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# Perivalvular Mitral Abscess Fistulised to the Pericardial Cavity Revealing Staphylococcal Endocarditis

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## Background

Fistula to the pericardial cavity is a very rare complication of perivalvular abscess during infective endocarditis, with *Staphylococcus aureus* being the most commonly associated microorganism.

## Methods

We report a fatal septic shock due to a mitral endocarditis revealed by a myocardial abscess fistulised toward the pericardial cavity.

## Results

A 66-year-old female without previous valvular disease was admitted to intensive care for severe sepsis. A few hours after admission, an unexpected cardiac arrest occurred. Chest computed tomographic (CT)-scan and transoesophageal echocardiography revealed a pericardial effusion due to a perivalvular mitral abscess fistulised toward the pericardial cavity. Despite prompt management including surgical debridement and appropriate antibiotics, death occurred 36 hours after intensive care admission. All blood cultures as well as native mitral valve and pericardial fluid grew methicillin-sensitive *Staphylococcus aureus*.

## Conclusions

Intensivists should consider this rare complication in patients with Staphylococcal infective endocarditis and perivalvular abscess.

## Keywords

Infective endocarditis • Perivalvular abscess • Myocardial fistula • *Staphylococcus aureus* • Pericarditis

## Introduction

We report a fatal septic shock due to a mitral endocarditis revealed by a myocardial abscess fistulised toward the pericardial cavity in a 66-year-old female without previously known cardiac or valvular disease. This infectious event occurred 8 days after a planned colonic surgery. Despite a prompt management including surgical debridement and appropriate antibiotics, death occurred 36 hours after intensive care unit admission.

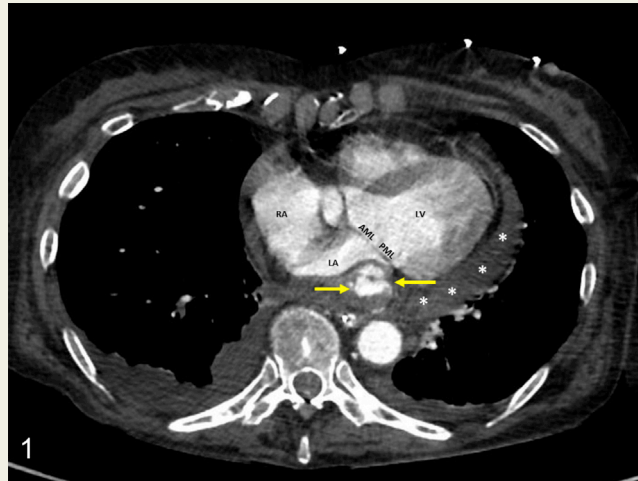
## Case Report

A 66-year-old female without previously known cardiac or valvular disease was admitted to the intensive care unit (ICU) for severe sepsis occurring 8 days after a planned surgery for restoration of colonic continuity. Upon ICU admission, she was febrile (38.6 °C), hypotensive (80/40 mmHg) and somnolent. However, she responded correctly to orders and there was no sign of focalisation. She was eupneic while breathing room air but she had

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**Figure 1** CT-scan revealing a pericardial effusion (\*\*\*) together with a myocardial 3 cm mass protruding in the left atrium (yellow arrows) compatible with a perivalvular myocardial abscess with pseudoaneurysm.

#### Abbreviations

AML: Anterior Mitral Leaflet; PML: Posterior Mitral Leaflet; RA: Right Atrium; LA: Left Atrium; RV: Right Ventricle; LV: Left Ventricle; CT: Computed tomography.

33 bilateral pulmonary rhonchi. Abdominal examination was  
 34 unremarkable. The surgical scar was inflammatory but not  
 35 purulent. No lymphangitis was noticed. The patient did not  
 36 have any central venous catheter device. Cardiac auscultation  
 37 did not reveal any heart murmur. Chest-X ray and  
 38 electrocardiogram did not reveal any abnormality. An  
 39 abdominopelvic computed tomographic (CT)-scan with  
 40 intravenous contrast did not show any peritoneal effusion,  
 41 collection or mesenteric ischaemia. Transthoracic echocardiography  
 42 (TTE) did not find any valvular regurgitation, vegetation  
 43 nor pericardial effusion. A blood culture drawn  
 44 8 hours before ICU-admission at the surgical ward grew  
 45 *Staphylococcus* (identification and susceptibility were  
 46 unknown at this moment). The patient was treated with  
 47 piperacilline-tazobactam (16 g/d, continuous intravenous  
 48 infusions) and vancomycin (15 mg/kg followed by 30 mg/  
 49 kg/d).

50 Twelve hours after ICU-admission, as the patient was  
 51 under low dose (0.2 mg/h) of norepinephrin, an unexpected  
 52 cardiac arrest occurred due to pulseless electrical activity.  
 53 After return to spontaneous circulation with intravenous  
 54 bolus of epinephrine and tracheal intubation, a second  
 55 CT-scan was performed and revealed a pericardial effusion  
 56 (absent on the first CT-scan performed 12 hours earlier at  
 57 ICU-admission) together with a myocardial 3 cm mass protruding  
 58 in the left atrium (Figure 1). Abdominopelvic  
 59 CT-scan remained unremarkable without sign of peritonitis.  
 60 Brain CT-scan with contrast injection was normal. Transoesophageal  
 61 echocardiography (TEE) founded an 8 mm mobile vegetation on the atrial  
 62 side of the posterior mitral leaflet and confirmed the presence of the  
 63 myocardial mass visible on CT-scan (Figure 2a and online resource 1),  
 64 which was compatible with a myocardial abscess with  
 65

pseudoaneurysm. Transoesophageal echocardiography with  
 colour Doppler also revealed a perforation of the left ventricular  
 free wall under the posterior mitral leaflet with a 5 mm diameter  
 fistula toward the pericardial cavity (Figure 2b and online resource 1).  
 An intravenous bolus of gentamicin (6 mg/kg) was added and the  
 patient was transferred to a cardiac surgery centre.

Cardiac surgery performed in a highly unstable patient confirmed  
 the presence of a myocardial abscess perforated both in the left  
 ventricle and the pericardial cavity. Despite a mitral replacement  
 and a patch on the left ventricle, the patient died a few hours  
 after surgery. All blood cultures as well as native mitral valve and  
 pericardial fluid grew methicillin-sensitive *Staphylococcus aureus*.

## Discussion

We report a fatal septic shock due to a mitral endocarditis revealed  
 by a myocardial abscess fistulised toward the pericardial cavity in  
 a 66-year-old female without previously known cardiac or valvular  
 disease. Even if *Staphylococcus aureus* is the leading cause of  
 infective endocarditis [1,2], a fortiori in a nosocomial or health  
 care associated context [3], several points should be discussed.

Firstly, the diagnosis of infective endocarditis was unexpected a  
 few days after a planned abdominal surgery in a patient without  
 valvular disease, and no obvious portal of entry was retrieved in  
 our patient. It is well known that a portal of entry is not retrieved  
 in almost 25% of infective endocarditis, especially in *Staphylococcal*  
 endocarditis [4].

Secondly, the TTE performed at admission did not reveal any  
 valvulopathy nor vegetation despite good image quality.

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