Journal of Heart

Case Report | Vol 2 Sp. Iss 1

The Embolic Risk of Infectious Endocarditis

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Received Date: January 10, 2021; **Accepted Date:** February 08, 2021; **Published Date:** February 15, 2021

ABSTRACT

Systemic septic emboli are a common complication of AE and have a deleterious effect on the prognosis. As reported in several series, the majority of lesions remain silent without their asymptomatic character improving the prognosis compared to obvious lesions. We try to focus the light on this subject through two clinical cases of infectious endocarditis complicated by multiple systemic embolic accidents.

KEYWORDS

Infective endocarditis; Septic emboli; Asymptomatic embolism

INTRODUCTION

The incidence of infective endocarditis (IE) is estimated to be between 3 and 10 cases per 100,000 people per year. This incidence does not decrease over time [1]. AE is a heterogeneous and fatal disease that can affect several organs and despite progress in medical and surgical management, the hospital mortality rate remains high between 15% and 30%, and reaches up to 37% after one year of follow-up. This mortality is mainly linked to complications [2]. Stroke, the most common embolic picture of AE, is found in 4% to 14% of all infectious endocarditis [1]. The latter (DALY) is one of the frequent causes of admission to intensive care unit, and a strong predictor of death for patients with AE [3].

Small, clinically inapparent embolisms likely occur in most patients with AE. Silent cerebrovascular complications (including ischemia and microhemorrhage) can occur in up to 81% of patients. Symptomatic embolism can occur in 13% to 46% of patients. Many symptomatic emboli involve the central nervous system; clinical evidence of cerebrovascular embolic events is present in 12% to 40% of patients with IE [3].

Prevention of embolism is a well-established indication for surgery; in the Euro Heart Survey, the size of the vegetation and the anterior emboli were reported as factors contributing to the surgical decision, respectively, in 48% and 18% of the operated patients; in the French series recently published by Hubert et al. [3].

CASE REPORT

We present here 2 clinical cases of complicated infectious endocarditis.

Clinical Case 1

Mr I.H, 50-years old, hospitalized with hemiplegia of the left hemibody in a feverish context revealing a stroke. In her history, he had infectious endocarditis treated a year ago, complicated by double mitral leakage and severe aortic unoperated. Clinical examination on admission revealed NYHA stage III dyspnea, with diffuse chills and sweating, fever of 39°C, with generalized mucocutaneous

Citation: El Mehdi Aqli, The Embolic Risk of Infectious Endocarditis. J Heart 2(S1): 24-28.

jaundice, multiple distal ischemic lesions in the toes (Figure 1).

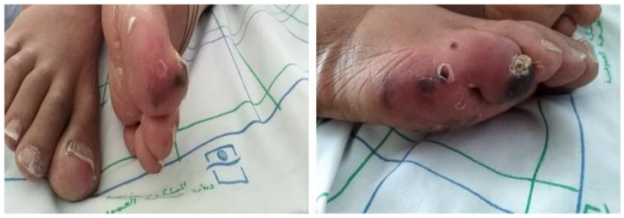

Figure 1: Multiple ischemic lesions of the toes.

On pleuropulmonary and cardiac auscultation, crackles at the bases of the pulmonary fields, systolic murmur 5/6 in the mitral focus and diastolic murmur 5/6 in the aortic focus. Neurologic examination found left hemiplegia. A veins in the right forearm considered a probable entry point. On the ECG, sinus tachycardia was noted at 120 bpm. On echocardiography we find a severe mitral and aortic leak with biventricular dysfunction LVEF at 45% (In Simpson assessment), severe HTP including PAPS estimated at 70 mmHg, visualization of large vegetation on the ventricular side of the valve aortic measuring 6 mm × 4 mm (Figure 2).

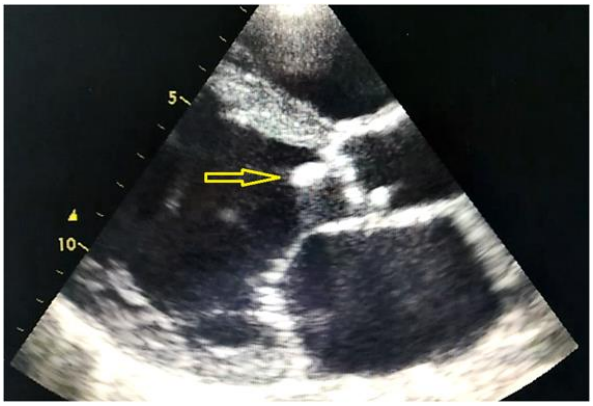

Figure 2: Aortic vegetation.

In the biological assessment we note an infectious syndrome with white blood cells at 13000 e/mm, the reactivated protein C at 251 mg/l, PCT at 7.9, a slight hepatic cytolysis with ALT at 80 IU/L, good normal renal function, a correct haemostasis assessment and no anaemia. A blood culture series did not show any germs. A normal immunological biological assessment.

A cerebral MRI was performed showing a multifocal ischemic stroke with haemorrhagic infarction in the acute phase, and subarachnoid haemorrhage, without notable abnormality on the angiographic sequences.

