

Comparison of Tc-99m-GSA scintigraphy with hepatic fibrosis and regeneration in patients with hepatectomy

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Objective: Liver regeneration after hepatectomy is correlated with liver fibrosis. Retrospectively, we compared three quantitative indices (HH15, LHL15 and LU15) of Technetium-99m-diethylenetriaminepentaacetic acid-galactosyl-human serum albumin (Tc-99m-GSA) liver scintigraphy with liver fibrosis; in particular, we compared the HH15 index and the rate of remnant liver regeneration. **Methods:** Fifty-three patients who had undergone hepatectomy were enrolled in this study. The non-neoplastic parts of their resected specimens were divided into 5 groups (F0–F4) according to the degree of liver fibrosis, as determined using the New Inuyama classification system: F0, no fibrosis (n = 12); F1, portal fibrosis widening (n = 12); F2, portal fibrosis widening with bridging fibrosis (n = 14); F3, bridging fibrosis plus lobular distortion (n = 7); F4, liver cirrhosis (n = 8). **Results:** When the cases were divided into a no or mild fibrosis group (F0 and F1) and a moderate or severe fibrosis or cirrhosis group (F2, F3 and F4), all of the indices were significantly different between the two groups. In this analysis, the areas (Az) under the receiver operating characteristic (ROC) curves for the HH15 and LHL15 indices were very similar, while the Az for the LU15 index was smaller. An HH15 index equal to 0.52 was the most accurate, producing a 79.3% sensitivity and a 75.0% specificity rating. When 18 patients that had received a CT scan one month after hepatectomy were divided into 2 groups according to their HH15 value (group A, HH15 \leq 0.52; group B, HH15 > 0.52), group A exhibited a better regeneration rate. **Conclusion:** Tc-99m-GSA scintigraphy is well correlated with liver fibrosis and may be useful for non-invasive, preoperative evaluations of liver fibrosis. The HH15 index, in particular, may be useful for predicting the rate of liver regeneration after hepatectomy.

Key words: Tc-99m-GSA, liver fibrosis, liver regeneration, hepatectomy, ROC curve