

Assessment of liver function in chronic liver diseases and regional function of irradiated liver by means of ^{99m}Tc -galactosyl-human serum albumin liver scintigraphy and quantitative spectral analysis

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Scintigraphy with ^{99m}Tc -diethylenetriamine pentaacetic acid galactosyl human serum albumin (^{99m}Tc -GSA) was performed on 102 patients, then the hepatic extraction fraction (HEF), the rate constant for liver uptake of the tracer from the blood (K_1) and the hepatic blood flow index (HBFI) were determined by spectral analysis. The HEF, K_1 and HBFI values correlated moderately or closely with various indices of hepatic function, and the HEF and K_1 values decreased according to the stage of liver dysfunction. The HEF and K_1 values linearly and nonlinearly correlated with HH15 and LHL15, respectively. The HEF, K_1 and HBFI values for the irradiated portion of 20 patients before and after irradiation were compared. The HEF value in patients with a cirrhotic liver significantly ($p < 0.002$) decreased compared with that in patients with a normal liver at a dose of less than 40 Gy, whereas the HBFI value in patients with a normal liver significantly ($p < 0.05$) decreased compared with that in patients with a cirrhotic liver at a dose of 40 Gy or greater. This method appears to be a simple, non-invasive and useful tool with which to quantitatively evaluate liver function and it also helps clarify changes in regional function of the irradiated liver.

Key words: ^{99m}Tc -GSA, spectral analysis, liver function, regional function of irradiated liver