

## Measurement of Glomerular Filtration Rate Using $^{99m}\text{Tc}$ -DTPA

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We measured the glomerular filtration rate using  $^{99m}\text{Tc}$ -DTPA ( $^{99m}\text{Tc}$ -diethylenetriamine pentaacetic acid), and compared the value with that from the chemical measurement by the single intravenous injection of sodium thiosulfate. There, fairly good correlation between them could be observed. Furthermore, a rapid urinary excretion of radioactivity was found in the dynamic scintiphotographic study as well as from the transition of count rates in lung, kidney and bladder, which may be considered to contribute much to the reduction of radiation dose to the body.

From the above facts it may be concluded that  $^{99m}\text{Tc}$ -DTPA is a chemically stable substance and is a very useful and effective diagnostic agent.

## Placental Scintigraphy Using $^{99m}\text{In}$ -Chloride

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Radionuclide placentography is well established as diagnostic method for localization of the placenta, but it is not widely used in our country.

Since October 1973, we started RI placentography with  $^{113m}\text{In}$  to minimize the fetal absorbed radiation dose.

$^{113m}\text{In}$ -chloride (2–3 mCi) was rapidly injected after mixing with about 3 volumes of blood in the syringe. All patients were examined 5–10 min. after injection with  $\gamma$ -camera fitted with diverging collimator including the uterine fundus and the symphysis pubis. Anterior, lateral and in some-times posterior views were obtained.

In all patients, placental blood pool, uterine wall,

liver, spleen, aorta, iliac and femoral vessels were visualized. There were no evidence of density attributed to radioactivity in the kidney and urinary bladder.

We have examined 50 patients, 41 of whom had the location of the placenta confirmed at delivery. The terms of pregnancy were distributed from 5 to 10 months (average 7.8 months). We correctly diagnosed 7 of 8 placenta previa (87.5%), and 31 of 33 patients with normal implantation (93.9%). The overall accuracy for the series were 92.7%. The differential diagnosis of low-lying placenta from marginal or partial placenta previa were limited. This limitation is fairly overcome by plac-

ing a land mark on the symphysis pbuis.

Recently, we performed rapid placental imaging prior to static imaging. The early and grearte appearance of radioactivity in the placenta, compared to the uterine wall, can be helpful to determine the placental site.

One of patients we studied in the supine position experienced hypotensive episode, but was easily

cured by turning lateral position. No untoward reaction of agent were observed.

With  $^{99m}\text{Tc}$ -albumin, urinary excretion into bladder interferes the image of placenta previa. With  $^{113m}\text{In}$ -chloride, lesser fetal absorption dose than  $^{99m}\text{Tc}$ -albumin and no necessity of pre-medication are advantages, nevertheless suboptimal energy for  $\gamma$ -camera.

### Comparison of $\alpha$ -Fetoprotein Values in Patients with Testicular Tumor by Radioimmunoassay and Hemoagglutinate Reaction

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Measurement of  $\alpha$ -fetoprotein (AFP) in patients with testicular tumor is valuable in differentiating embryonal carcinoma from testicular disease. AFP in human serum was measured by radioimmunoassay (RIA) and with a hemoagglutinate reaction (HAR) kit. AFP in 20 out of 40 patients with testicular tumor was measured simultaneously by RIA and HAR 60 times using the same serum.

Histopathological patterns of the testes were classified into 5 groups (Dixon and Moor's classification). AFP values above 20 ng/ml were determined as abnormal by RIA. AFP values below 100 ng/ml cannot be detected by HAR. Materials which proved abnormal by HAR were measured 25 times by RAI for comparison.

**Result:** Abnormal AFP values were observed in

3 out of 3 cases in Group II (carcinoma, pure or with seminoma), 2 out of 2 cases in Group IV (teratoma, with either embryonal carcinoma, chorio carcinoma, or both, and with or without seminoma) and 1 out of 2 cases in Group V (chorio carcinoma, pure or with either seminoma or embryonal carcinoma, or both). AFP values over 100 ng/ml measured by RIA showed good correlations with those by HAR.

**Conclusion:** HAR technique is easy, but the reaction has a slightly low sensitivity. On the other hand, RIA features a high sensitivity. AFP measurement by RIA for patients with testicular tumor is more effective than that by HAR in early diagnosis and follow up.