Cardiac tamponade secondary to purulent pericarditis with MRSA

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Introduction

Methicillin resistant Staphylococcus aureus (MRSA) is a nosocomial pathogen that causes severe morbidity and mortality worldwide. MRSA pericarditis is a rare life-threatening condition that can cause purulent pericarditis with only 7 cases having been reported so far. Several reasons why a patient may develop MRSA pericarditis are healthcare-associated infection, weakened immune system, invasive procedures and spread from other infections. Although not typically associated with tamponade, if MRSA were to cause an infection in the pericardial space, it could potentially lead to inflammation and fluid accumulation, resulting in tamponade. We present a case of a woman that developed tamponade secondary to pericardial effusion from MRSA.

Case report

A 61-year-old lady with known history of hypertension, previous cerebral vascular accident, chronic atrial fibrillation on apixaban, end stage renal disease on hemodialysis and major depression presented to the emergency department from the dialysis center with dyspnea and was found to have continuously low blood pressure readings despite isotonic fluid administration. She stated that she is not symptomatic and usually has hypertension. Vitals on initial presentation revealed a temperature of 36.2 C (97.1 F), blood pressure of 99/57, pulse 110, respiratory rate of 22, and BMI of 29.96. Physical examination was significant for jugular venous distension up to 10cm, bibasilar pulmonary crackles, intact right arm arteriovenous access palpable thrill with no discharge or overlying erythema, and no evidence of skin or soft tissue infections. Complete blood count was remarkable for leukocyte count of 11,370, hemoglobin of 11.0g/dl, hematocrit of 31.7%, platelets of 51,000. Complete metabolic profile showed a sodium of 137mmol/L potassium of 4.3, chloride 103, bicarbonate of 27.6, magnesium 2, calcium 8.7 BUN 13, and creatinine of 3.5, AST 20, ALT 15, total protein 5.3, albumin of 1.6. The patient was admitted for multifactorial shock and transferred to the ICU for pressor support. Echocardiogram on admission revealed a hyperdynamic left ventricle with LVEF of >65%, significant basal septal hypertrophy with peak gradient of 62 mg consistent with hypertrophy obstructive cardiomyopathy consistent with hypertrophic obstructive cardiomyopathy, moderate dilation of both atria, trace of aortic regurgitation and mitral regurgitation. There was moderate pericardial effusion and pericarditis with no tamponade. She was treated with broad spectrum antibiotic coverage and dialyzed maintaining an euvolemic status under close observation. Her blood pressure normalized and there was clinical improvement. Upon resolution of congestive symptoms and clinical stability, the decision to discharge was made. Unexpectedly she suddenly developed hypotension again during dialysis. Immediate labs, ecg, and echocardiogram showed cardiac tamponade secondary to a large pericardial effusion for which emergent pericardiocentesis was done and the culture of the pericardial fluid

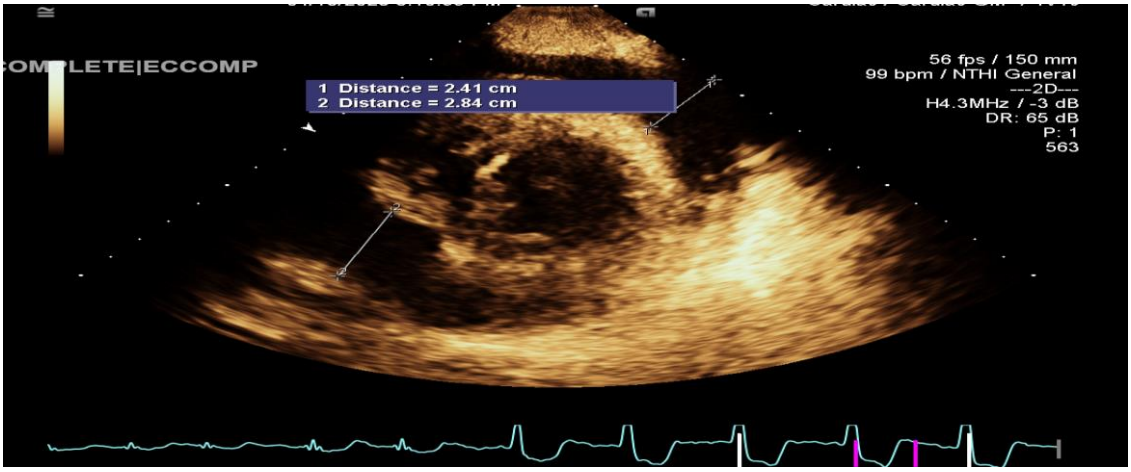
grew Methicillin Resistant Staphylococcus aureus. She subsequently became hypotensive and then developed pulseless electrical activity and despite resuscitation attempts, she passed away.

