treated patients, fulminant hepatitis was described in 5 (0.14%), all patients received high doses of corticosteroids at a median of 5 days after the onset of symptoms.[3]

Fulminant hepatitis due to cancer immunotherapy seems to be refractory to a first and even to a second line treatment with immunosuppressive drugs and liver transplantation cannot be proposed in a patient with an active cancer. A case report described the use of antithymocyte globulin therapy in a corticosteroid non-responder with clinical and biological improvement.[4] The use of plasma exchange, as described by Riveiro-Barciela and colleagues, is an interesting therapeutic option but further studies are required before it can be recommended.

In conclusion, retreatment with immune checkpoint inhibitors after immune-mediated acute hepatitis should not be denied. The patient has to be informed that there is a risk of hepatitis recurrence possibly characterized by a more severe phenotype, or of an irAE involving another organ. The oncological benefit needs of course to outweigh the risk. The interest of a corticosteroid prophylaxis is not known.

Fulminant hepatitis can complicate cancer immunotherapy, but it is still a rare irAE. The use of plasma exchange in non-responders to immunosuppressive therapy deserves further exploration.

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Please refer to the accompanying ICMJE disclosure forms for further details.

Supplementary data

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Predicting early hepatocellular carcinoma recurrence after resection: A comment for moving forward

To the Editor:

Tumour recurrence, which occurs in 70% of patients with hepatocellular carcinoma (HCC) within 5 years after hepatic resection, is a major cause of post-resection death.[1] This recurrence can be true recurrence (intrahepatic metastases), which occurs sooner than 2 years later, or it can be due to the development of *de novo* tumours at least 2 years later. Despite this high rate of tumour recurrence, no anti-recurrence adjuvant therapies are currently recommended by the European Association for the Study of the Liver (EASL)[1] or the American Association for the Study of Liver Diseases (AASLD).[2] Therefore, identifying patients with HCC at high risk of post-resection recurrence is important to enhance surveillance and to detect recurrence as early as possible.

Toward this goal, Chan and coworkers[3] have described two statistical models that may allow clinicians to estimate the risk of tumour recurrence in patients with HCC. Their retrospective study included 3,903 patients who underwent curative hepatic

resection at 6 medical centres in Asia and the West. Their multivariable analysis found that male sex, large tumour size, multinodular tumour, high albumin-bilirubin grade and high levels of alpha-fetoprotein in serum were significantly related to early recurrence. They used these 5 risk factors to develop a pre-operative risk prediction model, and then they added the sixth risk factor of microvascular invasion to develop a post-operative model.

We applaud Chan and colleagues for providing the largest study to date that identifies several risk factors for post-resection recurrence in patients with HCC. Their findings echo numerous previous studies investigating preoperative risk factors of tumour recurrence. However, their conclusions may be interpreted with caution in light of the following concerns.

The first concern is that neither risk prediction model includes macrovascular invasion, which several studies have associated with tumour recurrence and mortality.[4–7] HCC with macrovascular invasion is considered advanced disease in EASL[1] and AASLD[2] staging systems, which do not recommend resection because of the high postoperative recurrence rate and poor long-term overall survival. However, 5 of the 6 medical centres in the study by Chan and colleagues allowed patients with macrovascular invasion to undergo hepatic resection.[3] A potential role of macrovascular invasion in post-resection recurrence should be clarified because Chan *et al.* found that rates of macrovascular invasion among the 4 cohorts with more than 500 patients varied widely (0–28.6%), yet tumour recurrence was 39.8–43.0%. This contrasts with several studies showing that the rate of macrovascular invasion varies directly with 90-day mortality.[4–7] It is possible that the results of Chan and coworkers were influenced by their inclusion of the 0–7.7% of patients who died within 90 days of resection.[3] Patients who died within 90 days should not be included in analysis of tumour recurrence or recurrence-free survival.

Again, we have to congratulate Chan and coworkers on this interesting study on predicting early HCC recurrence after resection, which is still a major problem despite significant advances in hepatic resection. Their important work advances our understanding of pre- and post-operative risk factors of HCC recurrence, but it leaves a question unanswered. Which is the most powerful risk factor of HCC recurrence among the 6 variables they examined, together with other conventional variables, including macrovascular invasion, blood transfusion, and extent of hepatectomy? This question should be answered before we can definitively predict HCC recurrence.

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Authors' contributions
X.-Y.Z. and J.O. conceived, wrote and reviewed the manuscript.

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Toward the universal scoring system in treatment for patients with hepatocellular carcinoma

To the Editor:
With great interest, we read the article written by Chan *et al.* in a recent issue of "*Journal of Hepatology*".[1] The authors attempted to develop a new set of preoperative and postoperative scoring systems (ERASL) to predict the outcomes of hepatectomy for hepatocellular carcinoma (HCC), using a statistical approach