the urine was similar to I-123-OIH. The Rf value was 0.43. The blood clearance curves of I-123-OIH were evaluated in 4 cases. A case with good renogram curve showed good clearance curve. Renogram curves of I-123-OIH were similar to that of I-131-Hippuran. The scintigraphic images of I-123-OIH with low energy collimator were superior to that of I-131-OIH with high energy collimator. The scintigraphic images of I-123-OIH with low energy collimator were slightly inferior to that of Tc-99m-DTPA with low energy collimator.

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CLINICAL EVALUATION OF RENOGAM USING I-123-HIPPURAN. H. Ito, H. Tochio, Y. Saiki, Y. Morimoto, K. Ikekubo, M. Senda, M. Kudo, T. Mori, N. Tamaki and K. Yamamoto. Kobe Central Municipal Hospital Kobe. and Kyoto University School of Medicine. Kyoto.

Fundamental and clinical evaluation of renography with I-123-OIH were performed as compared with I-131-OIH renography. Thin-layer chromatographic analysis of both radiopharmaceutical agents and the urinary excretion products showed a single radiochemical form (Rf=0.20). The counting efficiency of a collimated I-123-OIH source was 4 times that obtained with I-131-OIH. Good bar-phantom (3.4mm) images were obtained with I-123-OIH while fair images with I-131-OIH were observed for 6.4mm of bar-phantom. Sequential dynamic renal images were obtained in 40 patients with renal diseases following injection of 700 $\mu$ Ci of I-123-OIH or 70 $\mu$ Ci of I-131-OIH. A comparison between I-123-OIH and I-131-OIH was performed in the same normal subject and patient with pelvic abscess. Good quality images and reproducible renograms with I-123-OIH were obtained. The renal images with I-123-OIH showed pooling of the tracer in the right pelvis and the regional renogram over the pelvic region revealed delayed excretion pattern in the patient. We conclude: (a) I-123-OIH is a stable agent. (b) Compared with I-131-OIH, accurate renograms and high-quality renal images are obtained by I-123-OIH. (c) Renography with I-123-OIH is very useful in clinical evaluation of renal function.

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EVALUATION OF TRANSPLANTED KIDNEY FUNCTION WITH I-123 ORTHO-IODO-HIPPURATE. H. Ikehira, G. Uchiyama, N. Arimizu, H. Katsulai, S. Uematsu, K. Uno, Y. Tateno, F. Shishido, M. Nagata, T. Ochi-ai, H. Sato. Dep. of Rad. Yamanashi Univ. School of Med., Dep. of Rad. Chiba Univ. Hospital, Div. of Clin. Res. NIRS, Dep. of 2nd Sur. Chiba Univ. School of Med.

A non-invasive study for evaluating transplanted kidney function was developed using I-123 ortho-iodo-hippurate (IOH) with radionuclide image processing technique. Twenty patients with transplanted kidneys of few weeks to several years old were imaged after the administration of 1mCi I-101H. Functional images with 4 kinds of parameters were processed and evaluated. The one with a parameter of regional counts in early blood flow phase of renogram, multiplied by the effective renal blood flow (ERBF), seemed to be the most promising indicator for the function of transplanted kidneys. The ERBF was calculated by counting 5- and 25-minute blood samples. The kidneys add another valuable informations to the conventional serum creatinine and BUN values.