2016-11-16 PH&RM Critical Care Education - 2016 Literature

A 70 kg 54 year old male with pneumonia and septic shock requires helicopter retrieval from Bathurst to Nepean. He is intubated on SIMV FiO2 0.8 PEEP 10 TV 500 f16 Spont rate 18 PeakAP 40
HR 115 AF ABP 75/42 Sedated on morphine/midazolam
12 lead ECG: AF, nil else.
CXR: Bilateral widespread patchy infiltrates with extensive consolidation right lower lobe
Has had: iv ceftriaxone and azithromycin, 4 litres Hartmann's
Is on: noradrenaline at 40 ml/hr of a 4mg/100ml concentration

pH 7.2 pCO2 50 pO2 80 HB 85 SO2 91% Na 137 K 5.4 Ca 0.9 Lac 6 BE - 8 HCO3 16
Creatinine 120, nil urine in IDC

1. How will you decide whether to give more fluid, and how much?

2. What validated fluid responsiveness tools exist for such a patient?

3. What are the limitations of any fluid responsiveness assessment?

4. What steps would you consider in improving his haemodynamics?

5. What is the role of steroids?

6. The ACC consultant recommends starting vasopressin. What dose would you use and what is the evidence for its effect on mortality, blood pressure, and kidney failure free days?

7. Is there a role for levosimendan if his echo shows impaired LV systolic function?

References

FLUID RESPONSIVENESS

Marik P, Bellomo R. A rational approach to fluid therapy in sepsis. Hardman JG, editor. Br J Anaesth. 2016 Feb 10;116(3):339–49.

STEROIDS

Venkatesh B, Myburgh J, Finfer S, Webb SAR, Cohen J, Bellomo R, et al. The ADRENAL study protocol: adjunctive corticosteroid treatment in critically ill patients with septic shock. Crit Care Resusc. 2013 Jun;15(2):83–8.

Keh D, Trips E, Marx G, Wirtz SP, Abduljawwad E, Bercker S, et al. Effect of Hydrocortisone on Development of Shock Among Patients With Severe Sepsis. JAMA. 2016 Nov 1;316(17):1775.
http://www.thebottomline.org.uk/summaries/icm/hypress/

VASOPRESSIN

Russell JA, Walley KR, Singer J, Gordon AC, Hébert PC, Cooper DJ, et al. Vasopressin versus norepinephrine infusion in patients with septic shock. N Engl J Med. 2008 Feb 28;358(9):877–87.
http://www.thebottomline.org.uk/summaries/icm/vasst/

Gordon AC, Mason AJ, Thirunavukkarasu N, Perkins GD, Cecconi M, Cepkova M, et al. Effect of Early Vasopressin vs Norepinephrine on Kidney Failure in Patients With Septic Shock. JAMA. 2016 Aug 2;316(5):509.
http://www.thebottomline.org.uk/summaries/icm/vanish/

http://lifeinthefastlane.com/ccc/vasopressin/

LEVOSIMENDAN

Gordon AC, Perkins GD, Singer M, McAuley DF, Orme RML, Santhakumaran S, et al. Levosimendan for the Prevention of Acute Organ Dysfunction in Sepsis. N Engl J Med. 2016 Oct 5;:NEJMoa1609409.

http://www.thebottomline.org.uk/summaries/icm/leopards/

HAEMODYNAMICS IN SEPSIS

Surviving Sepsis Recommendations: Hemodynamic Support and Adjunctive Therapy
http://www.survivingsepsis.org/Guidelines/Documents/Hemodynamic%20Support%20Table.pdf