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Tc-99m-DTPA RENOSCINTIPHOTO IN RENO-VASCULAR DISEASE. S.Ikeda,S.Egawa,K.Lee, A.Ishibashi and J.Kurokawa. Kitasato University, Sagamihara.

Tc-99m-DTPA renoscintiphoto in reno-vascular diseases was studied.
The subjects were 61 cases consisting of aneurysm, reno-vascular hypertension etc.
As instrumentation for this study,Nuclear Chicago LFOV type camera were used, and 5 to 10 mCi of Tc-99m-DTPA was injected rapidly.
In this study, we investigated the clinical usefulness of renoscintiphoto for reno-vascular disease comparing with arterio--graphy. Regarding to the cases of hyper--tension, the difference of perfusion of both sides was examined by image itself, region of interest(ROI) and the value of first pass, calculating with Hilson's methods.
Consequently, Tc-99m-DTPA renoscintiphoto is useful to diagnose and to follow up the cases of aneurysm, especially in the case effecting reno-vascular flow.
The value of first pass is also useful like as ROI and image itself for screening study of hypertension.

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DYNAMIC REGIONAL RENAL FUNCTION OF NORMAL DONORS AND POST KIDNEY TRANSPLNT. T.Suzuki, T.Akuta, H.Furunishi, S.Aoki, K.Masuda, Y.Ikemoto, T.Yamasaki, S.Paku, H.Sako and Y. Nakane. Shiga Medical School. Ohtsu.

We tried to analize the regional renal function using Tc-99m DTPA and evaluated the possibility for the early diagnosis of the tubular transport disorder in acute tubular necrosis and rejection of post kidney transplant. The subjects were normal donors and post kidney transplant patients. Tc-99m DTPA 20 mCi was administrated into the vein by a bolus, and its activity in the kidney was measured by the scinti-camera, and stored by the computer. The mean transit time of renal perfusion was increased, and the accumulation rate and the clearance rate were markedly decreased in acute tubular necrosis and the rejection, and the functional images of the perfusion mean transit time, the acculation rate, the clearance rate and time to peak showed the irregular distributions. These indexes and the regional functional images were useful for the diagnosis of the acute tubular necrosis and the rejection.

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ESTIMATION OF GLOMERULAR FILTRATION RATE FROM FRACTIONAL RENAL UPTAKE OF Tc-99m DTPA. T.Ito,K.Takeda,S.Toyota,H.Maeda, T.Kitano and T.Nakagawa. Mie University. Tsu.

Glomerular filtration rate (GFR) was estimated from fractional renal uptake (FRU) of Tc-99m-DTPA using the gamma camera-digital computer system with attenuation correction for kidney depth.
Forty-eight patients were studied, in whom 24 hour creatinine clearance (Ccr) were concomitantly obtained within a week of the study.
Attenuation corrected total renal counts at various time intervals after tracer injection were obtained by ROI selection over renal scintigram followed by background subtraction and depth correction to compensate for gamma ray attenuation by the soft tissues. Our formula for determining kidney depth, obtained by ultrasonic scanning, is shown as follows.

Right kidney depth = 16.55 × W/H + 0.66
Left kidney depth = 17.05 × W/H + 0.13

Attenuation corrected total renal counts was divided by injected dose measured by the gamma camera and thus FRU was calculated.
FRU at 1-2 min. was best correlated with Ccr ($r=0.925$, $p<0.001$). The formula for calculation of GFR was derived from the regression analysis.

GFR = (FRU at 1-2 min.) × 6.26 + 3.10

This method is highly valuable for estimating GFR rapidly and accurately.

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CALCULATION OF FRACTIONAL CORTICAL FLOW TO THE TOTAL RENAL BLOOD FLOW USING I-123-OIH. M.Ishine,K.Murase,M.Kawamura,H.Mogami,S.Nagao,S.Inatsuki,A.Iio and K.Hamamoto. Ehime University School of Medicine. Ehime.

We proposed a non-invasive method for measuring fractional cortical flow to the total renal blood flow by using deconvolution analysis of I-123-OIH data and applyed it to the cases with essential hypertension. To determine the transfer function, the direct operational method proposed by Yamamoto was employed. And for the subtraction of blood background, we used the single injection method by Rutland et al. The mean percent cortical flow in 11 normal subjects was 75.5±6.7%. On the other hand, in 19 cases with essential hypertension, the values were reduced in proportion to the severity of the disease. This suggests there is mainly reduction of cortical blood flow in hypertensive nephropathy. Consequently, it was thought this method was useful for analysis of intrarenal flow distribution.