Single transpulmonary thermodilution during anesthesia in off-pump coronary artery bypass grafting
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Aim: To evaluate hemodynamic effects of midazolam, propofol, and isoflurane anesthesia by means of transpulmonary single thermodilution (STD) in patients subjected to off-pump coronary artery bypass grafting (OPCAB).
Methods: Twenty-two patients undergoing OPCAB were randomized to three groups receiving midazolam, propofol or isoflurane. During anesthesia, all patients received fentanyl and pipecuronium. After catheterization of the femoral artery, cardiac index (CI), cardiac function index (CFI), stroke volume index (SVI), stroke volume variations (SVV), global ejection fraction (GEF), left ventricular contractility index (dPmax), systemic vascular resistance index (SVRI), and other hemodynamic parameters were assessed by STD and pulse contour analysis (PiCCOplus, Pulsion Medical Systems). The measurements were performed after induction of anesthesia, during surgery, and at 2, 4, and 6 h postoperatively. The data were assessed using ANOVA followed by Scheffe’s test or test of contrasts when appropriate.
Results: After revascularization, CI, CFI, and SVV increased in all groups in concert with a decline in SVRI ($P < 0.05$). In the midazolam group, SVI and GEF decreased perioperatively by 20–30% ($P < 0.05$). During surgery, propofol reduced GEF and dPmax by 10–15% ($P < 0.05$). These changes did not occur during isoflurane anesthesia.
Conclusions: In OPCAB, isoflurane provides better myocardial performance in comparison with midazolam and propofol, as evaluated by hemodynamic and volumetric data obtained with STD.