N. Kidney and Urinary Tracts

Dynamic Studies of Radioactive Regional Renal Function.

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We have attempted to enhance the clinical value of kidney examinations using by a computer to record and process all the radioisotope images from the scintillation camera.

The apparatus used included a Pho/Gamma scintillation camera, interfaced with a HITAC-10 minicomputer and digital data processing system. 140 microcuries of $^{131}$I-hippuran was rapidly injected intravenously. 129 frames of scintillation image were stored at 10 seconds intervals immediately following intravenous injection.

The data stored were reproduced on the oscilloscope and made ROI (region of interest) with a light pen on the cortex and calix area respectively. Then, ROI of the cortex and calix area were displayed for dynamic studies by data processing system, and recorded the radioactive function curves separately.

Adopting this method, the cortex and calix function can be obtained more information than the renogram, which was showed whole kidney function inclusively. From the selective renal function curve for this method, the cortex and calix function can be appraised respectively. Next, using reproductive images on the oscilloscope, ROI was given on the region of each ureter except kidney, urinary bladder and blood vessels areas. Radioactive dynamic curve were obtained from the ROI of ureter’s area, as what may be call selective ureter renogram. Selective ureter renogram enables renal function to be indicated individually, and total renal function can be discriminated by ureter renogram, which was assembled for 129 frames data.

The result shows that total renal function for radioactive isotope dynamic studies, was closely related to PSP.