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CASE REPORT

A pregnant woman with a mechanical prosthetic valve

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KEYWORDS
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Abstract A 24-year-old woman who was 11 weeks pregnant and had a mechanical mitral valve presented at the emergency department with ischemic stroke. Although treatment with aspirin and unfractionated heparin was initially successful, subsequent management was almost impossible, as she eventually suffered a right hemispheric stroke, requiring percutaneous intervention and an emergency cesarian; prosthetic valve thrombosis with hemodynamic instability; and multiple bleeding complications. This case demonstrates how difficult it can be to select the appropriate treatment strategy for prosthetic valve thrombosis.

PALAVRAS-CHAVE
Gravidez e doença cardiovascular;
Trombose e embolia;
Prótese valvular cardíaca

Uma mulher grávida com uma prótese valvular mecânica

Resumo Uma mulher de 24 anos, grávida de 11 semanas, com uma prótese mecânica em posição mitral, foi admitida no serviço de urgência com um acidente vascular cerebral isquémico. Apesar de a terapêutica com aspirina e heparina não fracionada ter sido inicialmente bem-sucedida, a gestão subsequente da doente foi dificultada por várias intercorrências: acidente vascular cerebral hemisférico direito com necessidade de intervenção percutânea e realização de cesariana emergente; trombose obstrutiva de prótese com instabilidade hemodinâmica; múltiplas complicações hemorrágicas. Este caso permite ilustrar as dificuldades na seleção do tratamento da trombose de prótese.

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Introduction

Mechanical heart valves require lifelong anticoagulation. Inadequate therapy or overlapping factors can precipitate prosthetic valve thrombosis (PVT). Severe cases may require urgent surgery or fibrinolysis. For most patients, however, the optimal therapy remains unclear.

Case report

We report the case of a 24-year-old woman who presented at the emergency department with sudden right hemiparesis and dysarthria. She had a history of rheumatic heart disease and mitral valve replacement with a biological valve in 2003 and with a 29-mm mechanical bileaflet valve in 2012. Her obstetric history included two medically induced abortions in 2011 in the context of heart failure. One month prior to admission, she discovered she was seven weeks pregnant and was advised to replace warfarin with enoxaparin 60 mg/day. Physical examination confirmed right-sided hemiparesis, while fetal ultrasound confirmed an 11-week pregnancy. Cranial computed tomography (CT) revealed no abnormalities.

Transthoracic echocardiography (TTE) showed a mean transprosthetic gradient of 8 mmHg and maximum velocity of 2 m/s, while transesophageal echocardiography (TEE) revealed two large protruding thrombi (measuring 15 and 17 mm) attached to the atrial side of the mechanical valve (Supplementary Video 1). This led to a diagnosis of non-obstructive PVT complicated by stroke. The patient was offered the option of terminating the pregnancy but refused. In view of recent inadequate anticoagulation, she was started on a continuous infusion of unfractionated heparin (UFH). She was deemed unsuitable for surgery by our heart team due to prior heart surgeries and a high risk of miscarriage. Fibrinolysis was also considered inappropriate because of recent stroke, ongoing anticoagulation and pregnancy. Her clinical course was favorable, with the neurological deficit resolving in 36 hours and no treatment-related complications. A follow-up TEE showed progressive decrease in the size and mobility of the thrombi (Supplementary Video 2) and low-dose aspirin was initiated in order to improve endogenous fibrinolysis. As soon as she entered the second trimester of pregnancy, it was considered safe to resume treatment with warfarin.

She was discharged on warfarin and aspirin, but readmitted a week later with a transient ischemic attack despite an adequate international normalized ratio. At this point, TEE revealed small thrombi attached to the prosthetic valve. Warfarin was discontinued and continuous UFH was restarted. A follow-up TEE during week 25 of gestation revealed no obstruction or thrombi. The patient remained in the obstetric ward until the day she was 29 weeks pregnant. That morning, she was found with left-sided hemiparesis, facial palsy, conjugate eye deviation and dysarthria. Cranial CT showed a recent right middle cerebral artery stroke and uterine artery Doppler indicated fetal suffering. TTE revealed no prosthetic valve obstruction.

At a multidisciplinary team meeting, we decided to discontinue aspirin, reverse anticoagulation with protamine and perform an emergency cesarean section, followed by percutaneous intervention for ischemic stroke. An invasive angiogram revealed occlusion of the right middle cerebral artery in the M1 segment; blood flow was restored using stent retriever thrombectomy. However, despite the success of the procedure, the patient developed cranial edema, necessitating decompressive craniectomy. At this point, UFH was resumed due to the high risk of PVT. TEE performed four days after this ischemic event showed a normally functioning prosthesis with no thrombi.

Throughout the remainder of her hospital stay, the patient suffered multiple hemorrhagic strokes, required a damage control laparotomy for hemostasis and suffered multiple nosocomial infections. Abdominal CT revealed an infarcted area of the upper splenic pole with no clinical implications. She was eventually discharged on warfarin, fully dependent, with persistent severe neurological deficits. She died from sepsis a few months later.

Her child, a 990-g preterm female, suffered from severe respiratory distress syndrome and recurrent sepsis, requiring invasive mechanical ventilation for a month. However, her clinical course was favorable and she was discharged after two months.

Conclusion

This case demonstrates how difficult it can be to select the appropriate treatment strategy for PVT. Hemodynamic stability, valve obstruction, systemic embolism, thrombus size, patient preference and comorbidities have to be taken into account. Conservative treatment may be appropriate for non-obstructive PVT, but some patients may still develop simultaneous severe thrombotic and bleeding complications. Pregnancy, both a hypercoagulable and a hyperdynamic state, may prove fatal for some women with cardiac disease, such as those with prosthetic mechanical valves.

Conflicts of interest

The authors have no conflicts of interest to declare.

Appendix A. Supplementary material

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.repc.2017.06.026.

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