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## MSSA Pericarditis in a Patient with Systemic Lupus Erythematosus Flare

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### *Abstract*

Bacterial pericarditis is a rare yet fatal form of pericarditis. With the introduction of antibiotics, incidence of bacterial pericarditis has declined to 1 in 18,000 hospitalized patients. In this report, we present a rare case of MSSA pericarditis in a patient that presented with systemic lupus erythematosus flare, which required treatment with antibiotics and source control with pericardial window and drain placement.

### *Abbreviations*

ANA: Anti-nuclear Antibody  
Anti-dsDNA: Anti double stranded DNA  
IV: intravenous  
MSSA: Methicillin-sensitive staphylococcus aureus  
SLE: systemic lupus erythematosus  
TTE: Transthoracic Echocardiogram

### *Case Presentation*

#### **History of Present Illness**

31-year-old female with history of SLE, hypertension and type 1 diabetes mellitus presented with several days of pleuritic chest pain.

#### **Physical Examination**

Vitals were notable for blood pressure 204/130. She had normal S1/S2 without murmurs and had trace bilateral lower extremity edema.

#### **Laboratory and radiology**

Admission labs were notable for creatinine of 1.8, low C3 and C4 levels, elevated anti-smith, anti-ds DNA and ANA titers. ESR was elevated at 62. Troponin was normal on 3 separate samples 6 hours apart. CT Angiography of the chest showed moderate pericardial effusion (Figure 1).



Figure 1. CT Angiography of the chest on admission with moderate pericardial effusion (arrows).

Transthoracic echocardiography (TTE) showed a moderate effusion, but no tamponade physiology.

### Hospital Course

Given the ongoing lupus flare, pleuritic chest pain, elevated ESR, normal troponin and pericardial effusion, the patient's chest pain was thought to be caused by acute pericarditis secondary to SLE flare. The patient was treated with anti-hypertensives, though her creatinine worsened, which prompted a kidney biopsy, that showed signs of lupus nephritis. The patient was treated with methylprednisolone pulse 0.5 mg/kg for three days, then prednisone taper. Her home hydroxychloroquine regimen was resumed. The patient became febrile on hospital day 15 and blood cultures were obtained. These later revealed MSSA bacteremia, which is thought to be secondary to thrombophlebitis from an infected peripheral IV line in her left antecubital fossa. On hospital day 16, the patient complained of worsening chest pain and had an elevated troponin of 2, but no signs of ischemia on EKG. Repeat echo was performed, which showed increase in size of the pericardial effusion and right ventricular collapse during diastole, concerning for impending tamponade (Figure 2).



Figure 2. Transthoracic echocardiography showing a pericardial effusion (yellow arrow) with RV collapse during diastole (red arrow), concerning for impending cardiac tamponade.

The patient remained hemodynamically stable. Pericardial window was performed. 500 cc of purulent fluid was drained, and a pericardial drain was placed. Intra-operative fluid culture grew MSSA. The drain was left in place for 13 days. The patient was treated with a 4-week course of oxacillin. Blood cultures obtained on hospital day 28 were negative. A repeat echo was normal. The patient was discharged without further complications.

### Discussion

Bacterial pericarditis is a rare, but fatal infection, with 100% mortality in untreated patients (1). After the introduction of antibiotics, the incidence of bacterial pericarditis declined to 1 in 18,000 hospitalized patients, from 1 in 254 (2). The most implicated organisms are *Staphylococcus*, *Streptococcus*, *Haemophilus* and *M. tuberculosis* (3). Historically, pneumonia was the most common underlying infection leading to purulent pericarditis, especially in the pre-antibiotic era (2). Since the widespread use of antibiotics, purulent pericarditis has been linked to bacteremia, thoracic surgery, immunosuppression, and malignancy (3).

