future studies need to carry out sub-analysis for virus etiology (HBV or HCV), viral load and antiviral therapy strategies with different methods of spleen stiffness measurement (SWE). Again, future studies need to clarify whether the combination of SSM and immunological parameters could be better for predicting late recurrence of HCC.

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Conflict of interest

The authors declare no conflicts of interest that pertain to this work.

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Supplementary data

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Liver and spleen stiffness in predicting the recurrence of hepatocellular carcinoma after resection: A comment for moving forward

To the Editor:

Predicting risk factors of hepatocellular carcinoma (HCC) recurrence has become a hot topic in the last decade.[1] In a recent issue of *Journal of Hepatology*, Marasco and coworkers[2] performed a prospective study which included 175 patients with HCC who underwent hepatic resection. The post-operative and 90-day mortality rates following resection were nil. Patients were followed up for at least 24 months from inclusion or until HCC recurrence. The authors found that risk factors of early recurrence (<2 years) included viral etiology, HCC grading (3 or 4), resection margins <1 cm, and being beyond the Milan criteria, while spleen stiffness measurement (SSM) (hazard ratio 1.046, 95% CI 1.020–1.073) was the only risk factor of late tumor recurrence (≥2 years).[2] Therefore, they concluded that spleen stiffness seems to be a crucial predictor of the late recurrence of HCC, since it is directly correlated to the degree of liver dis-

ease and portal hypertension, which are both involved in carcinogenesis. We would like to propose several important issues raised in this study.

The authors suggested that SSM is an indirect measure of portal hypertension and may reflect the degree of portal hypertension. However, the critical factors affecting portal hypertension should be liver cirrhosis and liver stiffness measurement (LSM).[3,4] Many reports have also confirmed that cirrhosis[5,6] and LSM[7] are independent risk factors for late recurrence of liver cancer. However, the present study did not find LSM and METAVIR F4 (cirrhosis) were important factors influencing late recurrence. This seems to confuse the reader. Does LSM not affect late recurrence of HCC through portal hypertension? Or is it a bias caused by a small sample size? In addition, the authors have consistently emphasized that the main risk factor of late recurrence of HCC is portal hypertension; LSM and SSM are indirect measures of portal hypertension. We recommend comparing the recurrence-free survival between those with and without portal hypertension, which may provide better evidence to support the authors' point of view.

Two other issues may have further confused readers. Firstly, in the Methods, the authors mentioned that the indication for curative hepatic resection for patients with initial HCC was based on American Association for the Study of Liver Disease (AASLD) guidelines.[8] In this study, 14% of patients with HCC had macrovascular invasion, and 34% of patients had more than 2 HCC nodules (Table 1). However, in the AASLD guidelines,[8] patients with HCC and macrovascular invasion or multiple nodules are not recommended for curative hepatic resection. In addition, patients with HCC who have macrovascular invasion are considered as stage C in the Barcelona Clinic Liver Cancer staging system.[9,10] Patients with HCC and macrovascular invasion have a higher rate of early recurrence. However, univariate and multivariate analyses in the present paper showed that macrovascular invasion did not have any effect on the prognosis of HCC. Second, the 30-month follow-up time for late recurrence was relatively short. Although the authors also mentioned this in the discussion, we still hope that there will be longer follow-up for late recurrence to produce more convincing results.

Again, we congratulate the authors for their interesting and important work.

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Conflict of interest

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Authors' contributions

X.X conceived the manuscript. All authors wrote and reviewed the manuscript.

Supplementary data

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