Thrombosis of mechanical valve prosthesis in patient with recent Caesarean delivery

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We present a case of a mechanical mitral valve thrombosis in a 37-year-old woman occurred 2 days after a Caesarean delivery. The patient stopped warfarin and initiated low-molecular-weight heparin 1 week before the programmed delivery. Subsequently the diagnosis of thrombosis, heparin infusion was started however unsuccessfully and eventually patient was referred for cardiac surgery.

KEYWORDS
Mechanical valve prosthesis; Pregnancy

Introduction

We present a case of thrombosis of mitral mechanical prosthetic valve after suspension of oral anticoagulation therapy, and substitution with low-molecular-weight heparin (LMWH) for programmed Caesarean delivery. Patients like that presented herein are very difficult to treat even because therapeutic management is not clearly indicated by guidelines.

Case report

A 37-year-old woman, with a 27 mm Sorin Bicarbon prosthetic mitral valve, came to our observation 2 days after a Caesarean delivery. Patients had been implanted 2 years before our observation for severe rheumatic stenosis. After the operation, patient suffered a thrombo-embolic event without complications. The patient became pregnant and warfarin was not stopped until the last week of pregnancy when it was substituted by enoxeparine 6000 U/I subcutaneous (sc) once daily. Two days after Caesarean delivery, patients came to our inpatients cardiologic unit for cardiological evaluation before hospital discharge. Patient was asymptomatic for dyspnoea and palpitation; cardiac auscultation revealed a normal first prosthetic valve click; a sinus tachycardia was present at the electrocardiogram. Continuous mitral Doppler signal showed an increased velocity of E-wave (2 m/s), prolonged pressure half-time (150 ms), and an increase of mean gradient (16 mmHg) (see Supplementary data, Video Clip 1). These parameters were suggestive of prosthetic dysfunction, thus trans-oesophageal echocardiogram was performed which diagnosed a prosthesis thrombosis (see Supplementary data, Video Clip 2). The patient was then admitted to the intensive care unit and treated with heparin infusion with a target of activated partial thromboplastin time (aPTT) of 2-2,5 baseline value and aspirin 100 mg once a day. After 3 days, another trans-thoracic echocardiogram was performed, showing a massive prosthetic thrombosis (see Supplementary data, Video Clip 3). Patients were referred for cardiac surgery, which confirmed the thrombosis and, thus, a prosthetic valve substitution was performed.

Discussion

Prosthetic thrombosis is one of the major complications of mechanical cardiac valve. Warfarin derivatives are mandatory for its prevention. However, issues have been raised on the use of such drugs during pregnancy. In pregnant women with mechanical heart valves, oral anticoagulants administration is associated with an increased risk of spontaneous abortion, foetal haemorrhage, teratogenesis, especially when it is taken between weeks 6th and 12th of gestation, and in the last weeks of pregnancy, with increased risk of perinatal intracranial haemorrhage in the foetus, and haemorrhage in the pregnant woman during delivery. Consequently, at present warfarin is usually substituted by i.v. heparin infusion during these periods. However, an high incidence of valve thrombosis, probably...
due to an inadequate therapeutic target of aPTT, has been reported. LMWH may represent an interesting alternative to heparin, as they have a better clinical profile and minor rate of adverse effects as thrombocytopenia and osteoporosis during long periods of treatment. However, as the pregnancy progresses, the volume of distribution for LMWH will change as well as the physiology of coagulation and, thus, in pregnant woman it is necessary to measure plasma anti-Xa levels to achieve a level of approximately 0.7–1.2 units/mL.6,7 The American College of Cardiology/American Heart Association Guidelines for the Management of Patients with Valvular Heart Disease suggest that dose-adjusted subcutaneous LMWH can be used during the first and the last weeks of pregnancy. In our case report, the LMWH dose was not adjusted based on anti-Xa level and thus the dosage was probably low leading to valve thrombosis. It must be underscored that the same guidelines suggest that bridging therapy in patients with mechanical mitral valves who require interruption of warfarin therapy for non-cardiac surgery has to be done with i.v. heparin.8 In our opinion, Caesarean delivery is a kind of ‘non-cardiac surgery’ and thus, guidelines are contradictory, resulting in therapeutic difficult choices in pregnant women with mechanical valve prosthesis.

Supplementary data

Supplementary data are available at *European Journal of Echocardiography* online.

References


