

New findings on resuscitating patients with septic shock



Among patients with septic shock, a resuscitation strategy targeting normalisation of capillary refill time, compared with a strategy targeting serum lactate levels, did not reduce all-cause 28-day mortality. These findings from the ANDROMEDA-SHOCK randomised clinical trial do not support the use of a peripheral perfusion-targeted resuscitation strategy in this patient population.

Early resuscitation is crucial to limiting progression to multiple organ dysfunction and death in patients with septic shock. Shock is characterised by increased serum lactate levels and signs of tissue hypoperfusion including abnormal peripheral perfusion.

Based on observational studies, persistent abnormal peripheral perfusion after resuscitation is associated with organ failure and mortality. Capillary refill time (CRT) is an easy-to-use, resource-independent method to assess peripheral perfusion. CRT has been shown to rapidly respond to resuscitation, and its assessment might be effectively used to allow adjustments of therapy.

The ANDROMEDA-SHOCK trial was conducted at 28 intensive care units in five countries to compare peripheral perfusion-targeted resuscitation to lactate level-targeted resuscitation in patients with early septic shock, hypothesising that resuscitation guided by peripheral perfusion would be associated with improved outcomes. Patients ($n = 424$) were randomised to a step-by-step resuscitation protocol aimed at either normalising CRT ($n = 212$) or normalising or decreasing lactate levels at rates greater than 20% per 2 hours ($n = 212$), during an 8-hour intervention period.

The study's primary outcome was all-cause mortality at 28 days. Secondary outcomes were organ dysfunction at 72 hours after randomisation, as assessed by Sequential Organ Failure Assessment (SOFA) score (range, 0 [best] to 24 [worst]); death within 90 days; mechanical ventilation-, renal replacement therapy-, and vasopressor-free days within 28 days; ICU and hospital length of stay.

Among 424 patients randomised (mean age, 63 years; 226 [53%] women), 416 (98%) completed the trial. By day 28, 74 patients (34.9%) in the peripheral perfusion group and 92 patients (43.4%) in the lactate group had died (hazard ratio, 0.75 [95% CI, 0.55 to 1.02]; $P = .06$; risk difference, -8.5% [95% CI, -18.2% to 1.2%]). Peripheral perfusion-targeted resuscitation was associated with less organ dysfunction at 72 hours (mean SOFA score, 5.6 [SD, 4.3] vs. 6.6 [SD, 4.7]; mean difference, -1.00 [95% CI, -1.97 to -0.02]; $P = .045$). There were no significant differences in the other six secondary outcomes. No protocol-related serious adverse reactions were confirmed.

Recent guidelines recommend increasing mean arterial pressure (MAP) to levels of 80 to 85 mm Hg in patients with chronic hypertension. This recommendation was operationalised in the vasopressor test when CRT or lactate targets were not reached. The increase in MAP resulted in the achievement of the respective resuscitation targets in about 40% of patients in both study groups. These results could provide a basis for further exploring the use of higher MAP targets in patients with septic shock and a history of chronic hypertension.

It must be noted that the use of CRT in clinical practice is not devoid of problems. CRT is dependent on age, sex, ambient temperature and light, and pressure applied during the manoeuvre — all factors that might influence results. Although no relationship between CRT and hypovolaemia was found in older studies, more recent studies performed in critically ill patients, including those with septic shock, have shown clinically relevant associations with outcome.

Source: [JAMA](#)

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