

## Asialoglycoprotein receptor concentration in tumor-bearing livers and its fate early after their sectorial resection

Xiao-Feng LI,\* Junichi TAKI,\* Seigo KINUYA,\* Takahiro HIGUCHI,\* Shota KONISHI,\*  
Eui-Hyo HWANG,\*\* Noriyuki SHUKE,\*\*\* Kenichi NAKAJIMA\* and Norihisa TONAMI\*

*\*Department of Biotracer Medicine, Kanazawa University Graduate School of Medical Sciences*

*\*\*Department of Radiology, Fukui Prefecture Hospital*

*\*\*\*Department of Radiology, Asahikawa Medical College*

The aim of the present study was to investigate asialoglycoprotein receptor (ASGP-R) status in tumor-bearing livers and early after their sectorial resection employing  $^{99m}\text{Tc}$ -DTPA-galactosyl human serum albumin ( $^{99m}\text{Tc}$ -GSA) dynamic SPECT. **Methods:** Ten normal liver controls and 44 liver tumor patients who underwent sectorial hepatectomy were included in the study.  $^{99m}\text{Tc}$ -GSA dynamic SPECT study was performed  $7 \pm 3$  d before (pre-operative) and  $34 \pm 13$  d after surgery (post-operative) in liver tumour patients. Pre- and post-operative parameters including hepatic functional volume and  $^{99m}\text{Tc}$ -GSA clearance of unit hepatic functional volume, representing ASGP-R concentration, were measured. The sum of functional volume of the sectors uninvolved in hepatectomy was defined as residual functional volume. Subsequently, post-operative change in functional volume (the ratio of post-operative to residual functional volume), post-operative change in  $^{99m}\text{Tc}$ -GSA clearance of unit hepatic functional volume (the ratio of post- to pre-operative  $^{99m}\text{Tc}$ -GSA clearance of unit hepatic functional volume) and percent resection of functional volume were calculated. **Results:** Pre-operative  $^{99m}\text{Tc}$ -GSA clearance of unit hepatic functional volume in tumor-bearing livers was significantly lower than that in non-tumor bearing control liver. The ratio of post- to pre-operative  $^{99m}\text{Tc}$ -GSA clearance of unit hepatic functional volume showed marked variation from 0.57 to 2.14, which negatively correlated with the percent resection of functional volume ( $r = -0.58$ ,  $p < 0.0001$ ). The ratio of post- to pre-operative  $^{99m}\text{Tc}$ -GSA clearance of unit hepatic functional volume exhibited a negative correlation with the ratio of post-operative to estimated residual functional volume ( $r = -0.67$ ,  $p < 0.0001$ ). **Conclusion:** ASGP-R concentration is reduced in the presence of liver tumor. ASGP-R concentration reveals variable changes early after sectorial resection; the change negatively correlates with percent resection of hepatic functional volume. Post-operative change in ASGP-R concentration negatively correlates with change in functional volume.

**Key words:** asialoglycoprotein receptor,  $^{99m}\text{Tc}$ -DTPA-galactosyl human serum albumin, dynamic SPECT, liver neoplasm, liver resection