

Albumin versus Saline in Mortality in Critically Ill Children

Yusheng Liu,* Shiqin Xu,* Fuzhou Wang,* †, ^Δ Xirong Guo, ‡ Rong Shen, ‡ Xiaofeng Shen*, ^Δ

High mortality in critically ill patients is a challenge for the intensive care medicine. While different reasons were figured out and corresponding therapeutic protocols were recommended, the actual mortality is still high and it is hard to conquer it and make a big improvement of the overall outcomes. Albumin, the most abundant protein in human blood plasma, plays an essential role in maintaining oncotic pressure, in participating in as an important protein transporter, and in possessing many physiological functions. In the context of critical care medicine, administration of albumin was found benefit patients in increasing their survival rate. However, a more recent study reported that bolus injection of albumin in critically ill pediatric patients increased the mortality. Of this report, we analyzed carefully and commented their methodology in performing the study. Some issues were not that clear, and it is difficult to determine the real effect of albumin administration on the mortality in children. It is a challenge to answer one question precisely and in overall, and we herein raise our concerns on this topic to discuss them with other researchers. ■

*: Department of Anesthesiology and Critical Care Medicine, Nanjing Maternity and Child Health Care Hospital, Nanjing Medical University, Nanjing 210004, China

†: Division of Neuroscience, The Bono Academy of Science and Education, Winston-Salem, NC 27157, USA

‡: Institute of Pediatrics, Nanjing Maternity and Child Health Care Hospital, Nanjing Medical University, Nanjing 210004, China

^Δ: Correspondence to: Dr. Fuzhou Wang or Xiaofeng Shen, No. 123, Tianfei Xiang, Mochou Rd., Nanjing 210004, China. Tel: +86-25-5222-6115; Fax: +86-25-8420-0723; Email: zfwang50@njmu.edu.cn or sxf0418@njmu.edu.cn

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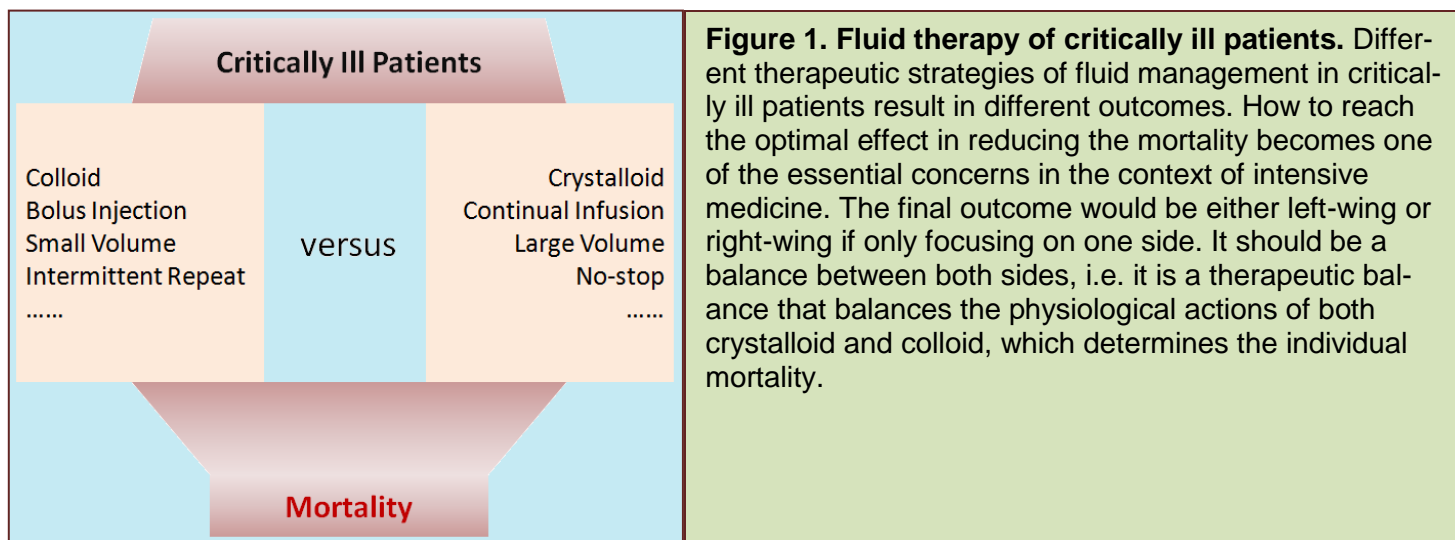
HOW to reduce the mortality of critically ill patients is hot topic in critical care medicine, but it is a challenge for intensive care physicians. Although decades passed, the real situation on this topic did not show substantial change. Fluid therapy was a focus due to the consideration that fluid deficit was a major contribution to the high mortality, whereas the precise mechanisms and potential risks about this treatment are not yet guaranteed. Some studies positively support the

fluid therapy, but some do not. Even though it is beneficial for patients using fluid management, it is hard to determine which type of fluid – colloid versus crystalloid, and what volume – large versus small, and what time it should be given – bolus versus continual infusion, all become the issues need to be clarified (Figure 1).

In a study, Maitland and colleagues reported intriguing results that fluid boluses markedly increased mortality in critically ill children (1). The

study used 20ml of 5% albumin (1g/kg), and the total albumin the patients received at 48 hours was 76.2ml (IQR=40-97ml). So the total albumin given was 3.81g/kg (IQR=2.0-4.85g/kg). Because the paper did not present data regarding the serum levels of albumin before and after fluid interventions, so it is difficult to declare the effect of albumin itself on the patients' overall mortality. Given the decreased albumin is associated with increased death after surgeries (2, 3) and albumin

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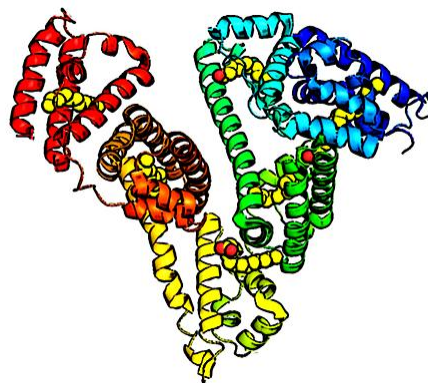
can detect dying risk in pediatric wards (4), the albumin levels and corresponding subgroup analyses are necessary.

Second, given the reciprocal relationship between nutrition and plasma volume (5), the decreased albumin might be because reduce in total volume or diluted by the relatively increased plasma. The reported mid-upper-arm circumference was not enough to indicate the nutrition state. Although fewer patients were of mid-upper-arm circumference ≤ 11.5 cm, it is more when compared with the number of death. So the influence of malnutrition on the mortality is needed to be investigated. ■

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CONFLICT OF INTERESTS

None

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