

Can Infectious Endocarditis during Pregnancy Be Cured with Only Drug Treatment?

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ABSTRACT

During pregnancy, infective endocarditis (IE) is quite rare but has a high mortality rate in terms of the mother and the fetus. In this article, a 24-year-old patient with a history of mitral valve prolapse (MVP) who was hospitalized due to IE and treated successfully is presented. On echocardiography, severe mitral valve prolapse, severe mitral regurgitation, and vegetation on the posterior leaflet of mitral valve were observed. *Streptococcus mitis* was subsequently isolated from four sets of blood cultures. The patient was diagnosed with IE. After 6 weeks of antibiotic therapy, the patient was cured completely without surgical treatment. At 40-weeks of pregnancy, the patient gave birth via a normal vaginal delivery. There were no problems with the 3,800-gram baby born. In current guidelines, there is very limited advice on treatment options for patients who develop IE during pregnancy. Therefore, evaluation of patient-based treatment options would be appropriate. In addition, IE prophylaxis for MVP is not recommended in current guidelines. However, in MVP patients with mitral regurgitation, prior to procedures associated with a high risk of infective endocarditis, IE prophylaxis may be rational.

INTRODUCTION

Infective endocarditis (IE) is quite rare during pregnancy (0.006%) [Cox 1988]. However, it has high mortality rates in terms of both mother and fetus (22.1%, 14.7% respectively) [Campuzano 1990]. IE usually occurs in the setting of preexisting cardiac lesions, or as a result of intravenous drug abuse. Complications of IE are often associated with heart failure or an embolic event [Campuzano 1990; Kebed 2014]. The management of IE developed during pregnancy has a number of challenges. Both the type of selected treatment (medical therapy or surgery and etc.) and the timing of delivery require great caution.

In this article, a 24-year-old pregnant patient with a history of mitral valve prolapse (MVP) who was treated successfully for IE is presented.

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CASE REPORT

A 24-weeks-pregnant 24-year-old patient on her third pregnancy with 2 live births was admitted with intermittent fever in the last one month and increasing dyspnea in the last week. Her history revealed the presence of MVP and moderate mitral regurgitation before pregnancy. On physical examination, body temperature was 38.1°C, heart rate 110 beats/min, blood pressure 104/60 mmHg, respiratory rate 24/min, and a 3/6 pansystolic murmur predominantly in the mitral region and at the apex and pulmonary basilar rales was observed. Laboratory examination revealed a hemoglobin level of 10.2 g/dL, a white blood cell count of 11,000 mm³, and a C-reactive protein (CRP) of 7.5 mg/dL. Her electrocardiogram showed sinus tachycardia. On echocardiography evaluation, MVP, severe mitral regurgitation, and a vegetation of 1.0 × 1.8 cm in size on mitral valve posterior leaflet were observed (Figure 1, A). *Streptococcus mitis* (oralis) was subsequently isolated from all four sets of blood cultures and highly susceptible to penicillin. The patient was diagnosed with IE according to the modified Duke Criteria [Fournier 1996; Li 2000], specifically 2 major criteria: positive blood culture for typical microorganism and vegetation on echocardiography. The patient was started on 6 million units of penicillin G every six hours. Short-term low-dose diuretic therapy was also given. As a result of consultation with obstetrical and cardiovascular surgery experts, it was decided to continue the pregnancy, and 6 weeks of antibiotic therapy was planned. After starting the antibiotics, the patient became afebrile. White blood cell count and CRP values decreased. Blood cultures became negative. In the follow-up echocardiography of the clinically stable patient, the previously severe mitral regurgitation had decreased to moderate degree, and the vegetation had regressed markedly (Figure 1, B). During this period, any problems with the fetus were detected on fetal evaluation. Antibiotic therapy was discontinued after 6 weeks. Afterwards, the patient was followed for 2 weeks and then discharged. At the patient's fortieth week of pregnancy, a vaginal delivery was achieved. A 3,800 gram male infant was born without any problem for mother or child. On the follow-up echocardiography examination done in the postpartum period, calcification of the vegetation on the mitral valve was observed (Figure 2). The mitral valve regurgitation flow was observed to be moderate. The patient was considered to be cured of the endocarditis.