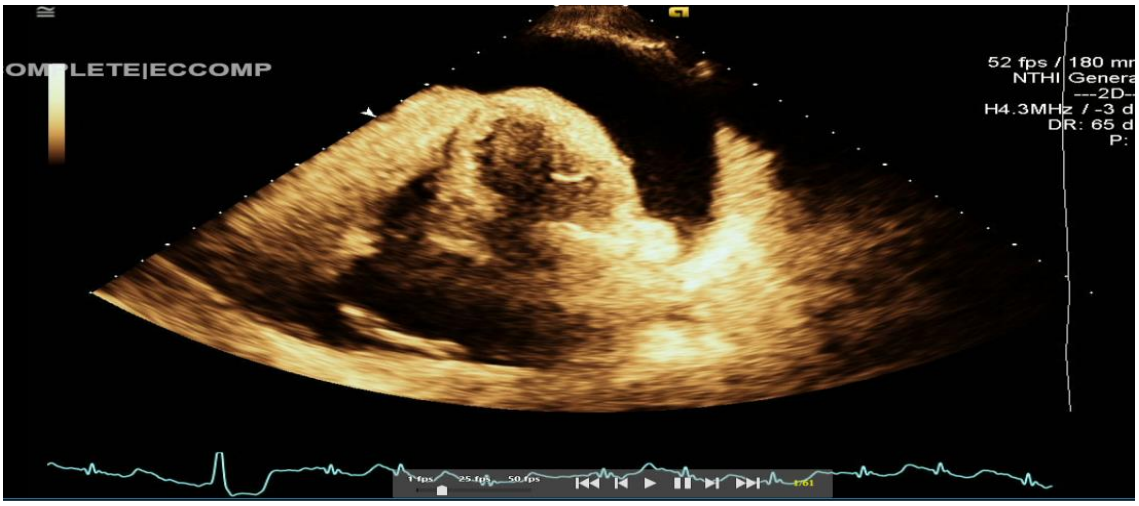
Conclusion:

MRSA infections can start in other parts of the body, such as the skin, lungs, or bloodstream, and spread to the pericardium, causing MRSA pericarditis. Early diagnosis and treatment of purulent pericarditis from MRSA with source control is critical because of the downstream complications of cardiac tamponade, septic shock, pericardial abscess formation, and constrictive pericarditis. It is worth noting that purulent pericarditis due to MRSA is extremely rare, especially in the absence of prior surgical interventions and data shows that there is a 100% mortality related to the condition. If a patient has risk factors for MRSA infection or a known MRSA infection in another part of the body, healthcare professionals must consider MRSA pericarditis as a possible cause of pericarditis.

