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Risk factors of post-hepatectomy liver failure for perihilar cholangiocarcinoma: Proposal of risk score and significance of future liver-remnant volume-to-body weight ratio

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Introduction : Hepatic resection for perihilar cholangiocarcinoma (PHCC) is associated with high postoperative mortality and morbidity rates, particularly in cases involving post-hepatectomy liver failure (PHLF). This study aimed to investigate the clinical value of the FLRV-to-body weight (FLRV/BW) ratio and propose a risk score model for predicting the risk of patients with PHCC developing PHLF.

Methods : This study included 348 patients who underwent major hepatectomy, including caudate lobectomy with bile duct resection for PHCC during 2008–2015 at a single center in Korea. Liver volume was measured using preoperative dynamic CT, and perioperative data were retrospectively analyzed to identify risk factors of PHLF (grade B/C on ISGLS) and major postoperative complications.

Results : Clinically relevant PHLF was noted in 40 patients (11.4%). Combined portal vein resection (PVR) was performed in 54 patients (15.4%). The area under the curve (AUC) for FLRV/BW was not significantly different from that for FLRV/TLV (p = 0.803) or ICGK-F (p = 0.629) in terms of predicting PHLF. On multivariate analysis, predictors of PHLF (p < 0.05) were male (odds ratio [OR], 3.77), albumin< 3.5 g/dL (OR 3.67), preoperative cholangitis (OR 3.23), PVR (OR 3.18), FLRV/BW <0.5% (OR 18.48), and FLRV/BW 0.5–0.75% (OR 8.46). These variables were included in a risk score that showed good discrimination (AUC, 0.853; 95% CI, 0.802–0.904).

Conclusions : FLRV/BW is a risk prediction factor of PHLF that is comparable to FLRV/TLV and ICGK-F. Male, albumin, FLRV/BW, PVR, and preoperative cholangitis are associated with PHLF in patients with PHCC, and the proposed risk score can be used preoperatively.

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