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A scoring system to predict the risk of major complications after laparoscopic liver resection in elderly patients with hepatocellular carcinoma

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Background : The safety of laparoscopic liver resection (LLR) in elderly patients is a matter of concern because the reduced physiologic reserve increases the risk of postoperative complications. However, there are few score systems for predicting complications after LLR in elderly patients. The aim of this study is to propose a new simplified scoring system based on the Geriatric Nutritional Risk Index (GNRI) to predict major complications after LLR in elderly patients with hepatocellular carcinoma (HCC).

Methods : We retrospectively reviewed 257 consecutive patients aged ≥ 65 years who underwent LLR for HCC between 2004 and 2019. The GNRI formula was $1.489 \times \text{serum albumin (g/L)} + 41.7 \times \text{present weight/ideal weight (kg)}$. A scoring system to predict the risk of major complications was developed by assigning points to each risk factor equal to its regression coefficient determined in the multivariable analysis. Major complications were defined as complications of Clavien–Dindo grade III or higher.

Results : Major complications occurred after LLR in 24 patients (10.9%). Multivariable analysis showed that the GNRI (hazard ratio [HR] 3.396, 95% confidence interval [CI] 1.242–9.288, $P = 0.017$), Child–Pugh score (HR 2.191, 95% CI 1.400–8.999, $P = 0.036$), major liver resection (HR 2.683, 95% CI 1.082–7.328, $P = 0.050$) and intraoperative transfusion (HR 1.802, 95% CI 1.428–7.591, $P = 0.022$) were independent predictors of major postoperative complications. These variables were assigned points based on their HRs, and the resulting 10-point model showed good discrimination (area under the curve 0.756, 95% CI 0.649–0.836, $P = 0.001$).

Conclusions : The scoring system outperformed the GNRI for predicting major complications after LLR in elderly patients with HCC.

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