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The albumin-bilirubin score predicting the mortality of patients with decompensated cirrhosis

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Dear Editor,

We read with interest the article by Zou et al. (1), published in March 2016. In their retrospective study of 631 patients, the authors concluded that the performance of the albumin-bilirubin (ALBI) score was comparable with that of Child-Pugh and model for end-stage liver disease (MELD) scores for predicting the in-hospital mortality of patients with acute upper gastrointestinal bleeding (GIB) and liver cirrhosis (2). However, the authors did not compare GIB with other types of decompensated cirrhosis.

In our unit, we conducted a retrospective cohort study including 106 patients (age 60.3±10.7 years; 87.7% men) (admitted for acute decompensation of liver cirrhosis between January 2014 and December 2015. We excluded patients with multicentric hepatocellular carcinoma or severe chronic extra-hepatic disease. Clinical manifestations included ascites (58.5%), hepatic encephalopathy (46.2%), portal hypertensive GIB (39.6%), acute kidney injury (38.7%), and infection (36.8%). In the group of patients with GIB (n=42), most presented with bleeding from esophageal or gastric varices (81%). MELD, Child-Pugh, and ALBI scores were calculated, and in-hospital mortality (MH) and mortality at 28 days (M28), 90 days (M90), and 1 year (M1y) were assessed.

The area under receiver operating characteristic curves (AUROCs) of ALBI, Child-Pugh, and MELD scores for predicting mortality were as follows (n=106): for MH, 0.676±0.073, 0.765±0.059, and 0.854±0.051, respectively; for M28, 0.736±0.068, 0.798±0.051, and 0.805±0.064, respectively; for M90, 0.790±0.049, 0.818±0.040, and 0.822±0.047 respectively; and for M1y, 0.728±0.049, 0.763±0.045, and 0.718±0.049, respectively.

Considering patients with GIB (n=42), AUROCs of ALBI, Child-Pugh, and MELD scores were as follows: for MH, 0.815±0.090, 0.762±0.106, and 0.736±0.113, respectively; for M28, 0.886±0.067, 0.884±0.062, and 0.801±0.102, respectively; for M90, 0.919±0.045, 0.886±0.050, and 0.760±0.088, respectively; and for M1y, 0.868±0.059, 0.845±0.066, and 0.684±0.090, respectively. Therefore, ALBI was always superior to MELD and Child-Pugh for patients with GIB, although this difference is only statistically significant in the comparison with MELD for M90 (0.046/ borderline) and M1y (p=0.007).

We highlight two findings from these results. In our group, MELD tended to perform better predicting MH and M28 than predicting M90 and M1y, whereas ALBI and Child-Pugh were better predictors of longer term mortality, namely M90. In addition, as in the study by Zou et al., ALBI was particularly accuratein patients with GIB (although these authors only included patients with upper GIB).

One possibility is that, in acute decompensations involving multiorgan dysfunction, MELD is a better model (namely by including creatinine), whereas ALBI is superior as a model of liver dysfunction. Indeed, in our group, patients with GIB had lower creatinine levels compared with the other patients (1.22 vs. 1.59 mg/dL; p=0.010) and had less acute-on-chronic liver failure (26.2% vs. 42.2%; p=0.103). Compared with Child-Pugh for patients with GIB, ALBI presented a similar performance and had the advantage of being more objective.

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Author's Reply

Albumin-bilirubin, Child-Pugh, and model for end-stage liver disease scores for the assessment of prognosis in cirrhotic patients

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To the Editor,

We thank Dr. Cardoso et al. (1) for their interest in our findings that the performance of albumin-bilirubin (ALBI) score has a higher accuracy than the Child-Pugh and model for end-stage liver disease (MELD) scores for predicting the in-hospital mortality in 631 cirrhotic patients with upper gastrointestinal bleeding (GIB) but that the difference was not statistically significant (2). Similarly, Cardoso et al. (1) found that the performance of the ALBI score was superior to that of the MELD and Child-Pugh scores for predicting the in-hospital, 28-day, 90-day, and 1-year mortality in 42 cirrhotic patients with GIB and that the difference between 90-day and 1-year mortality was statistically significant.

In addition, further analyses by Cardoso et al. (1) suggested that the performance of MELD score was superior for predicting mortality in patients with acute decompensation involving multiorgan dysfunction. Our previous systematic review and meta-analysis suggested that the performance of MELD score had a higher specificity than the Child-Pugh score for the assessment of prognosis in patients with acute-on-chronic liver failure (3). Our previous retrospective study also found that the performance of MELD score, rather than the ALBI or Child-Pugh score, could significantly predict the mortality of patients with acute-on-chronic liver failure diagnosed by the Asian Pacific Association for the Study of the Liver criteria (4).

We acknowledge that studies both by our team and by Cardoso et al. were retrospective (1,2).

In summary, the prognostic assessment of liver cirrhosis is often complicated (5). The indications of the ALBI, Child-Pugh, and MELD scores are heterogeneous. In the future, we should perform larger, well-designed prospective studies to identify a specific target population suitable for prognostic assessment by the ALBI, Child-Pugh, and MELD scores.

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