

“Removal without Replacement” Strategy for Uncontrolled Prosthetic Tricuspid Valve Endocarditis Associated with Abortion Sepsis

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ABSTRACT

Isolated tricuspid valve (TV) endocarditis associated with abortion is a rare entity with a poor prognosis. We report the case of a 22-year-old woman with a diagnosis of isolated prosthetic TV endocarditis secondary to recurrent abortion. The patient had progressed to multiorgan failure and disseminated intravascular coagulation during her clinical course. Because of the high operative risk and uncontrolled infection, we performed an unusual surgical approach that has not previously been reported. Resection of infected valvular tissue without replacement of the prosthesis led to a rapid convalescence period and complete cure.

INTRODUCTION

Isolated tricuspid valve (TV) endocarditis associated with abortion is a rare entity, and there are only brief case reports in the literature [Kangavari 2000; Aslam 2005; Palys 2006; Jeppson 2008]. The disease usually has an aggressive course, and surgery was indicated in nearly half of the cases. We present a patient with prosthetic TV endocarditis (PTVE) secondary to recurrent abortions. The patient progressed to multiorgan failure, and a subsequent unusual surgical treatment led to rapid convalescence and cure of the infection.

CASE REPORT

A 22-year-old female patient was referred to our center with a diagnosis of PTVE. She had had recurrent abortions and received a diagnosis of TV endocarditis after a septic abortion 7 months before. She was treated with antibiotics for a month. Because of the uncontrolled infection, she underwent TV replacement with a bioprosthetic valve. The patient was admitted 6 months later to a public hospital with complaints

of fever, malaise, and fatigue after termination of a pregnancy with abortion. A transthoracic echocardiography (TTE) evaluation revealed a large vegetation on the bioprosthetic TV. Antibiotic treatment began with 2 g/day vancomycin, 180 mg/day gentamicin, 4 g/day cefoperazone, and 600 mg/day rifampicin. After 2 weeks of therapy, the patient was referred to our center for surgical treatment. After an initial evaluation, medical treatment was tried once more. A TTE examination revealed a mobile vegetation of 1.8 × 1.7 cm attached to the bioprosthetic TV (Figure 1). The maximum gradient across the TV was 15 mm Hg (mean, 10 mm Hg; Figure 2). Blood cultures showed proliferation of *Enterococcus* and *Pseudomonas* species. Antibiotic therapy was continued with 2 g/day vancomycin, 2 g/day metronidazole, 600 mg/day rifampicin, and 6 g/day meropenem. The patient's general status deteriorated progressively, however. After 10 days of medical treatment, septic shock and disseminated intravascular coagulation (DIC) developed, with concomitant retroperitoneal hemorrhage, gastrointestinal hemorrhage,

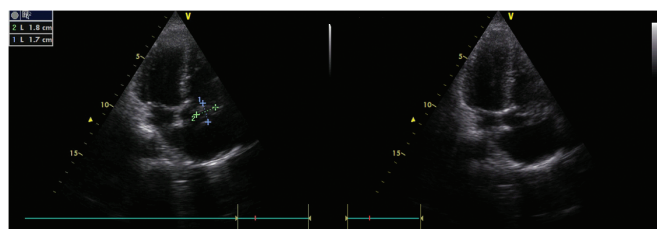


Figure 1. Transthoracic echocardiographic images of vegetation on the bioprosthetic tricuspid valve.

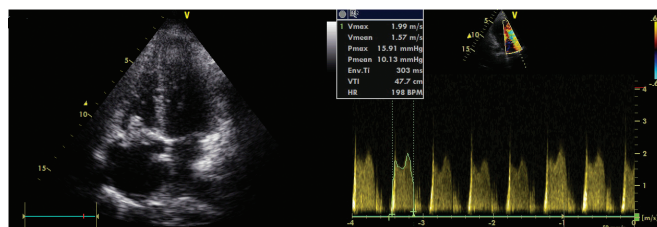


Figure 2. Images of vegetation and gradient across the bioprosthetic tricuspid valve.