A CT angiography of the aorta and lower limbs was performed objectifying: a splenic infarction without CT signs in favor of acute ischemia of the lower limbs (Ischemic lesions in the very distal seat toes).

The diagnosis of aortic endocarditis complicated by several systemic emboli is retained. Treated with injectable probabilistic antibiotic therapy with good clinical and biological improvement.

The patient died preoperatively with sudden death.

Clinical Case 2

Mr A.M, 27-year-old, with no particular pathological history hospitalized in intensive care for a febrile consciousness disorder suddenly onset.

Clinically, patient unconscious at 8/15 according to Glasgow score, temperature at 39°, BP = 120/70 mmHg, Heart rate = 120 bpm, Ejection systolic murmur of 3/6 at the mitral focus. On EKG: Sinus tachycardia at 120 b/minutes with incomplete right bundle branch block without conduction or repolarization disturbance.

Figure 3: Splenic infarction (Arrow) on an abdominal CT scan.

The brain scan shows signs of meningoencephalitis with hydrocephalus. The abdominopelvic scanner revealed a splenic infarction (Figure 3). In the biological assessment: White blood cells = 17000/mm3 with predominantly polynuclear neutrophils, A CRP at 320 mg/l, procalcitonin = 20 ng/l. Blood cultures and lumbar puncture revealed a multi-susceptible streptococcus pneumoniae.

On transthoracic echocardiography: Moderate to severe mitral insufficiency with large vegetation (measuring 23 mm × 8 mm) on the atrial side of the mitral valve (Figure 4), with good bi-ventricular function LVEF = 60%, without HTP, and low circumferential pericardial effusion.

The diagnosis retained is mitral endocarditis due to Streptococcus pneumoniae complicated by multisystem accidents. The patient is treated with antibiotic therapy and then offered for surgery for his valve disease.

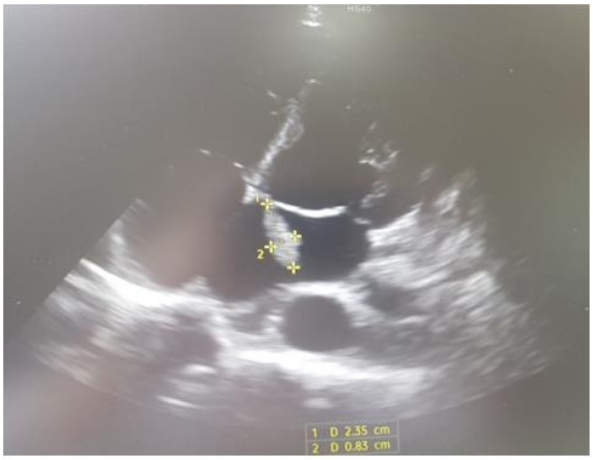

Figure 4: Echocardiography showing mitral vegetation.

DISCUSSION

Infectious endocarditis (IE) is a serious pathology characterized by high morbidity and mortality due to its complications.

Despite all the progress made in the management of infectious endocarditis, the number of patients who presented one or more complications and required surgical management has remained unchanged over the years [4].

Embolic events are major complications of AE associated with a poor prognosis especially in cerebral embolism [5].

Clinical pictures of septic embolism

Arterial complications of the lower limbs are most often acute ischemia of the limbs due to arterial embolism of the vegetations. Their frequency varies from 20% to 30%.

Coronary complications of septic origin are much rarer. But post-mortem studies have revealed microembolisms in the coronary arteries in 60% of cases in IE.

Splenic infarction is a common complication in AEs of the left heart (approximately 40%). It is most often asymptomatic, but it is rarely associated with a splenic abscess (approximately 5% of cases). Splenic infarction usually presents as multiple lesions due to obliteration of a branch of the splenic artery or to branching.

Vascular complications of infective endocarditis are frequent, especially neurological. They have a poor prognosis. These complications are multiple and polymorphic, and often asymptomatic. Their incidence decreases sharply after the start of antibiotic treatment [1].

Risk factors for the occurrence of embolic complications

The location of the prosthetic valve, right endocarditis, Staphylococcus aureus infection and the size of the vegetation are considered high risk factors for embolism. In other prospective cohort studies, age, gender, serum creatinine and C-reactive protein were considered to be additional risk factors. In other studies, a formula was

developed to determine the likelihood of embolism, given age, diabetes, atrial fibrillation, embolism before

antibiotics, vegetation size, and infection with Staphylococcus aureus. The results showed that the size of the vegetation and the infection with Staphylococcus aureus validly predicted embolization [6].

In a study analysing endocarditis of the left heart, a simple scoring system, which combines the etiology and size of the vegetation with the time of antibiotic treatment, could contribute to a better assessment of the risk of embolism and to a more individualized analysis of the indications and contraindications for early surgery [3].

Nevertheless, the presence of aCL and anti-β2 GPI IgM in the context of ac-antiphospholipid syndrome was associated with embolic events, particularly in the brain, and could help to assess the embolic risk of AE [1].

CONCLUSION

Asymptomatic systemic embolism and in particular of the spleen is common in infective endocarditis. This shows the importance of systematic screening for embolic events in all patients. This had an impact on deciding the best time for heart surgery [7].

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