



Left main occlusion secondary to infective endocarditis vegetation: “The unusual suspect”



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ABSTRACT

Treatment of acute coronary syndrome secondary to septic coronary embolism during valvular endocarditis is controversial. Urgent coronary angiography and stent implantation or surgical intervention have been proposed. We present the case of a patient presented at the emergency department with chest pain and cardiogenic shock. The coronary angiography showed a large filling defect in the left main due to a septic coronary embolism.

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1. Case report

A 66-year-old man was admitted to our emergency department one hour after the onset of acute chest pain, diaphoresis, weakness, and confusion.

His past medical history was significant for hypertension, dyslipidemia, impaired glucose tolerance and hypothyroidism. Physical examination revealed normal heart sounds without murmurs, peripheral edema and severe hypotension, immediately treated with intravenous fluid and dopamine administration. Of note, the patient reported an episode of fever during the prior month treated with empirical antibiotic therapy; however, at admission the patient was afebrile.

On arrival, biochemical analysis showed white blood cell count of $9.96 \times 10^9/L$, RBC $3.55 \times 10^{12}/L$, Hb 9.6 (mg/dl), troponin T 0.105 ($\mu g/L$), creatinine 0.97 (mg/dl), and C-reactive protein 84.6 (mg/L). A chest X-ray examination revealed signs of moderate pulmonary edema. ECG on admission showed sinus tachycardia and signs of anterolateral nonST-elevation myocardial infarction. Thus, the patient underwent an emergency coronary angiography that showed a large filling defect involving the left main, the proximal left anterior descending (LAD) artery and the ostium of the circumflex artery (Fig. 1).

Urgent intra-procedural trans-thoracic echocardiography demonstrated a normal left ventricular ejection fraction (LVEF) and the presence of an abnormal echogenic and irregular mobile formation of 2 cm length attached to the LV side of the aortic valve with independent motion during the cardiac cycle, highly suspicious for endocarditis (Fig. 2a). Moderate aortic regurgitation at color Doppler was also associated (Fig. 2b). After

Heart Team evaluation, the patient was not deemed suitable for percutaneous coronary interventions due to high risk of septic systemic and coronary embolization and he underwent immediate open-heart surgery.

After medial sternotomy and aortic and bi-caval cannulation, the aortic valve was evaluated: surgical examination showed multiple and variable sized vegetations located at the aortic and ventricular side of the aortic valve, and a large vegetation protruding into the ostium of the left coronary artery. After widely aortic-valve and LM-ostium debridement, valve replacement with a bioprosthetic valve (Carpentier-Edwards PERIMOUNT Magna Ease 25 mm) and double aorto-coronary bypass (for the first obtuse marginal coronary artery and LAD) were successfully performed.

Blood cultures performed preoperatively were negative for bacterial infection, while pathologic specimens from native aortic valve and LM embolus were positive for *Streptococcus bovis* sensitive to beta-lactams and vancomycin.

2. Discussion

To the best of our knowledge this is the first case of left main occlusion by septic embolization with angiographic, echocardiographic and surgical confirmation of the diagnosis.

Several mechanisms responsible for myocardial ischemia during infective endocarditis have been described: extrinsic coronary compression due to periannular complications (abscesses or pseudoaneurysms), coronary embolization from a native or prosthetic valve or multifactorial causes (i.e., concomitant severe acute aortic regurgitation, anemia, fever and/or sepsis) [1,2].

