

## Summary

### A Method for Improving the Accuracy in Measurement of $^{99m}\text{Tc}$ -GSA Liver Uptake

Atsushi NOGUCHI\*, Yoshihisa HASEGAWA\*, Terumi HASHIZUME\*, Keijirou IBUKA\*,  
Shigetoshi WAKASUGI\*, Takashi MATSUNAGA\*\*,  
Atsuo INOUE\*\* and Yoh SASAKI\*\*\*

*\*Department of Nuclear Medicine, \*\*Department of Internal Medicine, \*\*\*Department of Surgery,  
Osaka Medical Center for Cancer and Cardiovascular Diseases*

In order to improve the accuracy in the measurement of liver uptake rate of radioactivity at 15 minutes after injection of  $^{99m}\text{Tc}$ -GSA, the corrected liver uptake rate (LU15VW) for tissue attenuation of gamma ray was measured. On the basis of the results of phantom studies, LU15VW was obtained as a ratio of the liver counts to the calculated counts of the injected dose supposed to homogeneously distribute in the liver of each patient and to decrease in count rate by the tissue attenuation of gamma ray, which was caused by the liver itself and body wall. The values of LU15VW were compared with those of the other  $^{99m}\text{Tc}$ -GSA indices (LU15, LHL15, and HH15) and of the laboratory tests of liver function in 5 patients with chronic persistent hepatitis (CPH), 25 patients with chronic active hepatitis (CAH) 2A, 8 with CAH 2B, 8 with liver cirrhosis (LC), and 20 with hepatocellular

carcinoma. LU15VW showed a good correlation with LU15, LHL15, and HH15 ( $r = 0.912, 0.864, \text{ and } -0.869$ ). The relationships between the results of LU15VW and the laboratory tests of liver function such as ICGR15, serum albumin, platelets counts, and hepaplastin test ( $r = -0.800, 0.684, 0.599, \text{ and } 0.465$ ) were more excellent as compared with those between the results of the other  $^{99m}\text{Tc}$ -GSA indices and the laboratory tests. LU15VW was distinctly different in the mean values among the three groups of patients with CAH 2A, CAH 2B, and LC. These results indicated that LU15VW was a useful method for improvement of the accuracy in the measurement of liver uptake rate of  $^{99m}\text{Tc}$ -GSA.

**Key words:**  $^{99m}\text{Tc}$ -GSA, Liver function, Liver uptake rate, Liver diseases.