

MARS in acute-on-chronic liver failure

In their observational study published in this issue of the *Journal*, Waghlikar *et al*¹ have shown improvement in biochemical liver function and severity of hepatic encephalopathy (HE) in patients with acute-on-chronic liver failure (AoCLF) using the molecular adsorbent recirculating system (MARS) prior to living-related donor liver transplantation (LRDT).

This study addresses an important patient group, namely, patients undergoing LRDT as a method of expanding the donor pool. Pre-transplant optimization of patients undergoing LRDT would be ideal, but to date no device has been shown conclusively to improve survival and outcome and as such there are no evidence-based recommendations about the use of MARS or other support systems in this patient population.

This study shares characteristics with several previously published studies relating to MARS, being relatively small, retrospective, uncontrolled, and with limited number of treatment sessions. Improvement in bilirubin was noted, similar to previous studies on MARS in AoCLF.^{2,3} However, there is no statistical comparison with baseline.

It is encouraging to note that in 4 of 9 patients the grade of HE improved; however, the authors do not state the median change in grade and whether the changes were statistically significant. Blei *et al*⁴ showed more robust improvement in HE in AoCLF patients with baseline HE grade of 3 or 4, and defined improvement as decrease by 2 grades. No study to date has, however, correlated this with mortality benefit.

MARS has been associated with significant decrease in platelets and fibrinogen, and increase in INR and in bleeding complications.^{5,6} In this study, two patients treated with MARS had INR >3. Although they were supported with transfusions, MARS should be used with caution in severely coagulopathic patients.

The role of MARS in hepatorenal failure remains to be fully defined; some studies have shown benefit but these were small in numbers and only two were controlled.^{2,3} The results of larger trials are awaited. However, intuitively it would seem likely that improving metabolic status and renal function in those proceeding to LRDT would be beneficial; again well-designed trials will be required to define this further.

Given this heterogeneity in previous studies, it is difficult as yet to develop evidence-based clinical and biochemical criteria to define the need to initiate therapy and furthermore define the optimal duration of therapy.

Regardless of the form of liver support, patient prognosis is universally poor if liver transplantation is not promptly available. While significant 30-day survival benefit may be found, its clinical relevance in AoCLF patients with MELD scores >30 in the absence of transplant is doubtful. Hence, while not compared with standard medical therapy pre- and post-LRDT, 88% survival at 6 months in this patient population is encouraging.

To truly assess the impact of MARS in this population, larger controlled studies with longer lengths of follow-up post-LRDT are required.

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References

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