Primary Sternal Osteomyelitis in a Healthy 35-Year-Old Male: A Case Report

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INTRODUCTION

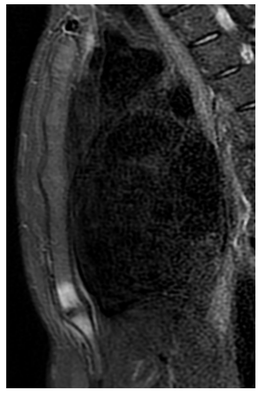
- Sternal osteomyelitis is a well known complication of cardiothoracic surgery, however, primary sternal osteomyelitis is much more rare in the literature, as low as 1-2% incidence[1] in the general population, and even less so when involving young patients without comorbidities.
- PSO is caused by seeding of bacteria through hematogenous spread
- Easily misdiagnosed due to rarity and non-specific presenting symptoms: chest pain, night sweats, fever, MSK pain.[6]
- Common risk factors for osteomyelitis include immune suppression, diabetes mellitus, and trauma/surgical intervention and IV drug abuse among others.[7]
- Treatment consists of IV antibiotics and in some cases may require surgical debridement

CASE PRESENTATION

35 year old male with no significant PMH presented to ED with complaints of chest pain, SOB that was acutely worsened the morning of presentation but had initially started about 3 weeks prior. His initial chest pain substernal pressure that was acute onset one morning and worsened throughout the day. It was positional pain initially and worse with any movement. Chest pain was accompanied by shortness of breath, subjective fever, night sweats. The pain had evolved some to include pinpoint sharp pain near the xyphoid process. He did have recent history of air travel and long rides in car on weekends prior to initial chest pain. Work up was performed outpatient with EKG, d-dimer, COVID PCR, CTA for PE. D-dimer was elevated but CTA was negative for PE but did show "tiny pleural effusions" EKG was read as normal at the time but on further review does appear to show evidence of pericarditis. He was treated for costochondritis with oral prednisone with initial resolution of symptoms and recurrence of symptoms after prednisone was completed.

On presentation to the ED the patient was diaphoretic, tachypneic and tachycardic. Initial EKG in ED was within normal limits, but subsequent EKG showed diffuse ST elevation concerning for pericarditis. Blood culture initially showed G+ cocci in clusters and eventually grew MRSA. ID and Cardiology were consulted for further management and TTE was performed as well as CT chest which which showed inflammation of the pericardium and fat stranding near the xyphoid process. MRI of the chest was ordered with focus on the sternum showing an abscess in the distal sternum. Treatment consisted of IV Vancomycin for osteomyelitis and Colchicine for pericarditis with full resolution

TREATMEANT & FOLLOW-UP



Labs	
Blood Culture x1	+MRSA
WBC	13.73 (high)
CRP	109.3 (high)
ESR	45 (high)
Lactic Acid	2.4 (high)
Ferritin	444 (high)
Coxsackie B Type 3	1:80 (High)
Coxsackie B Type 4	1:80 (High)

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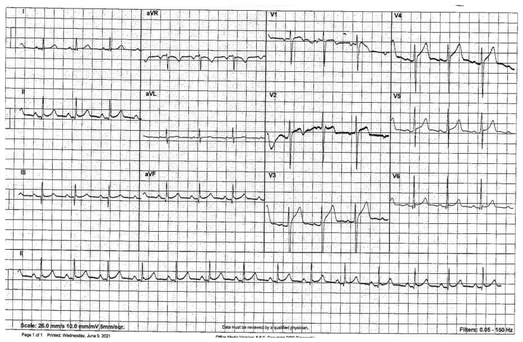

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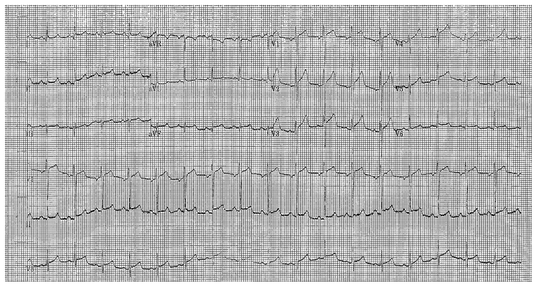

LEARNING POINTS

1. Primary sternal osteomyelitis is rare and easily missed
2. Symptoms can be very nonspecific including chest pain, musculoskeletal pain, fever, chills, night sweats, tenderness, erythema, swelling of anterior chest.
3. Plain radiography has low sensitivity and specificity for acute osteomyelitis and is not likely to show in first two weeks. CT cannot rule out.
4. MRI is gold standard for imaging due to high sensitivity for early disease.
5. Bone biopsy and culture is gold standard for diagnosis, although this is not needed with positive blood culture and Imaging studies suggestive of osteomyelitis.

DISCUSSION

Osteomyelitis can be broken down into two categories: primary and secondary. Secondary can occur through trauma and surgery. Primary occurs by seeding of a site from hematogenous spread as happened with this patient.[3] The most common pathogen is S. Aureus.[2] The patient initially presented to outpatient office due to chest pain which, in retrospect, was pericarditis that went undiagnosed at the time and the was treated with two weeks of prednisone. It is believed that treatment with steroids, while it provided temporary symptom relief, allowed pericarditis to recur and further placed the patient in an immunocompromised state. At this point bacteria was likely introduced through a cut in the skin and eventually seeded to the sternum due adjacent pericardial inflammation.

Diagnosis of primary osteomyelitis can be difficult and is based on clinical suspicion, labs, imaging, and sometimes bone biopsy. Lab abnormalities such as elevated CRP, ESR, and WBC can be useful in combination with clinical presentation of new or worsening musculoskeletal pain.[6] About 25-50% of patients with hematogenous spread will also have positive blood cultures. Plain radiography has low sensitivity and specificity for acute osteomyelitis, CT is less expensive than MRI but cannot rule out osteomyelitis, and MRI is the Gold standard for imaging due better visualization of affected bone and differentiation of surrounding soft tissue. It also has high sensitivity for detecting early osteomyelitis.[5] Gold standard for diagnosis is bone biopsy and culture although this is not needed with positive blood culture and Imaging studies suggestive of osteomyelitis.[4]

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ASCENSION