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LETTER TO THE EDITOR

Predicting liver function after hemihepatectomy in patients with hepatocellular carcinoma using different modalities

Erfan Taherifard, Anwaar Saeed

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Abstract

In response to Dr. Yue *et al*'s study on prognostic factors for post-hemihepatectomy outcomes in hepatocellular carcinoma (HCC) patients, this critical review identifies methodological limitations and proposes enhancements for future research. While the study identifies liver stiffness measure and standard residual liver volume as potential predictors, concerns regarding small sample size, reliance on biochemical markers for safety assessment, and inadequate adjustment for confounding variables are raised. Recommendations for rigorous methodology, including robust statistical analysis, consideration of confounding factors, and selection of outcome measures with clinical components, are proposed to strengthen prognostic assessments. Furthermore, validation of novel evaluation models is crucial for enhancing clinical applicability and advancing understanding of postoperative outcomes in patients with HCC undergoing hemihepatectomy.

Key Words: Hepatocellular carcinoma; Liver cirrhosis; Hepatectomy; Liver failure; Standard residual liver volume; Liver stiffness

Core Tip: Methodological rigor is essential for evaluating post-hemihepatectomy outcomes in patients with hepatocellular carcinoma. This paper highlights limitations in the current research methodologies, emphasizing the need for robust statistical analysis and validation of novel evaluation models. Addressing these challenges will enhance prognostic assessments and advance our understanding of postoperative outcomes in this patient population.

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TO THE EDITOR

We recently have read with great interest a recent article by Dr. Yue *et al*[1], "Clinical study of standard residual liver volume and transient elastography in predicting poor prognosis of patients after hemihepatectomy" which was published in *World Journal of Clinical Oncology*. The study aimed to investigate the risk factors associated with poor prognosis after hemihepatectomy in patients with hepatocellular carcinoma (HCC) secondary to hepatitis B cirrhosis. Their findings suggest that both preoperative and liver stiffness measure (LSM) and standard residual liver volume (SRLV) values could serve as independent risk factors for postoperative liver dysfunction, providing valuable insights into prognostic assessment for HCC patients undergoing hemihepatectomy. However, while acknowledging the significance of the findings in addressing the gap in the existing body of evidence on this topic, there are concerns regarding the study's validity that necessitate a cautious approach to interpreting the results.

One of the paramount considerations in this study, in addition to the small sample size that could potentially affect the statistical robustness of the findings, is the methodology employed and the outcome measure considered to assess the safety of hemihepatectomy in these patients. The reliance on biochemical assessments of liver function, such as abnormal international normalized ratio or total bilirubin levels, as indicators of operation safety, poses a significant limitation. The limitation of this approach lies in the possibility that patients may have exhibited these abnormal paraclinical liver profiles prior to the surgical intervention, thereby clouding the assessment of procedure safety when using this endpoint as the measure. The article did not provide information about the baseline status of the patients' liver function tests of the patients and also did not exclude patients with abnormal liver function from the study. Excluding patients with preexisting liver dysfunction could help ensure the integrity of the study's results by providing a clearer understanding of the impact of hemihepatectomy on liver function in individuals with HCC, where their liver function is not already compromised. Besides, the inclusion of outcome measures with clinical components in addition to liver dysfunction such as postoperative hepatic decompensation could offer a more comprehensive evaluation of the safety of hemihepatectomy in patients with HCC.

Second, while the authors employed a multivariable logistic regression model to evaluate the association between LSM value, SRLV, and postoperative liver dysfunction, they failed to address potential confounding factors or mitigate biases in their analysis model. It's recommended that relevant factors previously shown to be linked to the outcome variable, postoperative liver dysfunction, in the literature should be considered in the modeling analysis phase, where applicable [2-4]. This comprehensive approach would strengthen the study's validity and provide a more robust foundation for interpreting its findings.

Furthermore, the study introduced a new liver reserve evaluation model, integrating the Child-Pugh score with LSM values, which was reported in this study to have a superior accuracy in predicting postoperative liver function compared to the traditional Child-Pugh score. Based on the eligibility criteria of the study, however, patients with complications before the operation, such as hepatic encephalopathy, and abdominal dropsy, two items out of the five items of the Child-Pugh score and the six items of the new assessment model, were excluded. Therefore, the superiority of this new model may be subject to further scrutiny, and further studies with more diverse patient cohorts are needed to ascertain the performance of these two models.

In conclusion, while Dr. Yue *et al*'s study contributes valuable insights into prognostic evaluation for HCC patients undergoing hemihepatectomy, cautious interpretation is warranted due to methodological limitations and potential biases. Addressing these concerns through rigorous methodology and comprehensive analysis would enhance the reliability and applicability of the study's findings, thereby advancing our understanding of postoperative outcomes in this patient population.

FOOTNOTES

Author contributions: Taherifard E and Saeed A contributed to all stages of the work, including conceptualization, providing critical insights, and drafting of the manuscript. Both authors have read and approved the final manuscript.

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