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RISK ESTIMATION OF RECURRENCE BEYOND THE MILAN CRITERIA IN LARGE HEPATOCELLULAR CARCINOMA (≥ 5CM) AFTER HEPATECTOMY

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Background : Hepatectomy is the effective treatment for large hepatocellular carcinoma (HCC) (≥ 5cm); however, recurrence beyond the Milan Criteria (beyond-Milan recurrence: BMR) limits subsequent treatment options. The aim of this study was to develop a prediction model for BMR after hepatectomy in these patients and to identify the subset of patients who might require multidisciplinary treatment.

Methods : Consecutive patients who had undergone R0/R1 hepatectomy for large HCC(s) ≥ 5cm from 2003 to 2022 were retrospectively analyzed. A risk estimation formula was developed using multiple linear regression model based on the patients who showed recurrence. The predictability of this model was assessed by receiver operating characteristic (ROC) analysis in both recurrent and overall patients. Furthermore, impact of risk estimation on overall and recurrence-free survival was evaluated.

Results : A total of 317 patients were enrolled in this study. Of these, 233 patients (73.5%) developed recurrence and 122 patients showed BMR. The risk estimation formula was as follows: Risk Estimation = 0.0436 × maximum tumor diameter + 0.0448 × number of nodules + 0.2382 × macrovascular invasion (presence: 1, absence: 0) + 0.0052. This model demonstrated an area under ROC curve of 0.747 and 0.718, in the recurrent and overall patients, respectively. Furthermore, the risk estimation ≥ 0.5 (high-risk), determined by ROC analysis, was significantly associated with worse overall survival and recurrence-free survival (all $p < 0.05$).

Conclusions : This risk estimation preoperatively allows for identifying patients with BMR. Especially, high-risk patients would require multidisciplinary strategy to prevent BMR and improve the outcomes.

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