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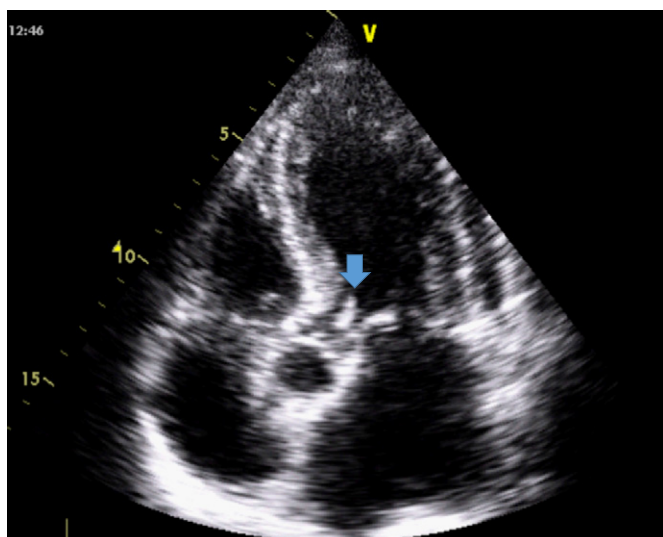


Fig. 1. Apical four chamber view of transthoracic echocardiogram showing a mobile formation (arrow) of 2 cm length attached to the non-coronary cuspid of the aortic valve, highly suspicious for endocarditis.

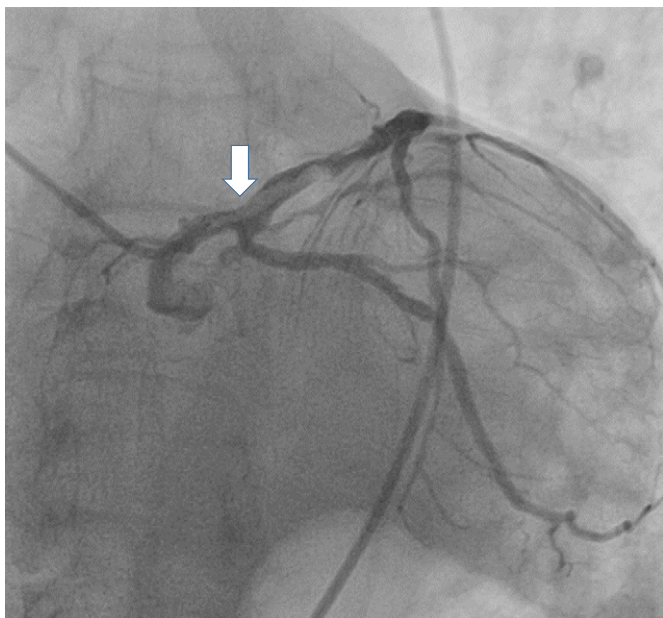


Fig. 2. Coronary angiogram showing a possible thrombus (contrast defect, arrow) in the left main coronary artery.

Although embolic risk is very high in the setting of infective endocarditis, with embolic events occurring in 20%–50% of patients, an acute coronary syndrome secondary to septic coronary embolism is rare and occurs more commonly when the aortic valve is involved. The most frequently coronary artery involved is the left anterior descending probably due to its less angulated take-off and downward course [4] and only few reports described a left main ostium occlusion secondary to aortic root abscess or to vegetative material embolism [1]. As initial manifestation of left main occlusion is commonly sudden death, usually diagnosis is made with postmortem pathological examination [3].

Treatment of acute coronary syndrome related to septic embolism is controversial and different approaches have been proposed: urgent angiography and balloon angioplasty with or without stent implantation, thrombus aspiration and cardiac surgery. Several reports demonstrated that balloon angioplasty and stent implantation seem to be safe in the setting of active endocarditis [4]. However, stent-associated complications as distal septic embolization, aneurism formation and infection at the dilatation site have been described [5].

Recent guidelines recommended surgical intervention in left-sided valves infective endocarditis in the clinical setting of: heart failure (severe acute regurgitation, valve obstruction and fistulae formation causing refractory pulmonary edema or cardiogenic shock), in situation of locally uncontrolled infection (abscess, fistulae, enlarging vegetation) and to prevent further embolic event (persisting vegetation after one or more embolic episode despite appropriate antibiotic therapy) [1]. However, evidence of successful surgical intervention in the context of coronary embolization is scarce, with only few case-reports demonstrating success through coronary embolectomy with direct incision of the coronary occluded and mechanical removal of the septic embolus [6].

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