Safety of Cardiac Surgery for Patients With Cardiac Cirrhosis
To the Editor:

We read with great interest the report by Gopaldas and colleagues [1] showing that coronary artery bypass grafting (CABG) does not need to be withheld from patients with well-compensated cirrhosis. Indeed, their results endorse the outcomes at our institution [2, 3]. By matching cirrhotic patients with noncirrhotic controls using a propensity score analysis that included preoperative, cardiac disease–related, and surgery–related risk factors, we found that cirrhotic patients with a Child-Turcotte-Pugh (CTP) score less than 8 have a postsurgical mortality no different from the one observed in noncirrhotic patients [3].

We are concerned, however, that the use of billing data for scientific inquiry rather than robust biochemical and clinical data is fraught with potential for error that cannot be compensated for by large datasets. This is somewhat reflected in the inconsistent mortality odds ratio in the cirrhosis on pump group (see Table 4 in Gopaldas and colleagues [1]), with almost sevenfold increase in mortality in the mild cirrhosis group compared with only a threefold increase in the moderate to severe group.

More importantly, we recommend caution in the interpretation of the supposed negative effects of compensated cirrhosis on postoperative outcomes after cardiopulmonary bypass. The lack of determination of CTP or MELD scores in assessing the severity of liver dysfunction, and the lack of accurate information on perioperative-related risk factors (preoperative creatinine and bilirubin values, emergency of the procedure, duration of CPB) may have influenced their findings. Reports (including our own) of cardiac surgery in patients with cirrhosis individually and cumulatively indicate that the CTP [4–6] and, to a lesser extent, MELD scores provide a fine-tuned evaluation of the postoperative risk regardless of whether cardiopulmonary bypass is used.

We agree with Gopaldas and colleagues that there is a need for further research. Such studies should be based on specific patient’s characteristics and objective measurement tools to enhance the selection process and to improve postsurgical outcomes.

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References

Reply
To the Editor:

We earnestly appreciate the comments from Macaron and Carey at the Cleveland Clinic [1]. We are indeed happy to note that the results of our administrative database study corroborate with the results of a more robust clinical database. They have rightly alluded to the limitations of using an administrative database, which was also detailed in the Comment section of our original report [2].

Broadly, our study indicates that cirrhosis does not necessarily preclude cardiac operations in a select group of patients. As pointed out, any clinical inference beyond this would require more focused studies. Administrative data have the distinct advantage of large sample sizes, which allow precisely what we had attempted to do—answer a broad question in a clinical arena, such as cardiac operations in cirrhotic patients, that typically does not have very high sample sizes.

Although some discrepancies in administrative data sets exist, such as coding errors, they typically do not deviate from the main message of our analysis. The discrepancies in the odds ratios, as pointed out by Macaron and Carey, are likely due to these limitations, although they could also be due other facts. In patients with severe cirrhosis, there could be other aggravating factors that would be imminent causes for death. For example, if intraoperative bleeding (categorized as an intraoperative complication) were the cause of death, risk-adjusted statistical models would assign a higher odds ratio for intraoperative complications as a cause of death. However, if moderate/severe cirrhosis were responsible for the intraoperative bleeding due to impaired clotting factors, a multivariable statistical model would not automatically assign a higher odds ratio to moderate/severe cirrhosis as a cause for death. This requires detailed clinical information from a record review.

Another issue would be selection bias [3]. Patients with moderate/severe cirrhosis might have undergone limited revascularizations, based on what the surgeon felt was most vital, to limit pump times, whereas patients with mild cirrhosis might have undergone more extensive revascularizations with prolonged pump times, thus falsely biasing the mortality rate to the less severe group. Again, only a detailed record review that contains information about the cardiopulmonary bypass times, cross-clamp times, and the number of bypass grafts can answer such questions. Notwithstanding the limitations, administrative data sets are powerful tools in providing a bird’s-eye perspective and a springboard for subsequent studies to answer clinically relevant and focused outcomes-related questions.

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References