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The golden hours of septic shock?

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Jeremy Bewley,[Aff1]

Aff1 Bristol Royal Infirmary, UK

Keywords

Sepsis, septic shock, resuscitation, treatment, mortality, outcome

Context

Goal directed haemodynamic optimisation has been demonstrated to increase mortality when initiated on the intensive care unit (ICU). This study is original as it recruits patients particularly early, in the hospital emergency department before admission to the ICU. Secondly it uses central venous saturation as the resuscitation end point.

Significant findings

A reduced hospital mortality was found in the treatment of severe sepsis, from 46.5% with standard treatment to 30.5% with early goal directed therapy. The proposed reason for this was a significantly higher mean central venous saturation (77% vs 66%). This was achieved through increased use of fluids (5 litres vs 3.5 litres), blood (64% vs 19%), and dobutamine (14% vs 1%) during the first 6 hours of care in the emergency department.

Comments

This is a well-designed randomised study that addresses the important question of resuscitation of patients with septic shock. It is not easy to blind clinicians in such a study so bias is possible, especially as many of the patients in the treatment arm spent longer in the emergency department and received blood transfusions. This study demonstrates that increased administration of fluids and more controversially blood can reduce mortality when administered early. Dobutamine was only administered to a relatively small number of patients whilst there was no difference in the use of other vasopressors.

The value of central venous saturation monitoring could be debated as a target central venous pressure (CVP) of 12 - 16 mmHg may have achieved the same results. Despite this the study demonstrates that early aggressive resuscitation is successful in reducing mortality and can be undertaken with the use of simple resuscitation end points. Studies of longer duration and using other centres would be valuable for confirming this benefit.

Methods

263 patients with severe sepsis who were either in a state of shock or had a lactate >4mmol/L were randomised between an initial 6 hours of either early goal directed therapy or standard therapy. Both groups were managed with arterial and central venous monitoring. The goal directed group had a target central venous saturation of >70% in addition to the standard targets of central venous pressure (CVP) 8-12 mmHg, mean arterial pressure 65-90mmHg, and urine output >0.5ml/Kg/min.

Additional information

Accompanying editorial:

Evans T: **Hemodynamic and Metabolic Therapy in Critically Ill Patients,**

N Engl J Med 2001, **345**:1417-1418.

References

1. Rivers E, Nguyen B, Havstad S, Ressler J, Muzzin A, Knoblich B, Peterson E, Tomlanovich M.: Early goal directed therapy in the treatment of severe sepsis and septic shock. N Engl J Med. 2001, 345: 1368-1377.