https://www.jacc.org/doi/epdf/10.1016/S0735-1097%2823%2903732-4

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6704044/

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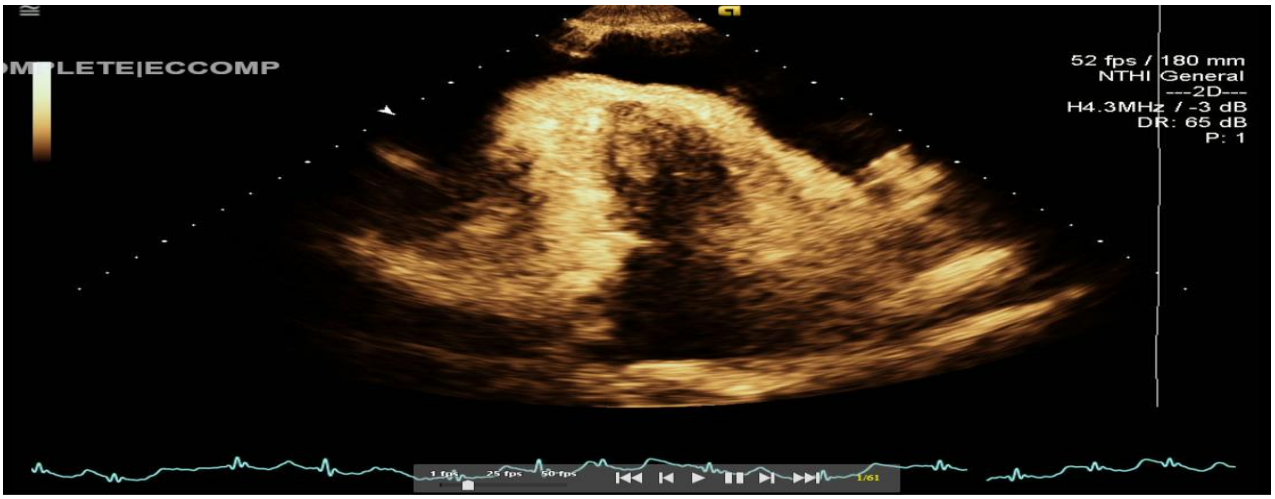
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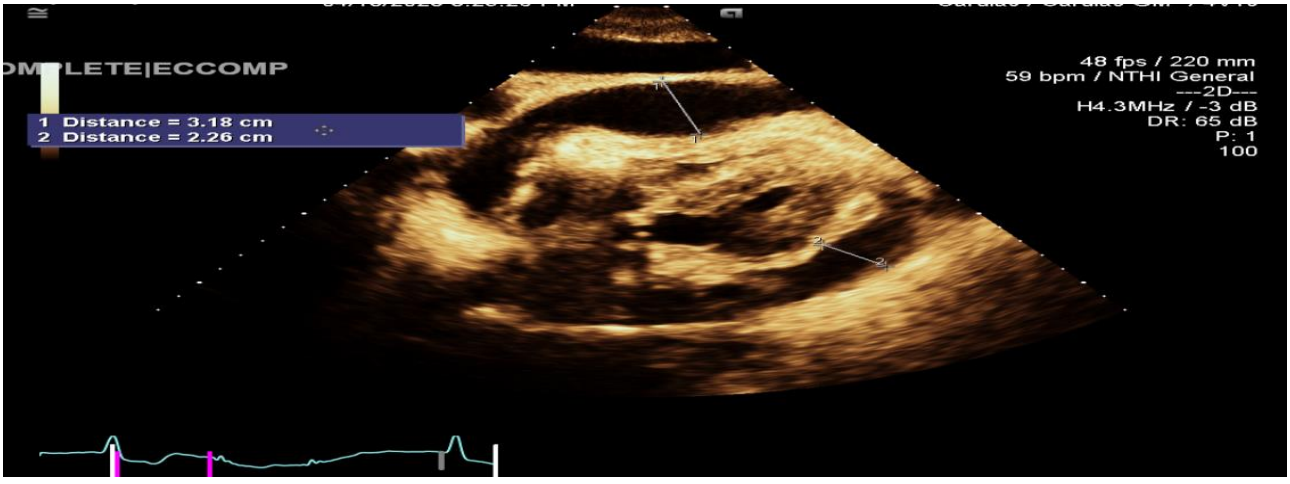
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P: 1
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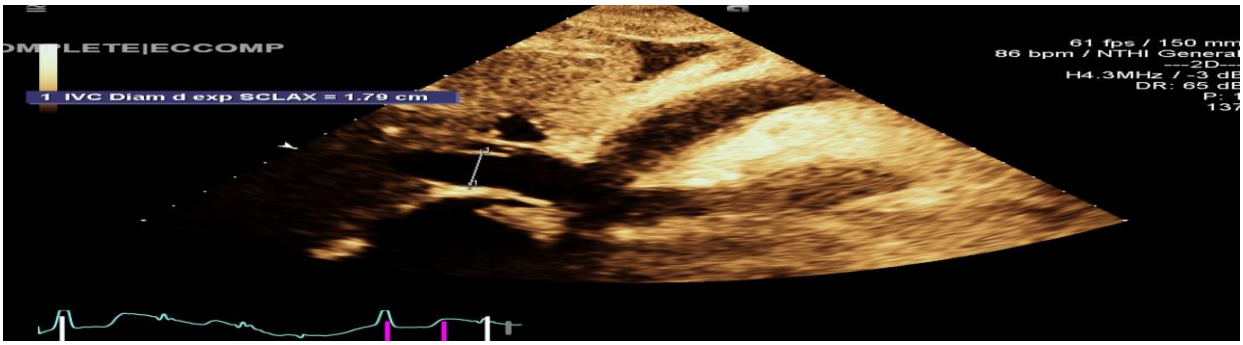
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H4.3MHz / -3 dB
DR: 65 dB