N. Kidney and Urinary Tracts

Analysis of Changes due to Pharmaco-loading Multi-Frame Renal Image
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Epinephrine (0.1–20mcg) and Dopamine (5mcg/kg/min) were added on the procedure to regional renograms using $^{99m}$Tc-DTPA 5mCi i.v. injection from on line data with scinticamera and computer, appearing some changes on their curves:
A) For Epinephrine added normal control 10 cases,
1) renal cortical renograms had almost no influences by the drug,
2) reaction times on renograms were slightly more prolonged at renal pelvis than medulla,
3) urodynamic changes were marked at postrenal segments,
4) renogram curves change to down slope promptly after loading the drug, then to up slope as recovery.
B) For Dopamine added normal controls, renogram curves change to more prolonged down slope and affected portions were as well as A).
C) For Epinephrine added postrenal lesions, renogram curves change more remarkably.
D) For Dopamine added parenchymal renal diseases, renogram curves change to normalized pattern.

It is emphasized that pharmaco-loading effects have a further diagnostic and therapeutic value through their characteristic changing patterns on each renal lesion.

The $^{131}$I-Hippuran Dynamic Renal Study with Deconvolution Analysis
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Analysis of the renogram by deconvolution, using an on-line computer, shows promise as a means of expressing renal function in terms of tubular transit time for $^{131}$I-Hippuran. We have already shown that the deconvoluted renogram (transfer function) is a simulation of the curve of renal activity which is obtained after the dose of $^{131}$I-Hippuran are injected as a single bolus into the renal artery.

In this study, the transfer functions for the whole and the regional kidney are clinically evaluated in normal and cases with some renal diseases. The transfer function for the whole kidney shows the percentage and the delay of the population of the abnormal transit times. Therefore, it is of value in judging the degree of the lesions.

On the other hand, the regional transfer function is seemed to reveal the nature of the lesion itself. For example, in glomerulonephritis, renovascular hypertention and nephrosclerosis the transfer functions have a tendency to be composed of two different populations of normal and delayed transit time, but those in pyelonephritis and hydronephrosis appear to consist of almost single population of considerably prolonged transit times. We have also made functional images by using several parameters for analysing the regional transfer functions. This technique is of special value to know the nature and intrarenal distribution of the lesions.

At the same time, for comparative information, effective renal plasma flow (ERPF) is obtained by using time-activity curve for cardiac region selected by the light pen. Estimated value for ERPF is di-