Liberal fluids in sepsis are bad

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Preload optimization in patients with severe sepsis implies the administration of considerable amounts of fluids to compensate for the relative hypovolemia induced by generalized vasodilatation, a landmark of the pathophysiology of sepsis. The current surviving sepsis campaign guidelines recommend fluid administration at relatively high rates to maintain a target CVP of 8-12 mmHg (1). This was largely based on the results of the Rivers’ study (2) in which this target was applied for a short time during the early phase of severe sepsis in the emergency department. The results of this study (2) have been recently challenged in two recent large randomized control studies (3-4). Moreover, the optimal target for fluid administration beyond the early phase of severe sepsis has not been systematically investigated.

Excessive fluid therapy may lead to tissue edema, dilutional coagulopathies, and complications related to the type of fluids used (5). Positive fluid balance has been reported in several observational studies to be independently associated with higher risk of death in septic patients. In a large European multicentre study, the Sepsis Occurrence in Acutely Ill Patients (SOAP) study (6), we previously reported that positive fluid balance was independently associated with higher risk of death in several populations of critically ill patients, including those with sepsis, lung injury, and acute renal failure. Indeed, it may be argued that this association may have been an epiphenomenon, with more severely ill patients requiring more fluids. Nonetheless, this observation has been confirmed in other studies. In a post hoc analysis of the Vasopressin in Septic Shock Trial (VASST) database, Boyd et al (7) reported that a more positive fluid balance both early in resuscitation and cumulatively over 4 days is associated with an increased risk of mortality in septic shock. The adoption of a rather restrictive strategy of fluid administration may be, therefore, expected to improve outcome in these patients.

Randomized control studies on restrictive vs. liberal fluid administration in patients with severe sepsis are scanty. In patients with acute lung injury, a large randomized study compared restrictive and liberal fluid management strategies (the FACTT Study) in relation to outcome (8). Although there was no significant difference in the primary outcome of 60-day mortality, the conservative strategy of fluid management improved lung function and shortened the duration of mechanical ventilation and intensive care without increasing nonpulmonary-organ failures. These results support the use of a conservative strategy of fluid management in patients with acute lung injury. However, it is not known, whether the results of this study can be extrapolated to all patients with severe sepsis. Recent data from a large international multicentre study suggest that negative early negative fluid balance may be associated with favorable outcome from severe sepsis.

