

cases, ossification on X-ray was not recognized on scintigram; in the remainder, remarkable accumulation of radioisotope was demonstrated though faint image on X-ray film.

Scintigraphic image didn't run parallel in the course of the disease.

In general, the accumulation of  $^{99m}\text{Tc}$ -phosphate

increases prior to the appearance of ossification on X-ray film. High accumulation on scintigram is recognized in active stage of ossification, while accumulation is lower when the ossification is completed and opacity on-X-ray film become stable.

### Study of Portal Circulation with Per-Rectal Portal Scintigraphy

T. KUROKI, K. KIM, K. KOBAYASHI, T. MONNA & S. YAMAMOTO

*The 3rd Dept. of Int. Med. Osaka City University Medical School, Osaka*

K. HAMADA, H. OCHI & M. TAMAKI

*Department of Radiology*

#### Method

10 mCi of  $^{99m}\text{Tc O}_4^-$  in a 3 ml solution is instilled through a polyethylene tubing into the rectum.

Scintigrams are taken sequentially at 15 second-interval by time-lapse camera and the radioactivities are recorded through VTR for ten minutes.

#### Results

Experimental per-rectal portal scintigraphy was done on the normal monkey. Scintigrams by time-lapse camera visualize the portal system, liver and heart successively.

Over the liver, counts of radioactivity per 4 seconds, when sequentially followed, start to increase at 19 seconds after rectal instillation and go up rapidly, while over the heart they start to increase at 30 seconds and go up slowly.

In three patients without hepatic or cardiac diseases, scintigrams visualize the portal system, liver and heart successively.

Counts per 8 seconds showed sequential change almost similar to that in the monkey, although appearance time at the heart was 16 seconds later

than that at the liver.

In three cases with chronic active hepatitis, the appearance-time at the heart was earlier and only 11 seconds (mean) later than that at the liver.

The speed of count-increase at the heart was almost same as that at the liver. In ten cases with cirrhosis of the liver, the scintigrams not visualize the liver but clearly visualize the heart.

In the nine of ten cases, at the heart, the count-increase was speedy from the start.

20 to 40 seconds later than it, the liver starts to show a clearly visible count-increase, which however goes up slowly than normal.

The spleen showed a count-increase at the same time as the liver.

Presumably, the above-noted count-increase over the liver results from the radioisotope reaching by way of the hepatic artery.

In conclusion, the non-invasive per-rectal portal scintigraphy enables clinicians to analyse hemodynamics of the portal system in various liver diseases.