

Renoscintigram using $^{99m}\text{Tc-EDTA}$

Y. ISHII and K. TORIZUKA

Department of Radiology, Kyoto University, Medical School, Kyoto

T. FUJITA and T. MORI

Central Clinical Radioisotope Division, Kyoto University Hospital, Kyoto

A newly introduced tracer of $^{99m}\text{Tc-EDTA}$ has been expected to be a renal scan agent. This tracer is easily provided with instant labeling method of electrolysis when ready to use.

By simultaneous administration of $^{198}\text{Yb DTPA}$ as an established GFR substance, blood activities of both tracers were shown to be decrease in a same fashion as two term of exponential components. In addition, by simultaneous administration of $^{131}\text{I-Hippuran}$ as an established RPF substances, it was observed that difference of disappearance rate constants of the EDTA was fourth of that of the hippuran which was exactly corresponded with the normal filtration fraction of the kidney, and that the intrarenal transit through nephrons was thought to be same essentially. On the basis of these fundamental observation, it was substantiated that this agent would be a GFR substance.

This tracer was, therefore, appeared to be use-

ful both for depicting a GFR renography as well as a renal scan agent. After intravenous administration of this agent, transport process into bilateral kidneys was recorded during 10 to 20 min. by scintillation camera simultaneously stored into data store system. By playing back the process, three part of regions of interest were selected, each bilateral kidneys and vascular background, and bilateral GFR renographs were, then, reproducible by subtracting the background activities, enabling to assess magnitude of GFR of the each bilateral kidneys.

In order to obtain the image of parenchymatous part of kidneys, a care should be paid to take a picture until 3 to 4 min. before the initial appearance of the tracer into the pelvis. On this premise, this agent might become a good substitute for ordinal scan agent such as $^{203}\text{Hg-Neohydrin}$ with minimum radiation hazard.

Clinical Evaluation of Renoscintiphoto

A. ISHIBASHI and N. HIRATA

Department of Urology

K. ISHII

Department of Radiology,

Kitasato University, School of Medicine, Kanagawa

On the last annual meeting of this society, we reported tomocamera and its clinical evaluation

on renal diseases. During 1 year and 2 months, from May 1972 to July 1973, renoscintiphotos in-

cluding tomophotos were studied 262 times. Among these cases, renal tumors and cysts, and cystic diseases were analysed in many ways.

Scintillation camera which was used was Pho/gamma III Anger camera and scanning agents were ^{131}I -Hippuran, $^{99\text{m}}\text{TcO}_4$ and $^{99\text{m}}\text{Tc}$ -PAC ($^{99\text{m}}\text{Tc}$ -penicillamine acetazolamide complex). After 300–500 μCi of ^{131}I -Hippuran was injected, serial 2 minutes exposure scintiphotos were obtained. In the same way, 10–15 mCi of $^{99\text{m}}\text{TcO}_4$ was injected and 2 second time lapse images were obtained. 40–60 minutes after injection of TPAC (2 mCi), renal parenchymal static images were obtained. Each images compared with other images, excretory urogram and renal angiogram.

The following results were obtained. A malignant neoplasm was seen as a mass on the excre-

tory urogram, as a functional defect in the Hippuran scintiphoto and as a vascular brush in the radiopertechnetate scintiphoto and angiogram. But in the neoplasms which had some necrotic lesions, there were cold areas in the pertechnetate images. It was often misdiagnosed as a cyst, so it must be confirmed by selective angiography as malignant neoplasms. In the most cases, images of the malignant neoplasms with radiopertechnetate appeared so early after injection as to differentiate from normal tissue and continued about 60 seconds longer than normal. It seems to be the significant sign to find out malignant tumor. TPAC, a new renal scanning agent, is a excellent material to make images for cystic renal diseases. In our 9 cases, it gave clear images even in the azotemic patients.

Differential Diagnosis between Functional and Organic Impotence by the Use of Isotopes

M. SHIRI and M. NAKAMURA

*Department of Urology and Department of Radiology, Tohoku University, School of
Medicine, Sendai*

The radioisotope penogram, which measures changes of blood flow through the penis by the aid of isotopes, was developed and applied as a method of objective differentiation between functional and organic impotence. In the present study, the changes of the radioisotope penogram curve were studied following drug administration or visual sexual stimulation. In patients with functional impotence, the penogram curve rose

in response to drug loading or visual sexual stimulation. However in cases which there was an organic disturbance in the part of the nervous system which participate in erection, including the upper erection center, there was no change in the penogram curve by drug loading or visual sexual stimulation, despite sexual excitation in response to visual sexual stimulation. Therefore, a differential diagnosis was possible.