

I. Kidney

Studies on the Radioisotope Renogram in Juvenile Hypertension

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Radioisotope renograms were recorded as a screening test for the juvenile hypertension which has recently been paid much attention to. The juvenile hypertension should be treated differently from that of older age, as it contains many kinds of secondary hypertension, some of which are curable by surgical method. Incidence of secondary hypertension were reported 18.7% by Asano, 27.1% by Toyama, 70% by Takeuchi of the total juvenile hypertension and most of them were caused by renal impairment.

In order to find renovascular or unilateral renal hypertension, general physical examination, specific examination of the optic fundus, and laboratory studies of urinalysis, serum electrolyte and total cholesterol, X-ray examination of the chest, ECG, VMA of urine, and radioisotope renogram were carried out for the in- and out-patients from 15 to 35 years old whose systolic blood pressure were higher than 140 mmHg, or diastolic pressure over 90 mmHg. Furthermore, the intravenous pyelography, renal arteriography by Seldinger method, separated renal function studies under cystoscopy and bilateral ureteral catheterization were done for the patients observed marked disparity of function between the left and right renograms.

As the results, 16 cases (32.7%) out of 49 juvenile hypertension were recognized as secondary hypertension. They were as follows: sequela of the glomerulonephritis which had no abnormalities in urinalysis at present

4 cases, pyelonephritis 1 case, tuberculosis of the kidney 1 case, nephrolithiasis 1 case, ptosis of the kidney 1 case, renovascular hypertension 2 cases, sequela of toxemias of pregnancy 3 cases, endocrine diseases (Cushing syndrome, primary aldosteronism) 2 cases, and aortic arch syndrome 1 case, respectively.

As for renograms, b/a (counting rate of point B/counting rate of point A), time B, time C and the ratio of the disparities of the peak counting rate between left and right to that of normal side were measured. Compared with renograms of control group of normotensives, decrease of b/a were observed in the cases of glomerulonephritis and tuberculosis of the kidney, prolongation of Time BB in ptosis of the kidney and sequela of toxemias of pregnancy, prolongation of Time C in glomerulonephritis, tuberculosis of the kidney, ptosis of the kidney and sequela of the toxemias of pregnancy. The ratio of the disparities were 46.4% in the cases of renovascular hypertension, over 20% in ptosis of the kidney, glomerulonephritis and pyelonephritis, respectively, and 18.7% in essential hypertension, whereas 5% in control group, endocrine disease, and aortic arch syndrome. Therefore, radioisotope renogram was considered useful for the screening test of renovascular or unilateral renal hypertension.

As for the essential hypertension, follow up studies might be necessary, suspecting of latent renal impairment.