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A Case of Prosthetic Valve Endocarditis (PVE) Caused by Methicillin Resistant Coagulase Negative Staphylococci (MR-Cons) With Atypical Presentation

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Abstract

Infective endocarditis (IE) is associated with high morbidity and mortality rate of 8-40%[1]. IE can manifest with various presentations which may or may not be typical and classical symptoms. Early detection and high suspicion are key to early intervention and may significantly improves patient's prognosis. We presented a case of 37-year-old male who presented with swelling and pain over sternotomy scar for 2 days. On presentation, she was conscious but with signs of septic shock requiring inotropic support and broad-spectrum intravenous antibiotics. Initial echocardiography (ECHO) showed no vegetation. Ultrasound anterior chest wall showed sternal hypoechoic collection with suspicious of intrathoracic extension. Contrast enhanced computed tomography (CECT) thorax confirmed subcutaneous hypodense collection at the mid sternal region but no CT evidence of intrathoracic extensions. Subsequently incision and drainage (I&D) were done and noted hemopurulent pus. First blood culture taken upon admission reported as methicillin resistant coagulase negative staphylococci (MR-CoNS), however it was not treated initially due to doubtful significance and possible contamination from skin flora in addition to having an obvious source of sepsis over anterior chest wall. Pus culture taken during I&D showed no growth but patient remained febrile and subsequent 2 sets of repeated blood culture showed MR-CoNS. A repeated ECHO was done and noted a vegetation of 0.5cm over aortic valve. Patient was treated for PVE caused by MR-CoNS with IV vancomycin, Rifampicin and Gentamicin. She had good recovery with no signs of heart failure or significant impairment of quality of life.

Introduction

Infective endocarditis (IE) is a life-threatening infection of the heart's chamber and valves. It has high disease burden globally of approximately 1.5-11.6 cases per 100000 person a year and it is still on the rise for the past few decades.[2] IE can be broadly divided into native valve endocarditis (NVE) and prosthetic valve endocarditis (PVE). The infection rate of prosthetic valve is estimated to be up to ten times higher than in native valves with an incidence ranging from 0.3% to 2% per patient-year[3]. IE may manifest itself with various symptoms. Hence in patients with prosthetic valves presenting with sepsis, IE should be suspected and intervene early for better prognosis and to prevent long term complication such as congestive heart failure (CHF), cardioembolic stroke, septic emboli and eventually death.

Case Report

A 37-year-old gentleman with the background of marfan syndrome, had previous history of dual mechanical valves replacement (AVR, MVR in 8/3/2024) and aortic brain aneurysm done op in 2024, presented with swelling and pain over previous median sternotomy scar for 2 days, associated with 5 days duration of fever, chills and rigors. He denied intravenous drug use, recent tooth extraction or upper respiratory tract infection. On clinical examination, he was febrile with a blood pressure of 92/62 and a heart rate of 102 beats per minute. Cardiovascular examination revealed metallic 1st and 2nd heart sound with no murmur. There was a 2x2cm swelling over previous sternotomy scar which was mild tender. (figure 1) His hand examination had no Janeway lesion or Osler node. Chest x ray (figure 2) and ECG were unremarkable. Blood investigation raised septic parameters, leukocytosis and elevated C-reactive protein. Bedside transthoracic echocardiography at emergency department reported as moderate contractility, no pericardial effusion and no dilated chambers. He was started on noradrenaline infusion after fluid boluses and intravenous ceftriaxone 2g was administered for septicemic shock.

He remained febrile in ward despite 3 days of intravenous ceftriaxone, initial formal echocardiography on 8/12/25 revealed no vegetation, clot, thrombus or pericardial effusion, ejection fraction of 45-50% with anteroseptal hypokinesia and dilated left atrium. He was subsequently referred to surgical team for anterior chest wall abscess. Ultrasound anterior thorax was done on 8/12/25 revealed sternal hypoechoic collection 2.9cm x 3.8cm x 4cm (AP x W x CC) with suspicious intrathoracic extension. This was followed by contrast enhanced CT thorax on 9/12/25 which reported a ring enhancing subcutaneous hypodense collection at the mid sternal region measuring 2.8cm x 3.9cm x 5.4cm (AP x W x CC) with no CT evidence of intrathoracic extensions. Surgical team then proceeded with bedside incision and drainage on the 10/12/25 which drained 25cc hemopurulent pus. The pus was sent for culture and no organism growth was noted.