Acute pericarditis is a common complication in SLE with incidence of 11-54% (4), though few cases of bacterial pericarditis were reported in SLE patients. The organisms in these cases were staphylococcus aureus, Neisseria gonorrhoea and mycobacterium tuberculosis (5). Despite these reports, acute pericarditis secondary to immune complex mediated inflammatory process remains a much more common cause of pericarditis than bacterial pericarditis in SLE (6). There's minimal data to determine whether the incidence of bacterial pericarditis in patients with SLE is increased compared to the general population; however, there is a hypothetically increased risk for purulent pericarditis in SLE given the requirement for immunosuppression. Disease activity is yet another risk factor for bacterial infections in SLE, which is thought to be a sequelae of treatment with high doses of steroids (7). In this case, the patient had an SLE flare on presentation with SLEDAI-2K score of 13. Both immunosuppression and bacteremia may have precipitated this patient's infection with bacterial pericarditis.

Diagnosis of bacterial pericarditis requires high index of suspicion, as other etiologies of pericarditis are far more common. In this case, we initially attributed the patient's pericarditis to her SLE flare. The patient's fever on hospital day 15 prompted the infectious work up. MSSA pericarditis was diagnosed later after the pericardial fluid culture grew MSSA. Delay in the diagnosis can be detrimental as patients may progress rapidly to cardiac tamponade.

Treatment requires surgical drainage for source control along with antibiotics (8). In our case, the patient required pericardial window and placement of a drain for 13 days. In bacterial pericarditis, the purulent fluid tends to re-accumulate; therefore, subxiphoid pericardiostomy and complete drainage is recommended (8). In some cases, intrapericardial thrombolysis therapy may be

required if adhesions develop (8). With appropriate source control and antibiotics therapy, survival rate is up to 85% (8).

### *Conclusion*

Bacterial pericarditis is a rare infection in the antibiotic era, though some patients remain at risk for acquiring it. Despite the high mortality rate, patients can have good outcomes if bacterial pericarditis is recognized early and treated.

### *References*

1. Kaye A, Peters GA, Joseph JW, Wong ML. Purulent bacterial pericarditis from *Staphylococcus aureus*. Clin Case Rep. 2019 May 28;7(7):1331-1334. [\[CrossRef\]](#) [\[PubMed\]](#)
2. Parikh SV, Memon N, Echols M, Shah J, McGuire DK, Keeley EC. Purulent pericarditis: report of 2 cases and review of the literature. Medicine (Baltimore). 2009 Jan;88(1):52-65. [\[CrossRef\]](#) [\[PubMed\]](#)
3. Kondapi D, Markabawi D, Chu A, Gambhir HS. Staphylococcal Pericarditis Causing Pericardial Tamponade and Concurrent Empyema. Case Rep Infect Dis. 2019 Jul 18;2019:3701576. [\[CrossRef\]](#) [\[PubMed\]](#)
4. Dein E, Douglas H, Petri M, Law G, Timlin H. Pericarditis in Lupus. Cureus. 2019 Mar 1;11(3):e4166. [\[CrossRef\]](#) [\[PubMed\]](#)
5. Coe MD, Hamer DH, Levy CS, Milner MR, Nam MH, Barth WF. Gonococcal pericarditis with tamponade in a patient with systemic lupus erythematosus. Arthritis Rheum. 1990 Sep;33(9):1438-41. [\[CrossRef\]](#) [\[PubMed\]](#)
6. Buppajamrntham T, Palavutitotai N, Katchamart W. Clinical manifestation, diagnosis, management, and treatment outcome of pericarditis in patients with systemic lupus erythematosus. J Med

Assoc Thai. 2014 Dec;97(12):1234-40.

[\[PubMed\]](#)

7. Nived O, Sturfelt G, Wollheim F. Systemic lupus erythematosus and infection: a controlled and prospective study including an epidemiological group. Q J Med. 1985 Jun;55(218):271-87. [\[PubMed\]](#)
8. Adler Y, Charron P, Imazio M, et al. 2015 ESC Guidelines for the diagnosis and management of pericardial diseases: The Task Force for the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology (ESC) Endorsed by: The European Association for Cardio-Thoracic Surgery (EACTS). Eur Heart J. 2015 Nov 7;36(42):2921-2964. [\[CrossRef\]](#) [\[PubMed\]](#)