Mixed shock; with an unusual hole-in-the-wall
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Introduction
• The most frequent form of shock noted in the Emergency Department (ED) is septic shock.
• Management includes aggressive fluid resuscitation and potentially vasoactive substances.
• When a cardiogenic component of shock exist management can be more challenging.

Case Presentation
• A 60-year-old male with a history of substance use, coronary artery disease, complete heart block s/p SJM dual pacemaker 2016, aortic valve stenosis s/p AVR in 2014 who presented to the ED with 2 weeks symptoms of recurrent chest pain, confusion, and decreased activity.
• Admitted for concerns of sepsis as he quickly deteriorated hemodynamically. Patient lactic acid elevated to 5.1 and was given 3L of ringer’s lactate and started on broad-spectrum antibiotics. Within hours of admission, the patient became tachypneic, tachycardic, diaphoretic, and acrocyanotic, and was intubated after failing noninvasive forms of ventilation. Chest X-ray showed signs of volume overload. He was transferred to the CCU for concerning of a cardiogenic shock component.
• He was hypotensive with systolic blood pressure in the 80s with elevated high sensitivity troponins, lactic acid 7.8, AST/ALT > 2000. He was started on norepinephrine and placed on diuretics. Heparin drip for concern for acute coronary thrombus as bedside echocardiogram which was notable for regional wall abnormalities and hypodynamic LV.
• Right heart catheterization was placed with a cardiac index of 2.2, SvO2 55, CVP 13, Wedge 32, and SVR 972.
• Left heart catheterization: demonstrated nonobstructive LAD disease.
• Formal Echocardiogram: Newly reduced LV EF 30-34% with apical akinesis and possible atypical annular calcification versus thrombus in the left atrium.
• Initial blood cultures grew streptococcus angiosus (strept milleri group) bacteremia
• TEE showed; bioprosthetic valve dehiscence, aortic root echolucency, 1.3 x 1.4 cm large echo density attached to the bioprosthetic valve, and a subvalvular aneurysm protruding from the LVOT into the right atrium, just above the septal tricuspid valve leaflet. Suspected to be perforated with a systolic jet from the LVOT into the RA( Gerbode Defect).

Management plan:
• Cardiothoracic surgery performed urgent redo AVR, patch repair of fistula from LVOT to RA, debridement of aortic root abscess with aortic root replacement, patch repair of the ventricular septal defect, tricuspid valve repair, and placed on venoarterial extracorporeal membrane oxygenation (ECMO).
• While the patient was placed on ECMO, he, unfortunately, developed multiple septic emboli causing right thalamic and right cerebellar infarcts.
• Family ultimately wished to have patient be made comfort measures only.

Discussion
This case demonstrates a challenging case of mixed septic and cardiogenic shock. Managed early on as purely septic shock, it became quickly evident of a possible cardiogenic component. The cardiogenic component is likely multifactorial in the setting of acquired LVOT-atrial Gerbode defect, valvular defect, and possible sepsis induced Takusobo cardiomyopathy. Despite early recognition that this was not a simple case of septic shock; early surgical intervention, aggressive pharmacological and mechanical support was not enough to prevent morbidity and mortality in this patient.

References: