

Clinical relevance of invasive hemodynamic monitoring in patient with circulatory shock

Authors:

L De Michieli¹, D Scarpa¹, L Cacciavillani¹, L Babuin¹, ¹University of Padova, Cardiac, Thoracic and Vascular Sciences - Padua - Italy,

Topic(s):

Acute Heart Failure - Clinical

Citation:

Famale, 78 years old. Cardiovascular risk factors: arterial hypertension, obesity. In 2014, for chest pain with abnormal EKG, a coronary angiography was performed and a subcritical stenosis of left descending was found. Evidence-based medical therapy was started and no new episodes of chest pain were reported during clinical follow-up.

In August 2018 she had a new episode of chest pain and was admitted to Emergency Department. ECG showed an abnormal repolarization and cardiac troponin was elevated. Echocardiograms showed a severe left ventricle (LV) ejection fraction reduction and regional wall abnormalities. A diagnosis of acute coronary syndrome was made and an urgent coronary angiography was performed, but no additional stenosis was found compared to previous coronary angiography. Left ventricle angiography showed an apical ballooning. Haemodynamic condition deteriorated. She needed endotracheal intubation and inotropic support with dobutamine and noradrenaline. A diagnosis of Takotsubo syndrome complicated by cardiogenic shock was made and the patient was transferred in our III level centre for a Mechanical Circulatory Support (MCS).

When she arrived, she showed severe hypotension, oliguria, elevated blood lactate and mild increased of subpyretic (37.5°C). She was transiently responder to a fluid challenge, but haemodynamic profile deteriorated again after a sudden onset of high ventricular response atrial fibrillation. Ineffective electrical cardioversion was performed. The Heart Team decided to repeat left and right heart catheterizations before MCS implantation.

Right heart catheterization showed normal pulmonary arterial pressure, wedge pressure was 10 mmHg, mixed venous oxygen saturation was 70%, cardiac index (calculated by Fick method) was 2.6 l/min/mq and systemic vascular resistance was 9.6 Wood. Angiography showed LV mildly dysfunction and no longer an apical ballooning. These findings were interpreted as compatible with mixed shock: primarily a distributive shock with associated cardiogenic shock. For this reason, MCS was not implanted.

For five days patient remain pyretic (max 38°C), hypotensive and anuric (Continuous Renal Replacement Therapy -CRRT- was performed), despite volume status optimized and vasopressor support. Elevated blood PCT levels was found. Chest X-ray showed right inferior lobe pneumonia. At the beginning antibiotic therapy with Daptomicin and Meropenem was started and, following urinary and sputum cultures (positive K. Pneumonia and S. Aureus respectively), Clindamycin was added.

Then, slowly, spontaneous urine output restarted, haemodynamic conditions improved and the patient became afebrile. The vasopressor support was progressively reduced and stopped as well as CRRT.

Conclusion: Diagnosis of mixed circulatory shock (distributive and cardiogenic) is challenging and right heart catheterization is a fundamental tool in order to perform the right diagnosis and treat patient consistently.