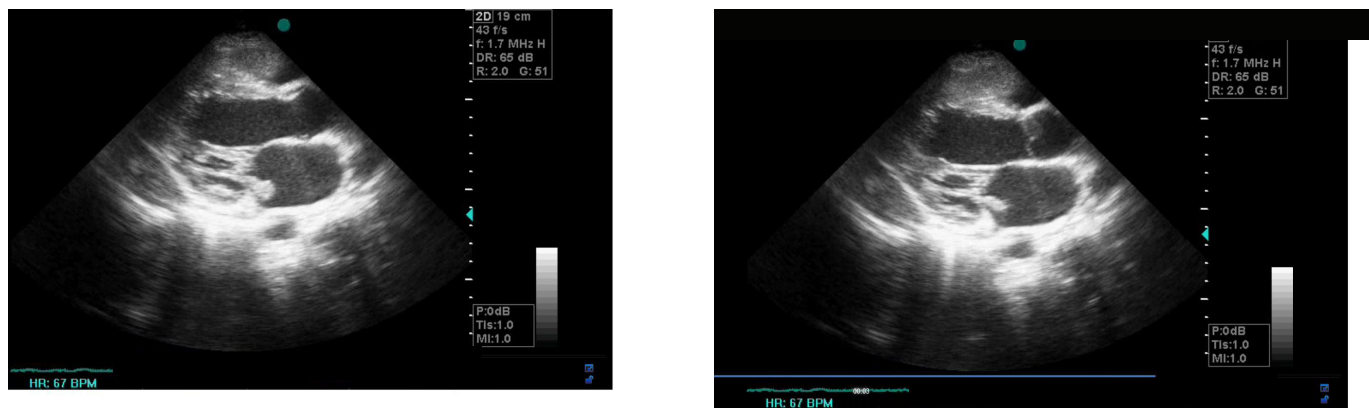


Figure 1. A, Vegetation of 1.0×1.8 cm in size on mitral valve posterior leaflet. B, The regression of vegetation.

DISCUSSION

IE in pregnancy is a rare but life-threatening complication that can lead to death. IE generally develops in the setting of underlying rheumatic valve disease, congenital heart disease, a prosthetic valve, or another structural problem. The Duke Criteria is used for diagnosis of IE and, based upon clinical, echocardiographic, and microbiological findings, provides high sensitivity and specificity (80% overall) for the diagnosis of IE [Fournier 1996; Li 2000]. MVP incidence varies according to the diagnostic criteria. However, in a recent community-based study it is reported to be present in 2-3% of the population [Boudoulas 2013]. In a recent systematic review of 2,371 IE cases based on 15 studies, it was reported that while IE incidence associated with MVP and prosthetic valve disease increased over time, the number of cases associated with rheumatic mitral valve disease decreased [Tleyjeh 2007]. In another study among patients with the diagnosis of IE, MVP incidence has been reported to be as high as 23% [Yang 1997]. MVP with the presence of mitral insufficiency is known to increase the risk of IE development. Mitral regurgitation or increase on the level of existing mitral regurgitation can lead to symptoms in IE patients with MVP. While mitral regurgitation in pregnancy

