Case study

Myocardial infarction due to coronary artery embolism in a patient with a mechanical mitral valve : a case report

ABSTRACT

Background

Mechanical valves are inherently thrombogenic and require meticulous anticoagulation. Thrombosis of cardiac valve prostheses is a dangerous complication, that practitioners should clearly explain to their patients the potential risks of stopping treatment

Case presentation

A 48-year-old female patient without any cardiovascular risk factor with a history of mechanical prosthesis for rhumatic mitral stenosis, who stopped anticoagulant treatment for dental extraction, admitted for Ischemic cerebral vascular accident complicated during her hospitalization by supraventricular tachycardia with a coronary embolism leading to an ST segment elevation due to an non obstructive thrombus causing embolic acute myocardial infarction.

Conclusions

Education regarding an adequate anticoagulation in these patients is important. Clinicians should keep in mind the importance of providing to their patients all the informations concerning the potential risks of stopping their treatment.

Keywords : Mechanical valves ,Thrombosis of prosthesis ,Anticoagulation, Case report

Introduction

Thrombosis of cardiac valve prostheses is a serious and potentially lethal complication. Its diagnosis must be made early by analysing clinical and echocardiographic results[1], particularly the transoesophageal one.

The surgical intervention, often performed in an emergency situation, is related to a high mortality percentage [2].

Prevention of valve thrombosis is essential. It is based on a strict control of the anticoagulant treatment. Both clinician and biologist doctor are responsible for the management of all patients with a mechanical valve. "Although mechanical valves have long term durability, yet the incidence of malfunction is not negligible (0.1-6%) and mechanical prosthetic valve thrombosis is one of those serious complications, where patients often deteriorate rapidly, compromising management outcomes" [17,18].

Case presentation

A 48-year-old female patient with no cardiovascular risk factors, with a history of mitral valve replacement for rhumatic mitral stenosis, who stopped by herself the anticoagulant treatment for dental extraction for five days

The patient was admitted to the cardiology department for Ischemic cerebral vascular accident.

Clinical examination on admission revealed a confused patient GCS 14/15, hemiplegic, hemodynamically and respiratory stable : blood pressure at 135/75mmHg, heart rate at 80bpm, SpO2 at 96% without oxygenation, cardiac auscultation was normal, and the prosthetic click audible, a transthoracic echocardiography was performed showing no prosthetic thrombus. Regarding the blood tests results, we hadn't notice any abnormalities, the cerebral CT scan has confirmed the presence of a left frontal and a right occipital ischemic vascular accident

The patient received aspirin 75mg per day , fluoxet 20mg per day, and a placement of a feeding nasogastric probe. We have contacted the neurologist doctor, we have decided to stop the anticoagulation. After 48h of hospitalization, we have performed a cerebral CT scan showing a non surgical hemorrhagic remodeling becoming a factor of poor prognosis.

The day after, the patient had presented a sudden supraventricular tachycardia with hemodynamic instability (Figure 1) shocked three times, and immediately after that, the electrocardiogram showed a ST-segment elevation in inferior derivation (Figure 2)

The echocardiographic control had showed a homogeneous hyperechoic formation attached to the mitral prosthesis related to a thrombus (Figure 3)

The patient subsequently had presented a cardiorespiratory arrest that was not recovered after 30 min of cardiopulmonary resuscitation.

DISCUSSION

Coronary embolism MI is a rare disease. Most emboli (75%) involve the left reticular formation (1,2). “This is due to its larger caliber and the implantation angle of the left coronary artery is smaller than the acute angle of the right coronary artery” (3). “Mechanical heart valves are thrombosed, and anticoagulation is essential to prevent thromboembolism and acute thrombotic obstruction” [13]. Coronary embolism is a common cause of acute transmural myocardial infarction, Occurs in 10% to 13% of autopsy series [14] and represents an important entity in etiology and clinical management [4] .

“The consequences of coronary embolism leading to myocardial infarction depend on the size of the embolus and the lumen diameter of the vessel” [14, 15]

“Coronary embolism should always be considered, especially in patients with sudden chest pain in patients with prosthetic valves, chronic atrial fibrillation, dilated cardiomyopathy, infective endocarditis, intracardiac shunts, cardiac myxomas, mural thrombi, and hypercoagulable states case” [15]

Major embolic events occurred in 1% of patients with valve prostheses treated with warfarin (4). Among serial coronary embolisms in patients with valvular heart disease at autopsy, 8% occurred in patients with prostheses [5]. The risk of embolism is greater with mitral valve prostheses, rigid prostheses, or multiple valve prostheses [6,7].