Initial blood culture taken upon admission (5/12/25) was reported as methicillin resistant coagulase negative staphylococci, labeled as doubtful significant, most likely contamination from skin flora. Subsequent sets of repeated blood culture were taken on 8/12/25 and 10/12/25 and all reported as similar organisms. Patient was then started on IV vancomycin in view of persistent temperature spikes and ultrasound abdomen was done which turned out to be normal and no intraabdominal collection seen. Echocardiography was repeated on 18/12/25 which noted vegetation seen at aortic valve measuring 0.5cm. (figure 3) Modified Duke Criteria were fulfilled, he was then treated for prosthetic valve methicillin resistant coagulase negative staphylococci infective endocarditis and started on IV vancomycin 20mg/kg, IV rifampicin 450mg 12hourly and IV gentamicin 1mg/kg 8hourly. Blood culture clearance was achieved on subsequent 2 sets of blood cultures and echocardiography reassessment 10days later noted resolution of vegetation. After completed 6 weeks of antibiotics, he was discharged home well with no signs of heart failure.

figure 1

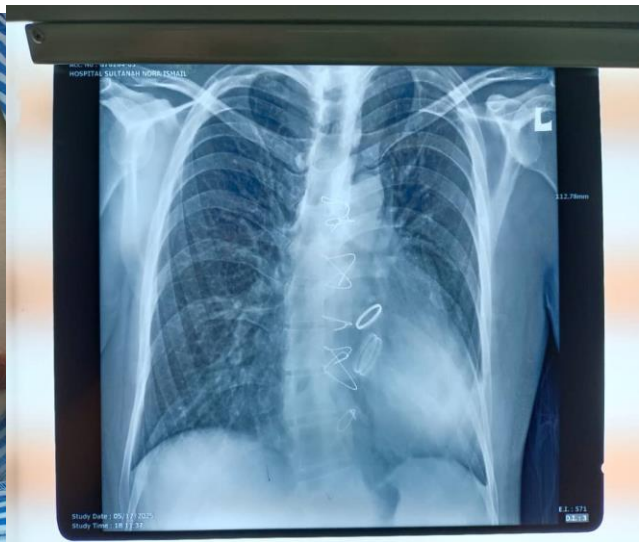

figure 2

figure 3

Discussion

Infective endocarditis is defined as infection of the heart endocardium or valves by microorganisms commonly staphylococci and streptococci. The commonest presenting symptoms and findings of IE are fever (58-90%), murmur (80-85%), petechiae (10-40%), Janeway lesions (6-10%), splinter hemorrhages (5-15%), Osler nodes (7-23%), clubbing (10-15%), Roth spots (4-10%). However, IE may be presented in an atypical manner as well which may be misleading and commonly cause delayed diagnosis and treatment. In our patient, he presented with a superficial abscess over median sternotomy scar which could be considered an obvious source of sepsis and if one does not have high suspicion of IE, the diagnosis could be easily missed.

Despite significant technological advances, the diagnosis of infective endocarditis (IE) remains a major challenge, and the condition continues to be associated with significant morbidity and mortality. Valvular vegetations have long been the diagnostic and pathologic hallmarks of IE. However, IE can be diagnosed even in the absence of vegetations using the modified Duke criteria[4]. In this case, the initial echocardiography did not show the presence of vegetation and hence despite the blood culture yielded MR-CoNS, hence it was not treated as IE initially until the repeated echocardiography showed a vegetation at the aortic valve. Echocardiography can of course be operator dependent and its accuracy and precision are highly dependent on the operator's skills and experience as well as patient's factors such as huge body habitus, obesity etc.

Extended parenteral antibiotics is the mainstay treatment of IE especially if left sided cardiac valves are involved due to higher bacterial density relative to right sided vegetations. There is surgical option as well for IE treatment and the 3 main reasons to undergo surgery in the setting of acute IE are heart failure, uncontrolled infection, and prevention of septic embolization. In our case, this patient had a left sided valves IE, and reassessment ECHO showed total resolution of vegetation and intact valves with good function. Hence surgical intervention was not done.

Conclusion

In conclusion, this case highlights a prosthetic valves endocarditis caused by methicillin resistant coagulase negative staphylococci which initially presented with abscess over previous sternotomy scar. It shows the importance of having high suspicion and the challenges to eventually comes to the diagnosis.

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