Fifteen years survival without anticoagulation after mechanical tricuspid valve replacement: a case report

Mekanik triküspit kapak değişimi sonrası antikoagülasyonsuz 15 yıllık sağkalım: Olgu sunumu

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Isolated tricuspid valve replacement is not a common operation and the choice between mechanical and biologic prostheses remains controversial. When mechanical prosthesis are used, anticoagulant therapy is mandatory. In this article, we report a 21-years-old female patient who survived 15-years without anticoagulation following tricuspid valve replacement with a Björk-Shiley prosthesis. Ultimately the mechanical valve was stuck and we replaced the tricuspid valve with a St. Jude Medical trileaflet bioprosthesis.

Key words: Cardiac surgical procedures; heart valve prosthesis; prosthesis failure; tricuspid valve.

İzole triküspit kapak değişimi yaygın olarak yapılan bir ameliyat olmayıp, mekanik veya biyolojik protez kapak arasındaki tercih tartışmalıdır. Mekanik protezler kullanıldığında antikoagülan tedavisi zorunludur. Bu yazıda, Björk-Shiley protezi ile triküspit kapak değişimini takiben 15 yıl antikoagülasyon olmadan sağ kalan 21 yaşında kadın hasta bildirildi. Sonuçta mekanik kapak tıkandı ve triküspit kapak, St. Jude Medical trileaflet biyoprotez kapak ile değiştirildi.

Anahtar sözcükler: Kardiyak cerrahi işlemler; kalp kapak protezleri; protez iflası; triküspit kapak.

Tricuspid valve replacement (TVR) is not a common operation. It is generally agreed that tricuspid valve repair is performed for functional disease and, if possible, for native valve endocarditis. But in some specific cases, TVR is unavoidable, for example, severe organic and functional disease, especially in cases of multiple reoperative procedures.[1,2] Although there has been very rare data in the literature regarding patients with mechanical heart valve prosthesis that survived without using anticoagulant therapy, it is clearly documented that anticoagulation is mandatory in all mechanical valve replacements. In this study we report the case of female patient who survived 15-years without anticoagulation following tricuspid valve replacement with the Björk-Shiley prosthesis.

CASE REPORT

A-21-year-old female patient was admitted to our outpatient clinic with symptoms of dyspnea, orthopnea and pretibial edema. Her complaint started five months ago and increased in the previous weeks. The patient had undergone a TVR with a number 23 Björk-Shiley mechanical prosthetic valve in a different hospital when she was six-years-old in 1989, because of tricuspid valve endocarditis. She had not undergone any routine follow-up and notably had not taken any anticoagulant therapy over the 15-year follow-up period.

Physical examination revealed an arterial pressure of 100/55 mmHg and a pulse of 110 beats/min. A 3/6 systolo-diastolic murmur over the mezocardiac area was heard and mechanical valve sounds were not appreciated during cardiac auscultation. The patient had 6 cm hepatomegalia and New York Heart Association (NYHA) functional class III. Electrocardiography revealed sinus rhythm, and on chest radiography, the cardiothoracic ratio was 80%. We found no leaflet motion on the valve under radiological (scope) examination. Transthoracic echocardiography showed 20-9 mmHg peak and mean diastolic gradients, severe tricuspid insufficiency and no leaflet motion on the prosthetic valve, we also noticed severe right atrial enlargement (11x9 cm). The laboratory findings were found as; ALT: 28 U/L, AST: 33 U/L, GGT: 77 U/L, direct billirubine: 0.32 mg/dl, total billirubin: 1.15 mg/dl, INR: 1.07, PT: 13.7 sec, APTT: 33.8 sec, fibrinogen: 3.19 g/L.

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General intravenous anesthesia was used for the operation. The heart was reached through a median sternotomy. A purse string suture on the aorta and two purse string sutures on the right atrium were placed. The operation was performed with the use of standard cardiopulmonary bypass (CPB) without clamping the aorta in the beating heart. The vena cava inferior and superior were surrounded by encircling tape.

When the right atrium was opened, we observed that the disc of the prosthesis was stuck by the pannus and thrombosis in the half-open position (Fig. 1). We observed that the Björk Shiley valve was not able to move. The prosthetic valve was excised and a number 29 St. Jude Medical trileaflet biologic prosthetic valve was replaced with interrupted pledgeted sutures. We close the right atrium by continuous suture technique. There were no operative or postoperative complications, and she was discharged from hospital on the 6th postoperative day. At the time of discharge, she was informed of the importance of regular follow-up visits.

Postoperative 1st month follow-up showed the patient without any symptom and NYHA class I-II. Hepatomegalia and pretibial edema were not observed. Transthoracic echocardiography showed non-restricted normal leaflet motion in the tricuspid position. The transtricuspid peak and mean diastolic gradients were 10/4.5 mmHg, right atrial diameter was 6.2x5.6 cm, and mean pulmonary artery pressure was 10 mmHg.

DISCUSSION

Tricuspid valve repair is usually performed for functional disease and if possible, for native valve endocarditis. Tricuspid valve repair is usually reserved for severe organic and functional diseases, especially in cases of multiple reoperative procedures.[1-3] The hospital mortality rate has been reported in a range of 12% to 27%.[1-3] We could not find any difference in the English literature regarding comparison of hospital mortality and postoperative morbidity between patients undergoing biologic or mechanical prosthesis.[1,2] Isolated TVR is associated with poor short and long-term results and a high rate of postoperative complications.[4]

Fig. 1. The stucked Björk-Shiley prosthesis on the tricuspid position.

The choice between mechanical and biologic prostheses remains controversial. Tricuspid valve repair with biologic prosthesis is associated with the need of reoperation for prosthetic dysfunction in the follow-up. Tricuspid valve repair with mechanical valves have a risk of thrombosis of the prosthesis. The higher prevalence of tricuspid valve thrombosis in older mechanical valves has been reported by several authors previously.[5,6] Some authors reported that with correctly regulated anticoagulation therapy, the St. Jude Medical bileaflet mechanical valve offers a good long-term results and low prevalence of valve related thromboembolism.[7] On the other hand, there was relative freedom from degeneration or structural failure of bioprostheses implanted in the tricuspid position.[8] On the right side of the heart, valves work with lower pressures to overcome the valve inertia, so the ultimate degeneration of the valves were considered as a reasonable risk when we compared with the left side of the heart. The conventional idea was that a porcine bioprostheses should be implanted when isolated TVR was indicated.[1,9,10] Patient survival, valve-related complications or freedom rates from tricuspid reoperation were also similar between the two types of prostheses.[1,11] It seemed that implantation of mechanical prostheses in the tricuspid position especially when association with additional implantation of mechanical valves in the left side of the heart would require life-long warfarin therapy.

We preferred bioprosthesis implantation in the right side of the heart in our case, because of the low incidence of degeneration. We also prefer biological valves on right side if we suspect that the patient has less compliance to drug use. In the tricuspid position, the hematological situation may deteriorate therefore anticoagulation treatment puts the patient health at risk. In conclusion, mechanical disc or ball valves in the tricuspid position are prone to dysfunction by pannus formation or thrombosis.[5,6] In our case, we observed that if the tricuspid valve remains open, this situation did not reach a fatal result and gave us a chance to treat the occluded valve surgically. As a result of this case report, we concluded that a stuck valve in tricuspid position is compatible with life provided that a hole on the artificial valve is available. In this specific situation, the use of bioprosthesis is a convenient option for surgical treatment.

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