STUDIES ON PORTAL CIRCULATION BEFORE AND AFTER THE SCLEROTHERAPY OF ESOPHAGEAL VARI- 
CIES BY RADIONUCLIDE ANGIOGRAPHY. S.Shiono, 
N.Ikeoka,T.Kuroki,T.Kobayashi, T.Kamata, 
K.Kobayashi,Y.Yamamoto,Y.Shimonishi,H.Ikeda, 
K.Hamada,H.Ochi,Y.Onoyama and T.Monna, Osaka 
City University Medical School, Osaka.

After a bolus injection of 10 mCi of Tc- 
99m phytate, scintigrams were obtained se-
quentially for up to 1 minute. The peak 
time of the kidney curve corresponded to the 
junction of the arterial and portal 
phases of the hepatic curve, and the portal 
component was calculated as the ratio of 
portal to total blood flow. 
Results: 1) The portal components ranged 
from 64% to 76% and the mean was 71.3% in 
normal subjects(n=21). The mean portal com-
ponent was 63.6% in CMH(n=15) and 58.6% in 
CAH(n=16). In the cases of hepatic cirrho-
sis, the mean of the portal component was 
39.4% (n=12). 2) The portal component was 
significantly lower in the cirrhotic pa-
 
ents with esophageal varices than that in the 
patients without esophageal varices. 
3) Portal components were calculated in 22 
patients before and after scleratherapy. 
A paired t-test showed a significant rise 
in the values of portal components between 
the measurement before and just after 
treatment. But it showed a significant fall 
in the values of portal components between 
the measurement just after and two months 
after treatment. Whereas, portal components 
didn’t show a significant change between 
two months and one year after treatment.

HEMODYNAMICS IN ESOPHAGEAL VARICES STUDIED 
BY RADIONUCLIDE SPLENOGRAPHY. 
Hayashi,Y.Saito,T.Hihara,K.Seto,T.Araiki, 
University School of Medicine,Yamashita.

The portal hypertension causes collat-
 
eral mesal flow between the portal and 
veins. Among others the esophageal varices 
are practically significant pathways that 
have influence on the patient’s prognosis. 
A small amount of phytate(Tc-99m) 
percutaneously injected into the spleen 
clearly visualized esophageal varices and 
allowed us to analyse their hemodynamics 
without any physiological disturbance. 
Twenty three cases were so far studied 
without complication. The study was con-
 
centrated in evaluating the hemodynamical 
changes in esophageal varices after the 
endoscopic sclerotherapy. Using gamma fit-
ting method, the areas under the time-
activity curves of the liver and varices 
were calculated. Changes in the varix 
fractions of venous blood from the spleen 
before and after the sclerotherapy were 
well correlated with the endoscopic obser-
 
vation and with the decrement of serum 
cholesterol. The test as well as quanti-
tative evaluation of blood flow in the 
esophageal varices is a useful method of 
evaluating the effect of sclerotherapy.

A NEW METHOD OF MEASURING THE RATIO OF 
PORTAL BLOOD FLOW TO TOTAL HEPATIC BLOOD 
FLOW BY RADIONUCLIDE ANGIOGRAPHY. 
M.Nogami, M.Hasegawa, K.Kiu, H.Takenaka, 
A.Shinotsuka and T.Hishida. Department of 
Radiology Showa University School of 
Medicine, Tokyo.

We have developed a new analytical method 
for Tc-99m phytate and Tc-99m PHT dynamic 
curves in the portal and hepatic 
artery. The curves before and after were analyzed by non-
 
linear regression method according to fol-
 
lowing formulars. 
Tc-99m phytate hepatic accumulation curve: 
\[ C(t) = C_s \frac{(1 - e^{-K_d t})}{K_a} \]
Tc-99m PHT hepatogram: 
\[ C(t) = C_s \frac{(1 - e^{-K_t t}) - K_d t}{K_d t} \]
Cardiac disappearance curve: 
\[ C(t) = C_s \frac{K_d t}{K_t} e^{-K_d t} - K_d t \]
C:count rate. C_s: of time = C_s of time 0. 
C: f: of time 0 for K_d, C: f of time 0 for K_t, 
K:accumulation rate, K:excretion rate, K_d: 
uptake rate, K:disappearance rate, K:dis-
appearance rate for second phase. 
The loads for the liver were leg exercise, 
administration of meal and transcatether 
arterial embolization therapy(TAE). The leg 
exercise was performed in supine position for 
13 min on a ergometer at work loads of 25 
watt. During leg exercise, Kd and Kt de-
creased by 26 %. After meal, Kt and Kd in-
creased by 45 and 12 % respectively. On 
the other hand, Ke didn’t show the constant 
tendency. After TAE, Ke in the non-tumor 
regions reduced markedly.