Coronary embolism as a cause of myocardial infarction is an uncommon but important entity both in terms of aetiology and treatment. Previous cases of coronary emboli in association with prosthetic mechanical valves have been reported previously (16) but the mechanism of pharmacology and lack of patient awareness of medication importance is quite unique in this case.

Inadequate anticoagulation is the most frequent factor involved (10,11), which was found in our patient. Therapeutic education of patients with prosthetic valves is one of the major preventive strategies for these serious, sometimes fatal, embolic events.

" Embolic myocardial infarction is underdiagnosed and it is important to diagnose the source of embolism and treat the cause".(16)

Patient education is vital in our battle to prevent this entity in high-risk patients as in our case.

Conclusions

Myocardial infarction by coronary embolism from mitral prosthesis thrombosis is probably an underestimated situation and often occurs in the presence of ineffective anticoagulation. Therapeutic education is necessary to prevent these complications.

Consent

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

List of Abbreviations:

VKA : antivitamine k

GCS : Glascow coma scale

ECG : Electrocardiogram

LV : Left ventricle

LVEF : Left ventricular ejection fraction

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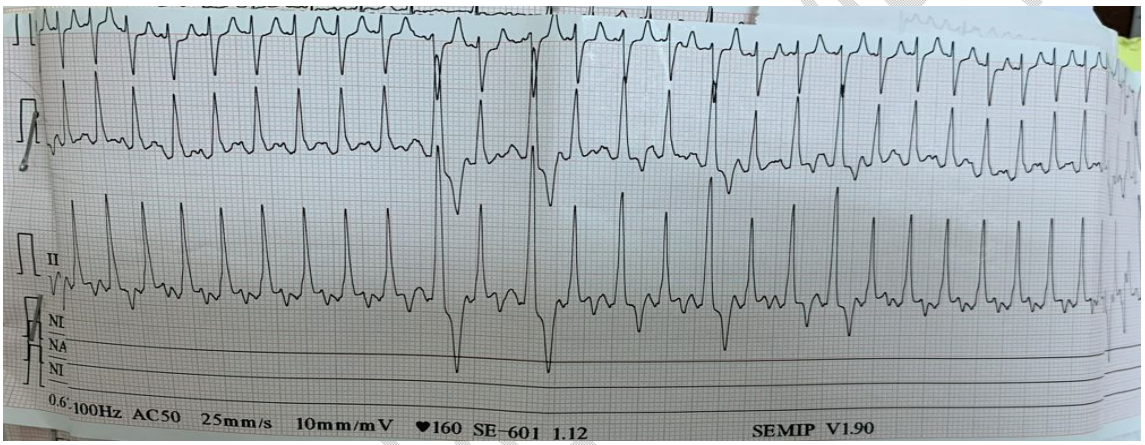
Figure Legends :

Figure 1: electrocardiogram showing a supraventricular tachycardia

Figure 2: electrocardiogram showing the st segment elevation in inferior derivation

Figure 3: apical section four cavities objectifying the thrombus on the mitral prosthesis



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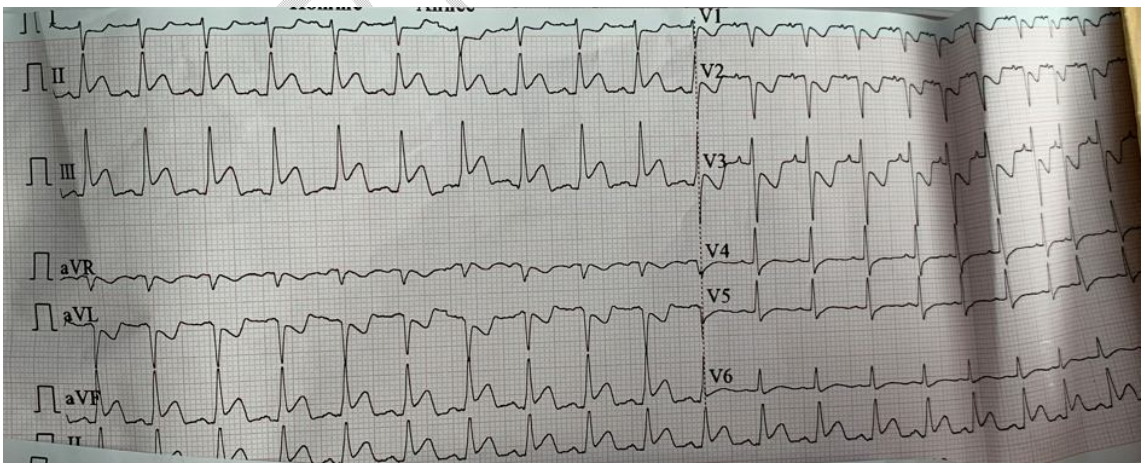

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