

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

ABSTRACT

Background

Mechanical valves are inherently thrombogenic and require meticulous anticoagulation.

Case presentation

We present a patient admitted for stroke on mechanical prosthesis who presented during her hospitalization a non obstructive thrombus causing embolic acute myocardial infarction.

Conclusions

Education regarding an adequate anticoagulation in these patients is important.

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

Background

Thrombosis of cardiac valve prostheses is a serious and potentially lethal complication. Its diagnosis must be made early thanks to the analysis of the clinical and echocardiographic situations, particularly the esophageal situation [1].

The surgical intervention, often performed in an emergency atmosphere, is grafted with a high mortality [2].

Prevention of valve thrombosis is essential. It is based on a strict control of the anticoagulant treatment and the responsible management of any patient with a mechanical valve by both the treating physician and the biologist.

Case presentation

We report the case of a 48-year-old female patient with no family history and no cardiovascular risk factors, with a history of previous mitral valve replacement on tight mitral stenosis, admitted to the cardiology department for Ischemic cerebral vascular accident due to a five-day suspension of anticoagulation for dental extraction.

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 transesophageal ultrasound was performed showing no prosthetic thrombus, concerning the biological tests : we had a correct complete blood count, without hydroelectrolyte disorders and a normal renal and hepatic function, the cerebral scan confirms 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 placement of a nasogastric tube for feeding , the anticoagulation was stopped after consultation with neurologists, and the scan control performed 48 hours of hospitalization objectified a hemorrhagic remodeling not considered as a surgical indication but becoming a factor of poor prognosis

At 72 hours of hospitalization the patient presented a sudden supraventricular tachycardia with hemodynamic instability (Figure 1) shocked three times, and immediately after that, the electrocardiogram showed an ST-segment elevation in inferior derivation (Figure 2)

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

The patient subsequently 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.

List of Abbreviations:

VKA : antivitamine k

GCS : Glasgow coma scale

ECG : Electrocardiogram

LV : Left ventricle

LVEF : Left ventricular ejection fraction

Références

1. Wenger nK, Bauer s. Coronary embolism. review of the literature and presentation of 15 cases. am J Med 1958; 25: 549-57.
2. Prizel Kr, Hutchins gM, Bulkley BH. Coronary artery embolism and myocardial infarction, a clinicopathologic study of 55 patients. ann intern Med 1978; 88: 155-61
3. gully C., Baron o., nguyen Khal o. et al, coronary embolism: a not so rare cause of myocardial infarction? review of the literature about five suspected cases of patients in atrial fibrillation. ann Cardiol angeiol 2008; 57: 290-94

4. Cannegiester sC, rosendaal Fr, Brier e. Thromboembolic and bleeding complications in patients with mechanical heart valve prosthesis. *Circulation* 1994; 89:635-41
5. Charles rg, epstein eJ, Holt s , Coulshed n . Coronary embolism in valvular heart disease. *Q JMed* 1982; 51: 147- 61
6. Cannegiester sC , rosendaal Fr , Winten ar , Van der Meer FJM, Vandenbrouke JP, Brier e. optimal oral anticoagulant therapy in patients with mechanical heart valves. *neJM* 1995; 333:11-7
7. srilakshmi M. a, shetty gg. M.J. santosh et al, acute sT elevation myocardial infarction in a patient with caged ball mitral valve prosthesis: a case report. *international Journal of Cardiology* 2008; 128: e101–e103
8. alpert Js. The thrombosed prosthetic valve. *J am Coll Cardiol* 2003; 41: 659:60
9. Tong Ta, roudout r, ozkan M, et al. on behalf of the prosthetic valve thrombolysis – role of transoesophageal echocardiography (Pro-Tee) registry investigators/ transoesophageal echocardiography improves risk assessment of thrombolysis of prosthetic valve thrombosis: results of the international Pro-Tee registry. *J am coll cardiol* 2004;43: 77-84
10. Kiernan TJ., Flynn aM., Kearney P., Coronary embolism causing myocardial infarction in a patient with mechanical aortic valve prosthesis *international Journal of Cardiology* 2006; 112: e14 – e16
11. dogan M., acikel s., aksoy MM.et al. Coronary saddle embolism causing myocardial infarction in a patient with mechanical mitral valve prosthesis: Treatment with thrombolytic therapy. *intern J Cardiol* 2009; 135: e47–e48
12. P. Lavoie, L. Leduc et L.-A. Mercier, « Infarctus du myocarde embolique chez une femme enceinte porteuse d'une valve cardiaque mécanique sous héparine de bas poids moléculaire », *Journal canadien de cardiologie*, vol. 20, non. 9, p. 917–919, 2004.
13. M. Dogan, S. Acikel, MMN Aksoy, et al., « Embolie coronarienne en selle provoquant un infarctus du myocarde chez un patient porteur d'une prothèse de valve mitrale mécanique : traitement par thérapie thrombolytique », *Journal international de cardiologie*, vol. 135, non. 2, pages e47–e48, 2009.
14. MS Aslam, V. Sanghi, S. Hersh et JB Lakier, « Embolie coronarienne en selle et infarctus du myocarde chez un patient porteur d'une valve mitrale prothétique » , *Cathétérisme et interventions cardiovasculaires*, vol. 57, non. 3, p. 367–370, 2002.

