Mitral valve endocarditis due to *Abiotrophia defectiva* in a 14th week pregnant woman

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Abstract

Infective endocarditis during pregnancy carries a high mortality risk, both for the mother and for the foetus and requires a multidisciplinary team in the management of complicated cases. We report our experience with a 39-year old patient, affected by an acute active mitral endocarditis due to *Abiotrophia defectiva* at the 14th gestational week, strongly motivated to continue the pregnancy. Our patient successfully underwent mitral valve replacement with a normothermic high-flow cardiopulmonary bypass under continuous intraoperative foetal monitoring. Caesarean section occurred at the 38th gestational week. The delivery was uneventful and both the mother and child are doing well at the 16-month follow-up.

Keywords: *Abiotrophia defectiva* • Endocarditis • Mitral valve • Pregnancy

INTRODUCTION

Infective endocarditis (IE) during pregnancy carries a high mortality risk, both for the mother and for the foetus and requires a multidisciplinary team in the management of complicated presentations [1, 2]. *Abiotrophia defectiva* endocarditis is quite unusual but often associated with a severe presentation and poor outcome [3, 4]. In the literature, this species, found as part of the normal human microbiota colonizing the oral, genitourinary and intestinal tracts, has not been previously reported in a pregnant woman.

Owing to its detrimental, maternal and foetal effects, open heart surgery during pregnancy is considered only after the failure of extensive medical treatment [5]. Correct timing of cardiac intervention still remains a matter of debate as well as the decision of pregnancy interruption before surgery [5, 6].

In this paper, we report our experience with a 39-year old patient, affected by an acute active mitral endocarditis at the 14th gestation week.

CASE REPORT

A 39-year old woman was admitted to our hospital for recurrent fever and dyspnoea for mild efforts. She was at the 14th gestation week. Past medical history consisted of one spontaneous abortion (first trimester) and two voluntary terminations of pregnancy (12th and 24th week of gestation) for a chromosomopathy 2 years earlier. No specific risk factors were identified (such as in vitro fertilization). In May 2013, she had intermittent fever, successfully treated with amoxicillin for 15 days. In September 2013, she was admitted to our department for persistent fever (39°C), chills, dyspnoea for mild efforts. At transthoracic echocardiography, a moderate-to-severe mitral regurgitation (eccentric jet from A3) and a small mobile structure (suspected vegetation) were evident (Fig. 1A and B). The infectologist prescribed 3 g ×4/die of i.v. ampicillin. Three days later, therapy was implemented with 80 mg ×2/die of i.v. Gentamicin. Blood cultural examinations revealed the presence of *A. defectiva*. Obstetrical evaluation documented a vital normal foetus. Amniocentesis was negative and the patient decided to continue the pregnancy.

Despite antibiotic therapy, clinical conditions worsened and high doses of diuretics and inotropic support were necessary to re-establish haemodynamic balance. Mitral insufficiency worsened from moderate-to-severe to severe and massive (Fig. 1). Chordal ruptures, leaflet perforations and multiple vegetations were observed (max 17 × 7 mm). End-diastolic diameter increased (51–53–56 mm) as well as end-diastolic volume (78–102–119 ml) in almost 3 weeks. After a careful multidisciplinary evaluation, mitral valve surgery was deemed necessary. Twenty-six days after admission, mitral valve replacement was performed under continuous monitoring. Caesarean section occurred at the 38th gestational week. The delivery was uneventful and both the mother and child are doing well at the 16-month follow-up.
foetal echographic monitoring (Fig. 2). Owing to extensive mitral valve destruction, valve repair was considered extremely challenging and time-consuming and a 31-mm mechanical prosthesis was implanted via the left atrium. Cardiopulmonary bypass (CPB) was performed in normothermia with a pump flow at 130% of the theoretical value. A warm blood reperfusion was used before clamp removal. CPB and cross-clamp times were 76 and 40 min (a single dose of blood cardioplegia was used without any alteration of electrolytes). Postoperative course was uneventful. Intensive care unit and postoperative hospital stay were 20 h and 7 days, respectively. At discharge, echocardiography showed a normo-functioning mitral valve and a good ejection fraction. End-diastolic diameter and volume were 48 mm and 87 ml, respectively. Antibiotic therapy was continued for 4 weeks. Anticoagulation was performed with warfarin, maintaining international normalized ratio (INR) between 2.5 and 3. This therapy was continued until 36th week of

Figure 1: At admission, transthoracic echocardiography showing a suspected vegetation (yellow arrow in A) and a moderate-to-severe mitral regurgitation (B). After 23 days, a 3D transoesophageal en face view revealed multiple and large vegetations on A3-P3 scallops (C, atrial side, red circle). A severe mitral regurgitation (two jets) with perforation of AML aneurysm was evident in D. AML: anterior mitral leaflet.

