

Editorial

Do cirrhotic patients with a high MELD score benefit from TIPS?

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The aim of a transjugular intrahepatic portosystemic shunt (TIPS) is to shunt blood from the hypertensive portal vein to the hepatic vein, thereby nonsurgically decompressing the portal pressure. This procedure is generally used to treat complications related to portal hypertension,¹ with intractable variceal bleeding and refractory ascites in particular being primary indications for TIPS.² TIPS was initially used as a rescue therapy for controlling acute variceal bleeding that is refractory to endoscopic therapy. The combination of pharmacologic and endoscopic treatment can achieve hemostasis in most patients with acute variceal bleeding, and so this combined treatment has become accepted as the first-line therapy.² However, approximately 20% of patients continue to bleed despite that combined treatment, for which emergency TIPS can be considered a second-line approach. Several studies have demonstrated that TIPS can control acute intractable variceal bleeding that is resistant to pharmacologic and endoscopic treatment with reported success rates in the range of 90-100%; however, the mortality rate is high, at approximately 30% within the first month.³ TIPS also can be regarded as a second-line therapy for the prevention of variceal rebleeding.⁴ Several randomized controlled trials have demonstrated that while TIPS is more effective than endoscopic therapy for preventing variceal rebleeding, there

appear to be no survival benefits from TIPS, and the incidence of complications such as hepatic encephalopathy is higher with TIPS than with endoscopic treatment. Therefore, TIPS is reserved as a second-line therapy for preventing variceal rebleeding. Furthermore, the current guidelines suggest that this procedure should not be used for preventing rebleeding in patients who have bled only once from esophageal varices, and that its use should be limited to those for whom pharmacologic and endoscopic treatments have failed.²

Refractory ascites represent another main indication for TIPS.⁵ The initial treatment of choice for patients with refractory ascites is large-volume paracentesis (LVP), which rapidly relieves abdominal tension. However, LVP does not prevent the rapid reaccumulation of ascites, since it does not correct the mechanisms underlying ascites formation. Repeated LVP is thus inevitably required, with its consequent negative effects on the patient's quality of life. Conversely, the decrease in portal pressure induced by TIPS leads to an effective control of ascites formation, resulting in a dramatic reduction in the recurrence of tense ascites. Indeed, many uncontrolled studies have found TIPS to be effective in relieving refractory ascites, with response rates of 50-90%. However, hepatic encephalopathy episodes were somewhat more frequent and more severe in patients undergoing TIPS than in those treated with repeated LVPs, with the survival rate being broadly discrepant.⁶

Abbreviations:

LVP, large-volume paracentesis; MELD, Model for End-Stage Liver Disease; TIPS, transjugular intrahepatic portosystemic shunt

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Despite the well-documented efficacy of TIPS, this procedure has two major drawbacks: shunt dysfunction and post-TIPS hepatic encephalopathy. Shunt dysfunction, which is caused by occlusion or stenosis of the TIPS, is the most common complication after this procedure.⁷ More than half of the patients treated with bare stents experience some degree of shunt dysfunction within the first year. However, the recent introduction of new-generation covered stents, which have antithrombotic properties and prevent the proliferation of neointimal growth inside the TIPS, has largely overcome the problem of shunt dysfunction, with an associated significant improvement in the stent patency.⁸ Hepatic encephalopathy is another frequent complication after TIPS, and is the most limiting complication with regard to indications for TIPS insertion.⁹ The risk factors for this condition are old age, Child-Pugh class C liver cirrhosis, prior hepatic encephalopathy, and a large-diameter stent. Although the incidence of hepatic encephalopathy does not seem to have been exacerbated by the use of covered stents, post-TIPS hepatic encephalopathy occurs as frequently with the covered stents as it did with the bare stents.

In the current issue of *Clinical and Molecular Hepatology*, Kim et al¹⁰ have report on a trial that they conducted to assess the clinical outcomes in 229 cirrhotic patients undergoing TIPS for the management of the complications of portal hypertension. In their retrospective multicenter study covering a 10-year period, about two-thirds of enrolled patients underwent TIPS for uncontrolled variceal bleeding, and one-third of patients underwent TIPS for refractory ascites. Approximately 75% of the patients were treated with covered stents. The shunt patency rate at 1 year was about 80%, and increasing platelet counts independently predicted the development of shunt dysfunction. During the mean 2-year follow-up period, 20% of patients experienced variceal rebleeding, and shunt dysfunction occurred in 90% of the rebled patients. About one-third of patients experienced recurrence/occurrence of ascites after TIPS. In addition, one-quarter of the patients experienced newly developed episodes of hepatic encephalopathy after TIPS; the predictive factor for hepatic encephalopathy was the use of a bare stent. A high Model for End-Stage Liver Disease (MELD) score was a prognostic factor for both early and overall mortality in TIPS recipients. Despite the several limitations of that study, such as heterogeneity of treatment indications, the use of two kinds of stent, and retrospective analysis, the results appear to be congruent with those reported previously.

In conclusion, the authors have reconfirmed that patients with a high MELD score have significantly poorer survival after TIPS compared to those with a low MELD score. Although this conclu-

sion is clearly supported by their results, their interpretation of the results requires careful consideration; that is, it is not possible to infer from their data that patients with a high MELD score obtain little benefit from TIPS.

TIPS might represent a unique rescue therapy for intractable variceal bleeding in patients with severe cirrhosis, since these people are unable to tolerate other aggressive treatment options such as surgery due to their poor liver function. In addition, intractable variceal bleeding that does not respond to less-invasive treatment options, such as medical and endoscopic treatments, may seriously aggravate the patient's liver functional reserves.¹¹ In terms of elective TIPS for variceal bleeding, early TIPS might prevent variceal rebleeding and avoid liver damage, and consequently improve the survival rate, especially among patients with a marginal liver functional reserve.¹²

From the standpoint refractory ascites, TIPS might improve the quality of life and survival outcome, because this procedure not only reduces tense ascites but also exerts favorable hemodynamic effects on the splanchnic and systemic circulations.¹³ Several meta-analyses have demonstrated that the risk of mortality was significantly lower for patients undergoing TIPS than for those treated with repeated LVP, even though their MELD scores were high.^{5,14} Therefore, patients with a high MELD score might be appropriate candidates for TIPS, irrespective of the treatment indications. Nevertheless, TIPS insertion has a small, but not-negligible risk from the procedure itself, and, in rare cases, it can lead a progressive liver failure due to a decrease in sinusoidal blood flow caused by porto-systemic shunting.¹⁵ Therefore, TIPS should be used cautiously in patients with severely compromised liver reserve. Further investigations are required to define the indicators of a favorable clinical response for TIPS.

Conflicts of Interest

The author has no conflicts to disclose.

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