is sometimes well-tolerated for a certain period, rapid development of mitral regurgitation may be life-threatening especially with valve complications such as perforation and chordal rupture. In recent years, despite advances in medical and surgical treatment of IE, there are still high mortality rates for the mother and the fetus [Campuzano 1990]. In pregnant patients with IE, the most important issue is to protect the lives of the mother and the fetus. In order to minimize the risks for mother and fetus, medical treatment should be the first treatment option. Delayed and inappropriate antibiotic therapy has an important effect on outcome. A prompt antibiotic therapy can avoid the occurrence of severe sepsis, multiple organ dysfunction syndrome, and sudden death. The choice of definitive antibiotic therapy is based on the causative microorganism and its antibiotic susceptibility, and whether the involved valve is native or prosthetic. Surgical treatment should not be preferred in the first two trimesters, except in cases refractory to medical treatment and in emergent situations (heart failure, shock, and ongoing embolism) [Parry 1996]. Surgical operations carried out in the first trimester are thought to potentially lead to congenital malformations. With advances in neonatal care in recent years, the survival rates of babies born after 28 weeks of gestation are much improved. In many cases, after appropriate antibiotic therapy, elective caesarean section performed simultaneously with the surgery for the mother (valve repair or valve replacement) can be performed [Zitnik 1969]. It is recommended that surgical treatment should be delayed as much as possible and be done after full control of infection [Parry 1996]. In our case, after antibiotic treatment, the patient was clinically stable, with improvements in the biochemical parameters, and with echocardiographic findings of regression in mitral valve regurgitation flow. Calcified shrinking of vegetation suggested that the IE was cured. As a result of these evaluations, a possible intervention of the mitral valve was to be decided by the evaluation after delivery. In our case, a normal vaginal delivery at 40 weeks of gestation occurred and a healthy baby was delivered.

In the patients with MVP, IE prophylaxis is still a matter of controversy. The European Society of Cardiology has recommended the prophylaxis of IE only for high-risk group of

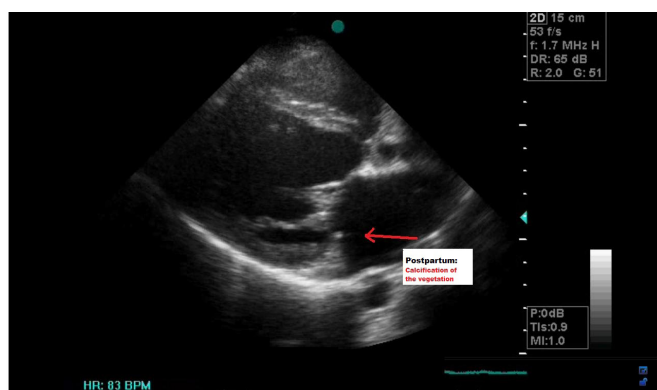


Figure 2. Postpartum period, calcification of the vegetation on the mitral valve.

patients: patients with prosthetic valve or with some prosthetic material used for heart valve repair; patients with a history of previous IE who have undergone treatment; and patients with some congenital heart diseases, only before high-risk invasive procedures (dental procedures when gum or the tooth periapical region is manipulated) [Habib 2009]. Mitral valve prolapse was not specially addressed in these recommendations. In studies with MVP, in patients without mitral regurgitation or thickening, an increase in the risk of IE has not been reported [Steckelberg 1993; Carabello 1993; Piper 1996; Bonow 1998]. However, in patients with mitral valve regurgitation in the setting of MVP, there are many studies showing an increased risk of IE. In mitral valve prolapse, regurgitation, valve thickening, calcification and, particularly, myxomatous degeneration increase the risk of IE [Carabello 1993; McKinsey 1987; Nishimura 1985]. Just as in our case, it is rational to provide IE prophylaxis for patients with moderate/severe mitral regurgitation together with MVP, before high-risk procedures. In our case, in the postpartum evaluation, the patient's functional capacity was class 1 and on the echocardiography examination, the vegetation on the mitral valve was observed to be calcified and regurgitation flow was observed to be moderate. Surgical treatment was not considered at the present stage. In terms of the timing of valve surgery, close follow-up with echocardiography in a 6-month period was planned.

Conclusion

During pregnancy, management of IE is a difficult problem. Especially in pregnant women with structural heart diseases, and in cases with unexplained fever and heart murmur, IE should come to mind and clinicians should start treatment promptly. In current guidelines, during pregnancy in patients with IE, recommendations regarding treatment options are very limited. Thus, selected treatment options should be based on evaluation of patients. In clinically stable patients with a complete response to drug therapy, the need for cardiac surgery can be determined after delivery.

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