

Transesophageal echocardiography is equal to pulmonary artery catheterization for trauma and critical care resuscitation

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Purpose:

Pulmonary artery catheter (PAC) use in critically ill populations is being increasingly questioned, with conflicting reports on reliability. A hemodynamic transesophageal echocardiography (hTEE) probe was used to validate its use in resuscitating critically ill trauma patients compared to PAC.

Methods:

In a prospective case-series of critically ill trauma patients with PACs, 29 patients received an hTEE probe. Each patient was evaluated with respect to optimal preload (pulmonary arterial occlusion pressure [PaoP] 18-24mm, left ventricular end-diastolic area [LVEDA] 10-12cm²), then with respect to optimal contractility (cardiac index [CI] 2.6, fractional area change [FAC] 40%). Data obtained simultaneously from both modalities was interpreted and compared; treatment was then rendered according to protocol.

Results:

In 20 patients, the hTEE supported PAC data in the treatment needed, demonstrating moderate agreement

($\kappa = 0.54$). In 9 patients, the hTEE and PAC data were not synchronous: in 6 of these patients, hTEE favored volume resuscitation, and in the remaining 3 patients PAC favored volume resuscitation. Of these 9 patients, clinical therapy was guided by hTEE in 7, with one mortality and resolution of the clinical picture in the remaining six. In 2 patients, clinical therapy was guided by the PAC, with one mortality and resolution of the clinical picture in the other patient. In 23 patients, data from the hTEE changed management of the patient, 7 of which differed from the recommended PAC treatment. In 3 patients where PAC indicated no change in therapy, the hTEE suggested volume resuscitation.

Conclusion:

In trauma patients there is moderate agreement between hTEE and PAC in the ability to diagnose predominant shock etiology and direct therapy, and can help validate PAC data. Further research is warranted to determine if hTEE is a better means of detecting preload problems than PAC.