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and signs of liver, kidney, and heart failure. The patient was intubated, and supportive medical care, including blood transfusion, was given. Emergent removal of the infected TV prosthesis without replacement was performed. Immediately after the operation, the patient began to improve. The DIC disappeared within the first postoperative day. Antibiotic treatment consisted of 2 g/day vancomycin and 2 g/day metronidazole administered for 2 additional weeks. On the third postoperative day, the sedimentation rate, which was initially measured at 105 mm/h, decreased to 55 mm/h. After surgery, the patient showed a rapid convalescence, and the signs of kidney, liver, and heart failure disappeared progressively. The patient was discharged at the end of the second week. The final blood cultures taken before the discharge were clear. Elective TV replacement will be scheduled in the next 3 months.

DISCUSSION

TV surgery is usually performed with other cardiac procedures, mainly mitral and aortic valve surgery [Singh 2006; Guenther 2008]. Isolated tricuspid procedures are rare, and data about surgery for PTVE are limited to brief reports [Bernal 2008]. TV endocarditis is commonly seen in intravenous drug users or patients with pacemaker implantation. Isolated TV endocarditis without preexisting cardiac disease is also rare, and the mechanism is poorly understood [Revilla 2008]. Septic abortion is one of the causes reported for isolated right-sided endocarditis. Although the incidence of infective endocarditis associated with abortion or curettage is reported as 1 per million, the numbers of such cases have increased in the recent medical literature [Kangavari 2000; Aslam 2005; Palys 2006; Jeppson 2008]. Among the reported cases, the organism most frequently causing endocarditis is group B *Streptococcus* [Azzam 1998; Panigrahi 1998]. The mortality rate is 15%, and surgical treatment is indicated when antibiotics fail to control the infection. All reported cases secondary to abortion were native TV endocarditis. There are no data about PTVE associated with abortion. In addition, there are no clear data or case reports that define the course of bioprosthetic TV endocarditis treated with antibiotics. Urgent surgical therapy is a challenge, and its effectiveness is restricted to selected cases. Mechanical valve replacement is associated with an increased risk of infection and a poor prognosis. Valve replacement with a bioprosthesis and/or upside down stentless aortic bioprosthesis replacement of the TV have been reported for uncontrolled endocarditis [Walther 1999; Cardarelli 2005; Sung 2009; Gutierrez-Martin 2010; Pisani 2010]. Our patient had had both native and prosthetic valve endocarditis within a short time period and did not have the predisposing classic risk factors for right-sided endocarditis. In both conditions, abortion was the triggering factor for infection. In the first presentation, surgical therapy with a bioprosthesis was preferred because of uncontrolled infection. In the second presentation, the patient was in the state of multiorgan failure and DIC. Operative mortality is usually high in such cases. Surgical removal of all infected valvular tissue was the only choice for treatment. This strategy decreased

the operative time and reduced the risk of contamination of a new valve prosthesis. The patient showed a dramatic response to the surgery, even in the first postoperative day and had a rapid recovery. She was discharged home well.

TV resection leaves the patient with the equivalent of complete TV insufficiency. TV insufficiency seen in patients with active TV endocarditis is tolerated to varying degrees. Patients with severe insufficiency, if tolerated, are the best candidates for TV resection without immediate replacement. If the patient does not have significant TV insufficiency before the procedure, the sudden development of complete TV insufficiency resulting from TV resection will be poorly tolerated. These patients may not be good candidates for TV resection as the primary therapy. For these reasons, patients with TV endocarditis with an abrupt beginning with no history of valvular disease and/or a normal right atrial and right ventricular size and function are not suitable for a "infected valve removal without replacement" strategy. Our patient had experienced second attacks of TV endocarditis. Because of the long-term TV disease, she had both an enlarged right atrium and an enlarged right ventricle, although she did not show tricuspid insufficiency on the last presentation. Thus, she tolerated the removal of the TV, which led to a large tricuspid insufficiency, and she did not progress to right-sided heart failure. We believe that TV resection for uncontrolled sepsis in TV endocarditis is suitable for patients who have become accustomed to severe TV insufficiency before the procedure.

CONCLUSION

PTVE due to abortion is rare, with a poor prognosis. Surgery is usually indicated in such cases because of the disseminated infection. Surgical removal of the infected valve without replacement is an alternative treatment for these patients.

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