

1.53 cm. (left), 1.39 cm. (right) in thickness, and the shortest distance between both kidneys does not exceed 2.7 cm. in a 2-year old infant, we developed entirely new collimators of smaller size which can be placed together with a minimal distance of 2.8 cm. from each other.

(1) We collaborated isoresponse curves of the collimators utilizing the point source and kidney phantom to ascertain that a good resolution can be achieved from the pediatric subjects.

(3) Materials and Method.

Pediatric subjects between the ages of one

month and 7 years with proven normal or abnormal renal function were selected. They were administered intravenously $0.9 \mu\text{Ci/kg}$.

(3) Based on a comparative study of each renogram parameters between adults and pediatric subjects, we concluded that there was no difference in each parameter between them.

(4) As in adult subjects, renal function could be classified as normal type, borderline type, hydronephrotic type (minimal, moderate, and severe), dysfunction type (minimal, moderate, and severe).

Studies on Changes of Body-fluid Distribution Produced by Surgical Operation (III)

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RPF was calculated from the measurements of half-life of ^{131}I -Hippuran administered by a single injection to assess the stress of abdominal surgery on the kidney. In addition, Na space and TBW were also determined by the use of triple isotopic method (^{22}Na and HTO) in some of the cases.

Dosages of the isotopes were:

^{131}I -Hippuran	30 to 100 Ci
^{22}Na	10 to 30 Ci
HTO	1 to 3 mCi

Studies were carried out on 18 gastric resections and one cholecystectomy. In all the cases, the operative procedures were uneventful and intraoperative I V infusion was given in the average amount of 20 ml/kg/hr. No blood was given.

Blood samples were drawn at 3 minute interval between 9 and 21 minutes after injection of Hippuran intravenously and RBF was calculated from the half-life. This was then converted to RPF by Hct. as reported by Gott and Pritchard.

Comparing the value of the 21-minute sam-

ple on the previous day and that obtained immediately after the operation, only 6.068% of the administered dosis was found retained in blood except for three cases with advanced disease. The half-life was 16.1 min. pre-operatively and 15.5 min. post-operatively. Thus, good elimination and minimum fluctuation of the values before and after the operation assure the practical usefulness of the method.

RPF tends to diminish after operation and average fall was found 9.34%. This is similar to the value we reported at the previous meeting using C. The fall in RPF was more marked in patients with gastric cancer.

^{22}Na space also tends to fall by average of 17.61%. Again it is greater in cancer patients. Fall in TBW was 1.46%. In summary, the single injection method of ^{131}I -Hippuran appears to be satisfactory measure of assessing the effects of surgical stress on the kidney. Triple isotopic method using ^{22}Na and HTO in addition is applicable and the results obtained can give useful information in post-operative management of these patients.