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Prowle, JR

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LETTER

Fluid resuscitation in septic shock: too much, too little or just right?

John R Prowle*

See related research by Smith and Perner, <http://ccforum.com/content/16/3/R76>

In their interesting observational study Smith and Perner [1] describe fluid resuscitation (FR) in 164 patients with septic shock, concluding that survival was better in patients receiving higher volumes over the first 72 h. I think we should be cautious, however, to conclude from this that more is better.

Median FR was 4.0 L over 24 h, and 7.5 L by 72 h - relatively small volumes for patients with ongoing shock. FR volumes reported from trials performed in septic shock are substantially larger despite comparable illness severity; mean FR over 72 h was approximately 19 L in the Vasopressin in Septic Shock Trial (VASST) study [2], 13 L in the study by Rivers and colleagues [3] and 16 L in another recent study [4]. Indeed, median FR in the high-volume group (10.9 L at 72 h) was comparable to the

lowest quartile, associated with the best prognosis, in the VASST study (16 L at 96 h) [2]. Thus, I do not believe that the benefit of higher-volume FR described is in conflict with the harm associated with larger volumes reported previously [2]. Similarly, median FR in the lower-volume group was only 4.3 L in 72 h. As FR was physician-directed, lower-volume FR might have been indicated by factors like chronic cardiac failure or fluid unresponsiveness associated with poorer outcomes irrespective of FR; no evidence is provided to conclude that increasing FR in this group would have improved survival.

Overall, this report records excellent outcomes using moderate FR by recent standards. Further trials are needed to characterize the dose and indications for FR in septic shock.

Authors' response

Anders Perner and Søren H Smith

Thanks to Dr Prowle for his interest in our study. We agree that observations in cohort studies should be interpreted with caution, in particular in complex clinical settings such as fluid resuscitation of patients with sepsis in the ICU. The interpretation of studies in this area is further complicated by differences in the reporting of fluid therapy. The types of, and indications for, fluids are most often not reported, so when previous trials [2-4] report that more than 10 L of fluid was given by day 3, we do not know if this fluid was given for resuscitation. In trials of fluid resuscitation [5] (unpublished observations from the 6S trial [6]), 2.5 L of other fluids were given for each liter of resuscitation fluid. The indications for giving other fluids may include nutrition, maintenance, fluids with medications and electrolytes or even to keep a drip

open, but we do not know the details. Taken together, we support the notion that the controversy of fluid volume in septic shock may only be resolved in randomized trials of higher versus lower fluid volumes in these patients. Such trials should be top priority for the ICU research community.

Abbreviations

FR, fluid resuscitation; VASST, Vasopressin in Septic Shock Trial.

Competing interests

The author declares that he has no competing interests.

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*Correspondence: john.prowle@bartshhealth.nhs.uk
Adult Critical Care Unit, The Royal London Hospital, Barts Health, Whitechapel Road, London E1 1BB, UK

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