15. BF Waller, DS Dixon, RW Kim et WC Roberts, "Embolus to the left main coronary artery," *Journal américain de cardiologie*, vol. 50, non. 3, pages 658–660, 1982.
16. Kiernan TJ., Flynn aM., Kearney P., Coronary embolism causing myocardial infarction in a patient with mechanical aortic valve prosthesis *international Journal of Cardiology* 2006; 112: e14 – e16

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

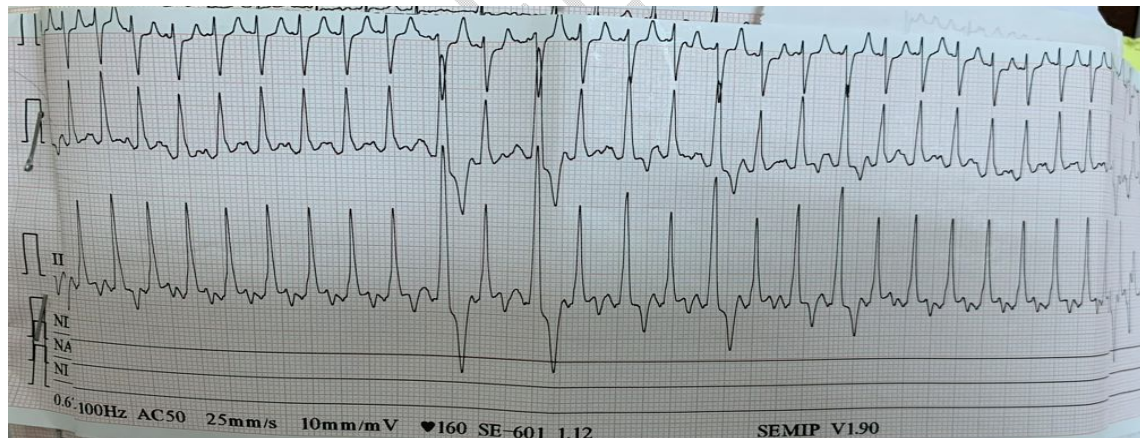


Figure 1: electrocardiogram showing a supraventricular tachycardia

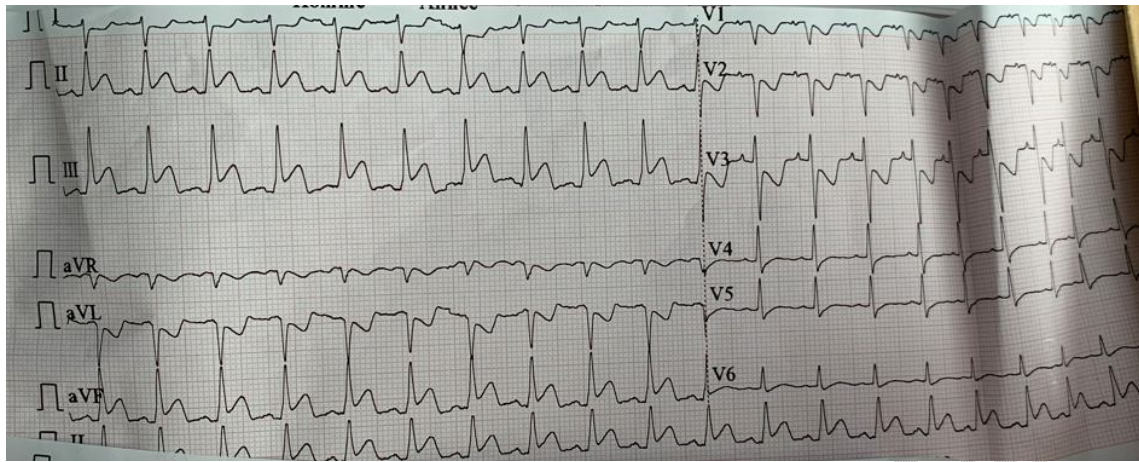


Figure 2: electrocardiogram showing the st segment elevation in inferior derivation



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

The consent of patient was obtained