



Caring for the critically ill patients: a multidisciplinary approach

Critical care medicine (CCM) is a discipline dealing with the critically ill patients and involves the management of all aspects of complex critical illness. The key to the successful treatment of the critically ill is the participation of a multidisciplinary team including physicians, surgeons, nurses and ultrasound specialist. In clinical researches, all aspects should be considered to finally improve the clinical outcomes. A single intervention may contribute limited clinical improvement. That is why most clinical trials in CCM failed to obtain positive results. In this special issue of caring for the critically ill, we included articles on several important topics in CCM.

Delirium and its associated complications are common in the intensive care unit (ICU), which can be regarded as a type of acute organ dysfunction, similar to its counterpart acute kidney injury (1,2). Appropriate management of delirium with pharmacological and non-pharmacological interventions can help to improve clinical outcomes of these patients. In the review article (3), Gonçalves and colleagues discussed the pathophysiology, outcome, management and prevention of delirium. They also highlight the importance of prevention and identification of delirium. Non-pharmacological strategies such as early mobilization, music, restoration of circadian cycle are promising in the prevention and treatment of delirium. This review article is helpful for junior doctors to rapidly take an overview of the clinical aspect of delirium.

Sepsis is another important disease in the ICU, which is defined as organ dysfunction caused by the over activation of inflammatory system induced by infection. As a syndrome, it encompasses a heterogeneous population. In the special issue, Bloos provided a comprehensive overview of sepsis (4), discussing from evolving definitions of sepsis, to the management. There are three versions of sepsis definition which were proposed in 1992, 2001 and 2016, reflecting the evolving understanding of this disease entity. The underlying mechanisms of multi-organ dysfunction caused by sepsis was discussed in another review paper (5).

Acute respiratory distress syndrome (ARDS) is a widely investigated syndrome and many clinical researches focus on the setting of mechanical ventilation to improve mortality outcome (6,7). Some strategies including low tidal volume, high positive end expiratory pressure and prone position are found to be beneficial (8). Wong and colleagues discussed the use of extracorporeal membrane oxygenation (ECMO) for pediatric patients with respiratory failure (9). ECMO is an advanced supportive modality in the ICU and can buy time for the recovery of underlying diseases. In general, ECMO can be more effective in pediatric patients than that in adults because the former is more likely to suffer from acute illness which can fully recover after supportive treatment. On the contrary, patients are usually old with multiple comorbidities in adult ICU ward, thus, the mortality rate can still be high with ECMO support. In the review article, Wong highlighted the evolving indication for the use of ECMO in pediatric patients. ECMO has been increasingly used in patients with major genetic syndromes, malignancies, and post-transplantation, which have once been considered as contraindications.

Critically ill patients may also suffer from complications such as gastrointestinal bleeding, which is attributable to the stress caused by critical illness. The review paper by van der Voort (10) discussed the clinical importance of upper gastrointestinal bleeding in critical illness and relevant management with histamine receptor blocking agents (H2RA) and proton pump inhibitors.

Critical care ultrasound is also another hot spot in both clinical practice and research. There is a journal named *Critical Ultrasound Journal*, which is dedicated to the critical care ultrasound (11). The launching of the journal indicates that the area has drawn wide attentions and is clinically important. Ultrasound is very welcome to critical care physicians because it is easy to perform and patients can be repeatedly examined with changing conditions. Although recent trials failed to demonstrate large benefits in mortality with the use of ultrasound versus those without using ultrasound, it has been shown to improve some intermediate outcomes such as shorter length of stay in ICU and improved safety for some procedures (12-14). In this issue, Abhishek Biswas reviewed the use of ultrasound to evaluate the lung. In the article, some high-resolution figures and videos are provided and can be used as tutorial for training purpose (15).

Acknowledgements

None.

References

1. Barr J, Fraser GL, Puntillo K, et al. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. *Crit Care Med* 2013;41:263-306.
2. Zhang Z, Pan L, Deng H, et al. Prediction of delirium in critically ill patients with elevated C-reactive protein. *J Crit Care* 2014;29:88-92.
3. Gonçalves B, de Barros DF, Righy C, et al. Delirium prevention and management—less sedation and keep moving! *J Emerg Crit Care Med* 2018;2:47.
4. Bloos F. Diagnosis and therapy of sepsis. *J Emerg Crit Care Med* 2018;2:3.
5. Spapen HD, Jacobs R, Honoré PM. Sepsis-induced multi-organ dysfunction syndrome—a mechanistic approach. *J Emerg Crit Care Med* 2017;1:27.
6. Cavalcanti AB, Suzumura ÉA, Laranjeira LN, et al. Effect of Lung Recruitment and Titrated Positive End-Expiratory Pressure (PEEP) vs Low PEEP on Mortality in Patients With Acute Respiratory Distress Syndrome: A Randomized Clinical Trial. *JAMA* 2017;318:1335-45.
7. Mansur A, Steinau M, Popov AF, et al. Impact of statin therapy on mortality in patients with sepsis-associated acute respiratory distress syndrome (ARDS) depends on ARDS severity: a prospective observational cohort study. *BMC Med* 2015;13:128.
8. Aronson K, Rajwani K. The acute respiratory distress syndrome: a clinical review. *J Emerg Crit Care Med* 2017;1:25.
9. Wong JJ, Cheifetz IM, Lee JH. Extracorporeal membrane oxygenation for severe pediatric respiratory failure. *J Emerg Crit Care Med* 2017;1:11.
10. van der Voort PH. How to prevent and treat gastrointestinal bleeding in the critically ill patient: a pathophysiological approach. *J Emerg Crit Care Med* 2017;1:35.
11. Blaivas M. A new point of care ultrasound journal. *Crit Ultrasound J* 2009;1:1-2.
12. Gobatto AL, Besen BA, Cestari M, et al. Ultrasound-Guided Percutaneous Dilational Tracheostomy: A Systematic Review of Randomized Controlled Trials and Meta-Analysis. *J Intensive Care Med* 2018. [Epub ahead of print].
13. Gobatto AL, Besen BA, Tierno PF, et al. Ultrasound-guided percutaneous dilational tracheostomy versus bronchoscopy-guided percutaneous dilational tracheostomy in critically ill patients (TRACHUS): a randomized noninferiority controlled trial. *Intensive Care Med* 2016;42:342-51.
14. Breitzkreutz R, Campo Dell'Orto M, Hamm C, et al. Does the integration of personalized ultrasound change patient management in critical care medicine? Observational trials. *Emerg Med Int* 2013;2013:946059.
15. Biswas A. The role of bedside point-of-care ultrasound evaluation of the lung in the critically ill patient. *J Emerg Crit Care Med* 2017;1:34.

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doi: 10.21037/jeccm.2018.10.15

Conflicts of Interest: The author has no conflicts of interest to declare.

View this article at: <http://dx.doi.org/10.21037/jeccm.2018.10.15>

doi: 10.21037/jeccm.2018.10.15

Cite this article as: Zhang Z. Caring for the critically ill patients: a multidisciplinary approach. *J Emerg Crit Care Med* 2018;2:96.