

## Renography in the Gynecology

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The disturbance of urinary tract which was caused by gynecological disorders often result in secondary renal failure, and it has been called as obstructive uropathy. It is believed to be necessary that the diagnosis of the obstructive uropathy is established by direct renal function tests. Then the renography is valuable test for this reason and the diagnostic appraisal of renography in the field of gynecology was evaluated from the stand point of its pathogenesis.

The renogram of the normal kidney can be characteristically described in terms of three segments (a, b and c segment). The renogram in cases of unilateral obstructive uropathy is recognized with relative ease as abnormal, when bilateral renograms are superimposed and the third segment is shown to be linear or rise pattern.

In our department, the renogram pattern has been divided into 4 types (N: normal pattern, M: prolongation of the transit time and depression of b, M: the platou and ascendance pattern). Obstructive uropathy in gynecology usually affects the renogram. IN general, such obstructive uropathy undergoes series of the renogram pattern changes from N to M and from M to L, depending on the severity of obstruction and the amount of renal dysfunction.

The longer the obstruction lasts, the more

likely certain changes appear on the first two segments. Chronic back pressure causes glomerular and tubular dysfunction, and results depressed renogram. Once the L-pattern appears on the renogram, recovery of the renal function rarely excepted even if the obstructive is corrected. If treatment is instituted for the obstruction at stage of M pattern, the renal function may return to normal.

The renographies were performed on 123 patients with carcinomas of the uteri (stage III) before and after irradiation treatments. Twenty of the 123 cases revealed renal dysfunction prior to the irradiation. Following the irradiation, improvements of the renal function were observed on 12 patients. On the other hand, all patients who did not respond to the irradiation were known to have poor prognosis.

The change of the renogram in course of radiation therapy closely related to the prognosis of cancer of the uterus but it is not possible to differentiate by the renogram post operative stricture from stenosis due to the cancer infiltration.

However, as the dynamic function study of the kidney, the renogram is valuable test in gynecological uropathy as well as in urological disease.

## Symposium: The diagnostic Use of Radioisotopes in Obstetrics & Gynecology Renography

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Radioisotope renography is uniquely useful as a research tool to study urinary tract dysfunction associated with irradiation and pelvic radical procedure.

It was performed by the intravenous injection of a tracer dose of  $^{131}\text{I}$ -labeled sodium O-iodohippurate with external monitoring over each kidney. Photoscanning of bladder was

also partly performed.

A total of 84 clinic patients with cervical cancer and 15 patients with no urologic disorders are reported.

Intravenous pyelograms or scintigraphy by the intravenous injection of a tracer dose of 100 to 150 microcuries of  $^{203}\text{Hg}$  chlormerodrin with over each kidney were available for comparison.

The following results were obtained;

(1) Abnormal renograms showed an increase in patients with Stage III and IV cancers.

(2) Use of the combination of radium and cobalt therapy showed renographic abnormalities in the urinary tract. An increase of

types  $M_1$ ,  $M_2$ , and L was observed after radium therapy. Type  $M_1$  after cobalt therapy showed a slight increase.

(3) Radioisotope renography provides information which is not obtainable by intravenous pyelography.

(4) The renographic results showed variable changes after irradiation and operative treatment.

(5) Renograms after radical operation revealed an increase of types  $M_1$ ,  $M_2$  and L. Normal renograms were much observed in the 1st postoperative month.

(6) The use of the renogram as a routine screening procedure in following the gynecologic cancer patient provides a dynamic picture of renal function.

## Radioisotope Placentography

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Radioisotope placentography with  $^{131}\text{I}$ -HSA,  $^{51}\text{Cr}$ -Red Blood Cell, and  $^{99\text{m}}\text{Tc}$ -Albumin was reviewed. Authors adopted  $^{113\text{m}}\text{In}$  preparation as a superior agent for placental localization.

$^{113\text{m}}\text{In}$  preparation was obtained by  $^{113}\text{Sn}$ - $^{113\text{m}}\text{In}$  generator elution and stabilized with gelatin at pH 4. The short 1.7-hr. physical half life and lack of beta emission keep the radiation dose to the fetus relatively low. This agent does not accumulate in the bladder in the early period of test, while there is no confusing uptake in the pelvis. Scintillation camera (pho/Gramma III) was used to take multiple views of placenta in a short period of time. It takes 2 to 4 minutes for a single shot, and only about 10 to 15 minutes are necessary for the whole procedure. A small lead disc was stuck on the pubic bone as a landmark. This landmark roughly tells the position of the outer orifice of the pregnant uterus.

$^{113\text{m}}\text{In}$  preparation of 1 to 3  $\mu\text{Ci}$  was intra-

venously administered to the patients who complained the bleeding in the third trimester. Six cases were so far examined by  $^{113\text{m}}\text{In}$  with the use of the scintillation camera, and all cases were correctly diagnosed. Placenta previa was eliminated in 3 cases and normal deliveries were resulted at the term of gestation. Placenta previa was positively diagnosed in 2 cases. In a case of 8 months of gestation with heavy bleeding the fetal head was perforated. The another one of 8 months of gestation was operated on by the Ceaserian section at the term. Placenta previa was confirmed in these cases.

A hydatidiform mole of 5 months from the last period was diagnosed by the placentography. No placental visualization was observed in scintigram.

The radioisotope placentography is useful for the differential diagnosis of the bleeding in the third trimester, and is also useful for the diagnosis of the hydatidiform mole even in the second trimester.