Surgical Treatment Of Right Sided Valvular Endocarditis
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Citation

Abstract
Reports of tricuspid endocarditis have increased in frequency during the past 2 decades (1,2). The growing number of patients addicted to intravenous (IV) drugs and those with long-term IV catheters or with antiarrhythmic devices, such as implantable defibrillators and pacemakers, have considerably increased the number of patients at risk of right-sided endocarditis. The case presented had no predisposition. We report a patient with tricuspid valve infective endocarditis who underwent surgical valve repair. At surgery, the leaflets weren't completely excised and annuloplasty was performed. The patient had a good postoperative recovery. Postoperative echocardiography showed mild tricuspid regurgitation. The patient has been followed up for two months in our outpatient clinic. Tricuspid valve repair rather than valvulectomy or replacement is preferred in cases of right-sided endocarditis with single-leaflet involvement, because repair enables eradication of the infection without implantation of prosthetic material.

INTRODUCTION
Reports of tricuspid endocarditis have increased in frequency during the last 2 decades (1,2). The growing number of patients addicted to intravenous drugs and those with long-term IV catheters or with antiarrhythmic devices, such as implantable defibrillators and pacemakers, have considerably increased the number of patients at risk of right-sided endocarditis. We report herein a case without any apparent etiologic factor contributing infective endocarditis, with special emphasis on treatment.

CASE REPORT
A five-years-old boy was admitted to our hospital with high fever(40°C) for 20 days who was diagnosed as sinusitis, and pneumonia. History revealed no previous cardiac problems. There was a 3/6 pansystolic murmur over the sternum. Abdominal ultrasound showed mild hepatomegaly and minimal ascites. His cranial CT scan showed no evidence of intracranial foci. Salmonella and Brucella agglutination tests were negative. Bone marrow aspiration ruled out malignancy. Blood smear also did not show any Plasmodium. Clinically the patient was in class I in New York Heart Association (NYHA). Infective endocarditis diagnosis was made according to Duke criteria(3). Two-dimensional and doppler echocardiography revealed moderate-to-severe tricuspid regurgitation. Multiple vegetations were seen, basically localized on the anterior tricuspid leaflet (Figures 1,2).

Figure 1
Figure 1: Vegetation on the anterior leaflet.
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Figure 2
Figure 2: Vegetation dimensions.

Staphylococcus aureus was identified on all blood cultures. Recurrent pulmonary embolism and persistence of fever despite appropriate antibiotic therapy were indications for urgent surgery. The operative approach was through a standard median sternotomy incision. Patient underwent valve repair with aortic cross-clamping and hypothermic arrest with use of cold blood cardioplegic solution. Surgeon’s policy was to perform wide-margin resection of the vegetation area and to restore tricuspid valve competence without any prosthesis(Figure 3).

Figure 3
Figure 3: Surgical excision of the vegetations on the tricuspid valve.

To achieve leaflet coaptation and stability of the repair over time, annuloplasty has been preferred in all cases. Resected valvular tissue was sent to the laboratory for histological examination and culture. Intraoperative testing of tricuspid valve competence was performed by injecting cold saline solution into the right ventricle. Parenteral antibiotic therapy was continued for 4 weeks postoperatively. Cultures of excised tricuspid leaflets did not show bacterial growth. Histological examination confirmed the clinical diagnosis of infective endocarditis.

Patient was discharged from the hospital within 10 days postoperatively. Postoperative echocardiography showed mild tricuspid regurgitation. Patient remains well at a mean follow-up period of 6 months.

DISCUSSION

It has been reported that the incidence of tricuspid valve endocarditis has risen dramatically during the last 2 decades(1,2). Successful cardiac surgery and interventional electrophysiology have considerably prolonged the survival of patients with congenital or acquired heart valve disease, as well as those with heart block or malignant tachyarrhythmias (1,2,4). Many patients with malignancies are treated with chemotherapy by means of long-term central venous catheters and also drug abuse predisposes to tricuspid valve endocarditis (1,2,4). Right-sided endocarditis is probably more common than is recognized and is therefore under diagnosed (5). The right side of the heart is less susceptible to injury from tricuspid regurgitation and pulmonary embolization than from lesions associated with left-sided endocarditis. Fortunately, tricuspid valve lesions can be treated medically. Most of these infections are caused by organisms that can be treated successfully with antibiotics(6). The surgical treatment of right-sided endocarditis is debatable, but nevertheless, improved sensitivity of routine echocardiography in detecting intracardiac vegetations enables diagnosis of an increasing number of cases of tricuspid endocarditis. Our patient had no prior documented cardiac problem or a predisposition for right sided infective endocarditis. He was admitted to the outpatient clinic with persistent fever of unknown origin. Diagnosis was made by echocardiography and positive blood cultures (10,11). Surgical intervention was necessitated(10,11).

The successful surgical treatment of tricuspid endocarditis includes excision of all infected tissue and restoration of valvular competence. Surgical intervention allows complete removal of infected tissues. Tricuspid replacement may be another therapeutic option. Although early reports of tricuspid valve replacement indicate a high incidence of valve-related complications including reinfection, heart block, prosthetic thrombosis, and poor hemodynamic
performance, the development of bileaflet valves and low-profile porcine valves have greatly improved the prognosis of patients after tricuspid valve replacement. Transvalvular gradients are low when prostheses larger than 31 mm are implanted; the incidence of prosthetic thrombosis is low, even if mechanical valves are used; and calcific degeneration of the tricuspid bioprosthesis develops more slowly than it does in the mitral position (12).

The best immediate and short-term solution to the problem of tricuspid valve endocarditis may be generous excision of valvular tissue when it has vegetations and reconstruction of the native valve without the use of prosthetic material. Valve reconstruction after excision of one half to three quarters of the anterior tricuspid leaflet can be considerably more complex than reconstruction after excision of redundant leaflet tissue in mitral valve repair procedures. The initial moderate insufficiency after tricuspid repair is well tolerated by the patients, and valvular competence generally improves over time (4). Residual regurgitation subsides with the resolution of right ventricular volume overload.

In conclusion, resection of all infected tricuspid tissue and simple repair without prosthetic material achieves a high rate of success in patients who have infective endocarditis. Complete excision of the posterior leaflet or resection of almost all of the anterior leaflet can be accomplished while maintaining good valvular function. Cases of endocarditis involving 2 tricuspid leaflets or the whole valve are best treated with tricuspid valve replacement.

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