Cardiovascular Medicine

Case report

Balloon mitral valvuloplasty saving a pregnant woman with mitral stenosis, pulmonary oedema and infective endocarditis

M Hassine*, G Cheniti, S Ben Kehla, M Mahjoub, N Bouchehda, Z Dridi, F Betbout, H Gamra

Abstract

Introduction
Mitral stenosis remains a health problem in developing countries. Pregnancy is a common situation during which untreated and frequently poorly tolerated mitral stenosis are first diagnosed. Balloon mitral valvuloplasty (BMV) may be life saving in this setting. When complicated by infective endocarditis, the management of this life threatening situation may be challenging. This paper reports a case of a pregnant woman with MS, pulmonary oedema and IE who was saved by BMV.

Case report
We report the case of a 31-year-old pregnant woman with a history of progressive exertional dyspnoea, who was referred to our institution at 26 weeks of gestation with the diagnosis of severe MS [2D Echo mitral valve area (MVA): 0.8 cm$^2$] complicated by severe refractory pulmonary oedema to medical therapy including high dose diuretics. The transthoracic echocardiography (TTE) also showed a mild mitral regurgitation, relative suitable anatomy for BMV (Wilkins score: 9 to 10) and a severe pulmonary hypertension (SPAP: 70 mmHg). Electrocardiogram (EKG) showed a sinus rhythm. Transesophageal echocardiography (TEE) was not performed because of the emergency setting. The patient was admitted immediately to the catheterization laboratory where a BMV was performed. The procedure was successful with an increase of MVA to 1.9 cm$^2$. However, a mobile mass was observed at the tip of the anterior mitral leaflet at the TTE performed during the procedure. Post-BMV examination found a fever and a few hours later, the patient developed an ischaemic stroke with dysarthria and left hemiplegia due an ischaemic stroke that lasted only a few minutes. A repeated TTE found a mobile image appended to the atrial side of the anterior mitral leaflet suggesting vegetation (Figure 1). Cerebral magnetic resonance imaging (MRI) found multiple ischaemic lesions confined to the territory of the right middle cerebral artery (Figure 2).

Blood cultures were positive to meticillin-resistant coagulase negative staphylococcus. White blood cells (WBC) and C-reactive protein (CRP)

Figure 1: Parasternal long axis view (A) and four chamber view (B) mobile image, with size of 4 mm, appended to the atrial side of the anterior mitral leaflet and typical features of rheumatic involvement of the mitral valve.

* Corresponding author
Email: mohamedmajed@voila.fr
Department of Cardiology A, Fattouma Bourguiba University Hospital, Monastir, Tunisia

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were high (respectively, 12,000/mm³ and 98 mg/l). Further investigations found multiple splenic abscesses. A conservative therapy versus surgery was decided considering the high complication of foetal and maternal risk of surgery in that setting. Antibiotic therapy was based on vancomycin, imipinem and rifampicin which were maintained during 6 weeks with a favourable outcome. There was no foetal complication at anytime of follow up. Caesarean delivery was performed without incidents at 37 weeks of gestation.

Discussion
IE rarely occurs during pregnancy, its incidence is approximately 0.006% and 0.5% in patients with known valvular or congenital heart disease. Mortality is particularly high in both the mother (22.1%) and the foetus (14.7%) and 0.5% in patients with known rheumatic valve disease, with streptococci being the predominant agent. Coagulase negative _staphylococcus_ has not been involved in native valve IE during pregnancy and is mainly responsible for prosthetic valve IE. Its origin in our case remains unidentified.

After successful BMV, the management of IE exposed many therapeutic challenges as the majority of antibiotics may be harmful to the foetus. Only few of them target coagulase negative _Staphylococcus_ bacteria and were used with success in our case. Vancomycin, imipinem and rifampicin were to be used carefully as they are included in group C of the Food and Drug Association (FDA) classification. There is a definite risk to the foetus in all trimesters of pregnancy with group D drugs (aminoglycosides, quinolones and tetracyclines) and they should therefore be used only for vital indications. Antibiotics were used intravenously for 6 weeks. Valve surgery during pregnancy should be reserved for cases where medical therapy has failed as per guidelines in non-pregnant patients. Surgery was judged unnecessary as the MS remained moderate without aggravation of the mitral regurgitation and the infection was well-controlled by antibiotics. Delivery could be postponed until 37 weeks of gestation without incidents. Vaginal delivery could have been done as the MS remained moderate without pulmonary hypertension in an asymptomatic patient, but caesarean section was chosen by the obstetrician. In our centre, outcomes after successful BMV during pregnancy are excellent for both the mother and the foetus. IE did not affect the prognosis as it was successfully treated.

Conclusion
BMV may be a life saving therapy for severe MS complicated by refractory pulmonary oedema. It helped to overcome the critical situation even in the presence of IE. Conservative treatment may stabilize an IE and prevent a surgical treatment during pregnancy.

Abbreviations list
BMV, balloon mitral valvuloplasty; CRP, C-reactive protein; EKG, electrocardiogram; IE, infective endocarditis; MRI, magnetic resonance imaging; MS, mitral stenosis; MVA, mitral valve area; SPAP, systolic pulmonary arterial pressure; TEE, transesophageal echocardiography; TTE, transthoracic echocardiography; WBC, white blood cells.

Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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Figure 2: Cerebral MRI with T2 flair sequence (A), T2 weighted sequence (B) and diffusion sequence (C) a recent ischaemic stroke in the territory of the right middle cerebral artery.
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References