Figure 2: During extracorporeal circulation, foetal monitoring showed a normally pulsed umbilical (yellow arrow) flow despite continuous-flow cardiopulmonary bypass.
gestation, then shifted to low-molecular-weight heparin (LMWH) until Caesarean section was performed (38th week). The delivery was uneventful and a 3110-g healthy male baby was born. At last follow-up (16 months), both the mother and baby are in good clinical conditions.

**DISCUSSION**

To our knowledge, this is the first case of *A. defectiva* endocarditis at an early stage of pregnancy, successfully treated by a combination of medical therapy and open surgery followed by a safe delivery.

IE remains a highly morbid condition in the pregnant population. Patients should be managed by a multidisciplinary team including cardiologists, surgeons, gynaecologists, anaesthesiologists, infectologists and neonatologists to ensure the best outcome for the mother and foetus [2, 7]. In our patient, the cardiologists and infectologists suggested medical therapy (with surgical approval) whereas the surgeon along with gynaecologists proposed surgical indication (shared by the team) when clinical and instrumental parameters worsened.

Incidence of IE during pregnancy is reported to be 0.006% [2], although difficult to define because not all cases of pregnancy-related IE are published. Kebed et al. [1] found 90 cases of peripartum IE from 1988 to 2012; of these, 51 were pregnant. Maternal and foetal mortality rate ranged between 10 and 15%.

*A. defectiva* is a rare cause of IE, associated with high rates of morbidity and mortality [4], and presents itself mainly as Gram-positive cocci, although cocccobacilli and bacilli may occur, depending on the culture medium. Cells are non-sporulating and non-motile. Some studies have estimated that *A. defectiva* is responsible for 5–6% of all cases of IE [4]. High rates of embolization and treatment failure have been described. Neurological complications, including subarachnoid haemorrhage and/or mycotic aneurysm, can occur in 20–40% of cases [4].

The correct management of IE during pregnancy depends on clinical conditions of the pregnant lady, the gestational age, the response to medical therapy and the evolution of valvular lesions. In our case, patient's conditions worsened despite antibiotic and medical therapy. Open valve surgery represented the last available treatment option.

John et al. [6] reported outcomes of 21 pregnant patients undergoing cardiac surgery at Mayo clinic (1976–2009), stressing the importance of the timing of cardiac surgical intervention. They concluded that cardiothoracic surgery can be performed with relative safety during pregnancy although an early intervention could decrease maternal risk but may result in foetal demise while delaying cardiac surgery soon after delivery may result in maternal death. Foetal complications were associated with urgent, high-risk surgery, maternal comorbidity and early gestational age.

Elassy et al. [5] reported their experience on 23 women. Only 2 patients continued their pregnancy to full term after surgery while delivery was done immediately before surgery in 11 patients. There were 10 intrauterine foetal deaths, all below 28 weeks. They concluded that high incidence of foetal losses might be expected when the surgery is performed at an early gestational age.

Regarding perioperative management, using normothermic high-flow CPB (>2.4 l/min⁻¹/m²), keeping mean arterial blood pressure above 70 mmHg is strongly recommended. Intraoperative foetal monitoring can be advisable in patients with a gestational age <24 weeks. Despite recommendations to attempt valve repair in these women, it is often impossible to repair the severely damaged valves [5]. When valve repair is unfeasible or in case of uncertain result, valve replacement should be performed from the beginning. Reduced CPB and clamping times have favourable effects on outcomes. The choice of an appropriate prosthesis is often hard. Biological valves are often delayed for fear of reoperation. Alternatively, a mechanical valve can be implanted, particularly if the embryological period has passed [8]. Unfortunately, there are limited data regarding anticoagulation during pregnancy and there is no perfect anticoagulation regimen for the pregnant woman with a mechanical prosthesis. Oral vitamin K antagonists are the optimal anticoagulants in terms of prevention of valve thrombosis and embolic events but are associated with detrimental effects on the foetus. According to the current AHA/ACC guideline recommendations, Warfarin is recommended in pregnant patients with a mechanical prosthesis to achieve a therapeutic INR in the second and third trimesters (Class I, level of evidence B). Our centre follows these recommendations shifting to LMWH 2 weeks before the planned delivery.

**CONCLUSIONS**

IE due to *A. defectiva*, never reported at an early stage of pregnancy, is rare and life-threatening with a rapid evolution. Although surgical timing needs to be further defined, conventional valve replacement can be safely performed at an early gestation age adopting normothermic high-flow CPB and intraoperative foetal monitoring. Pregnancy can be successfully continued, even with a mechanical valve requiring anticoagulation therapy.

**Conflict of interest:** none declared.

**REFERENCES**


eComment. Challenges in approaching infective endocarditis caused by *Abiotrophia defectiva*

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