

LIVES 2017: Perioperative management of high-risk patients



The Intraoperative Norepinephrine to Control Arterial Pressure (INPRESS) study – a multicentre, randomised clinical trial – finds that, among patients undergoing abdominal surgery, an individualised blood pressure management strategy during surgery tailored to individual patient physiology may improve postoperative outcomes. The findings published in JAMA add to the evidence of benefits of personalising care, especially in high-risk surgical patients.

Despite advancements in treating disease, many patients undergoing surgery still die or experience severe perioperative complications. Haemodynamic instability is common during surgery. There is accumulating evidence that intraoperative hypotension is associated with injury to heart, kidney, and brain and an increased likelihood of mortality in high-risk patients. However, intraoperative hypotension is a preventable risk factor as arterial pressure is modifiable using intravenous fluids and/or vasopressors.

There is no consensus regarding optimal blood pressure target thresholds to support perfusion of critical organs during surgery. The INPRESS trial, conducted by Emmanuel Futier, MD, PhD, Département de Médecine Périopératoire, Université Clermont Auvergne, Clermont-Ferrand, France, and colleagues, sought to determine whether a strategy of targeting individualised systolic blood pressure (SBP), tailored to the patient's usual value, would reduce organ dysfunction as compared with standard practice. In this randomised trial conducted in 9 French university and nonuniversity hospitals, adult patients (n = 298) at increased risk of postoperative complications who were undergoing major surgery (predominantly abdominal operations) under general anaesthesia were randomly assigned to receive an individualised management strategy aimed at achieving an SBP within 10% of the reference value (i.e., the patient's resting SBP) or a standard management strategy of treating SBP values less than 80 mm Hg or lower than 40% from the reference value during and for 4 hours following surgery.

The primary outcome event, a composite of systemic inflammatory response syndrome and dysfunction of at least 1 organ system of the renal, respiratory, cardiovascular, coagulation, and neurologic systems by day 7 after surgery, occurred in 56 of 147 patients (38.1%) assigned to the individualised treatment strategy vs. 75 of 145 patients (51.7%) assigned to the standard treatment strategy (relative risk, 0.73; 95% CI, 0.56-0.94). In addition, at 30 days, the cumulative probability of postoperative organ dysfunction was lower in the individualised treatment group than in the standard treatment group (68 patients [46.3%] vs. 92 patients [63.4%], respectively; adjusted hazard ratio, 0.66; 95% CI, 0.52-0.84), although there was no significant difference in all-cause mortality.

"Patients assigned to individualised treatment had significantly lower rates of clinically important outcomes, notably a lower risk for renal dysfunction and a lower risk for altered consciousness, than patients in the standard treatment group. There were no significant between-group differences for the other individual components of the composite primary outcome," the research team noted.

In an accompanying editorial, Solomon Aronson, MD, MBA (Duke University School of Medicine, Durham, NC) and Monty G. Mythen, MBBS, MD, FRCA, FFICM (University College London Hospitals National Institute for Health Research Biomedical Research Centre, London, UK) say "this well-done trial" by Futier et al. represents an important first step toward an elusive and heretofore scarcely ventured attempt to understand a best-practice perioperative medicine management pathway.

"The pathway to improved outcomes will no doubt be long and confounded by many circumstances, but it will be well worth the effort. The INPRESS trial not only provides a view of the important domain of perioperative randomised clinical trial design for conventional treatment of common conditions but also offers a glimpse of what may lie beyond when attention is focused on the clinical science of perioperative medicine. The study gives new meaning to the advice to 'avoid hypoxia and hypotension,'" Drs. Aronson and Mythen write.

Source: JAMA
Image Credit: ESICM

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