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# Additional value of echocardiography in critical patient: a quick and effective tool to improve diagnosis and treatment

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A 72 year-old woman with Hashimoto thyroiditis in replacement therapy and no known CV risk factors was admitted to the emergency department because of worsening asthenia, nausea, vomiting and fever unresponsive to antibiotic therapy. Two weeks before the admission, she had a syncopal episode preceded by intense chest pain for which she hadn't seek medical help.

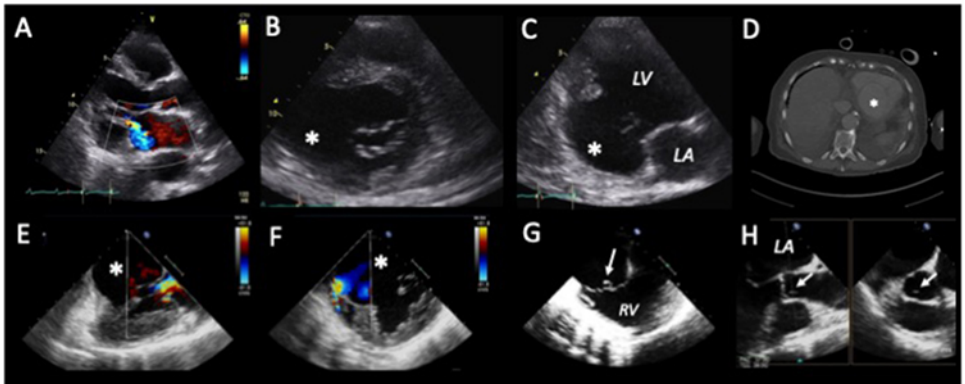
At admission, the patient was unconscious and hemodynamically unstable with signs of shock (BP 80/50 mmHg, HR 120 bpm, lactate 6.11 mmol/L). She was promptly intubated and mechanically ventilated, and fluids and vasopressor treatment was administered. Lab tests showed moderate anaemia (haemoglobin 8.3 mg/dl), mild neutrophilia, elevated inflammatory markers (C-reactive protein 87 mg/dl) and troponin I (679 ng/L). An ECG showed sinus tachycardia and inferior Q waves.

A thoraco-abdominal CT excluded pulmonary embolism and showed a suspect acute cholecystitis, suggesting a septic shock. However, a focused transthoracic echocardiogram in the emergency room showed a dilated and non-collapsing inferior vena cava, a severe mitral regurgitation and a very large rounded structure suggestive of left ventricle (LV) aneurysm/pseudoaneurysm, but it was inconclusive due to the poor acoustic window of the patient. The review of CT images also did not allow to make a clear diagnosis of LV aneurysm vs pseudoaneurysm. The patient was transferred in the ICU for further investigation; inotropes, vasopressors, blood transfusion and antibiotics were administered.

A complete transthoracic echocardiogram (TTE) was performed to clarify the diagnosis between septic and cardiogenic shock. TTE revealed a large aneurysm (55x40 mm) of the inferior interventricular septum and inferior basal and mid LV segments, with a ventricular septal defect (VSD) with left-right shunt, a severe ischaemic mitral regurgitation and a severely dilated and dysfunctional right ventricle. Due to the suboptimal quality of TTE, an urgent transoesophageal examination (TEE) was done which revealed mobile masses attached on the tricuspid and the aortic valves suggestive of vegetations and confirmed the VSD at the level of a large inferoseptal LV aneurysm and severe ischaemic mitral regurgitation with no signs of papillary muscle or chordal rupture (Figure). Coronary angiography was performed, showing proximal occlusion of right coronary artery (likely embolic) with initial collateral circulation. Blood cultures were positive. The patient underwent cardiac surgery, which confirmed the diagnosis of endocarditis associated with VSD and LV aneurysm. The postoperative course was complicated by multiple organ dysfunction syndrome and death after 19 days of intensive care.

**Learning point:** in challenging cases with unclear diagnosis of septic versus cardiogenic shock, both TTE and TOE play a pivotal role showing a series of findings that can help clarifying the diagnosis and guide patient treatment in emergency settings.

Abstract P1257 Figure




(A) Severe mitral regurgitation by transthoracic focus echocardiography; (B and C) Large cavity at the left ventricular infero-septal wall communicating with the ventricular cavity, suggestive of aneurysm/pseudoaneurysm (*); (D) CT showing a large rounded cavity at the interventricular septal level; (E) transgastric view showing the large aneurysm of inferior LV wall and severe ischemic mitral regurgitation; (F) transgastric view showing the interventricular septal defect with left-to-right shunt; (G) and (H) mobile masses attached to tricuspid and aortic valve suggestive of vegetations (arrows). Abbreviations: LA, left atrium; LV, left ventricle; RV, right ventricle.