

Pulmoner Restenoz ve Pulmoner Kapak Endokarditi Nedeniyle Yapılan Medtronic Freestyle Aortik Root Biyoprotez Replasmanı

MEDTRONIC FREESTYLE AORTIC ROOT BIOPROSTHESIS REPLACEMENT DUE TO PULMONARY RESTENOSIS AND PULMONIC VALVE ENDOCARDITIS

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Özet

Pulmoner kapak, kalp kapakları arasında infektif endokardite en az tutulandır. Onsekiz yaşında kız hastaya dört günlük ateş ve öksürük şikayetleri ile başvurduğu kardiyoloji kliniğinde izole pulmoner endokardit tanısı kondu. Kan kültüründe Nutritionally Variant Streptococcus spp. üreyen hastaya 10 yıl önce pulmoner valvuloplasti yapılmıştı. Ekokardiyografide restenotik pulmoner kapak üzerinde vejetasyonlar görülüyordu. Altı haftalık antibiyotik tedavisini takiben Medtronic Freestyle aortik root biyoprotez replasmanı yapılan hasta komplikasyonsuz olarak taburcu edildi.

Anahtar kelimeler: Pulmoner kapak endokarditi, pulmoner restenozis, Medtronic Freestyle biyoprotez

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Summary

The pulmonic valve is the least commonly involved valve in infective endocarditis. The case of an 18-year-old girl with isolated pulmonic valve endocarditis is presented. She was admitted to the cardiology department complaining of fever and cough for four day. She had a history of balloon pulmonary valvuloplasty 10 years ago. Blood cultures grew Nutritionally Variant Streptococcus spp, and echocardiogram identified vegetation on the restenotic pulmonic valve. She underwent elective operation and Medtronic Freestyle aortic bioprosthesis was replaced following six weeks antibiotic therapy. Patient was discharged with no postoperative complication.

Keywords: Pulmonary valve endocarditis, Pulmonary restenosis, Medtronic Freestyle bioprosthesis

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Introduction

The pulmonic valve is the least commonly involved valve in infective endocarditis. The case of an 18-year-old girl with isolated pulmonic valve endocarditis and pulmonary restenosis is presented. She had a history of balloon pulmonary valvuloplasty 10 years ago. She underwent elective operation after antibiotic therapy. Patient was discharged with no postoperative complication. Isolated pulmonic valve endocarditis is rare, accounting for 1.5-2.0% of all admissions for endocarditis [1]. Pulmonic valve endocarditis is usually associated with tricuspid valve endocarditis, and isolated pulmonic valve endocarditis is exceedingly rare. The predisposing factors for developing pulmonic valve endocarditis include a congenitally anomalous pulmonic valve, intravenous drug abuse, and the presence of indwelling intravenous or flow-directed pulmonary artery catheters [2-4]. We report a case of isolated pulmonic valve endocarditis

caused by Nutritionally Variant Streptococcus spp in an 18-year-old girl who had a history of balloon pulmonary valvuloplasty 10 years ago.

Case Report

She was admitted to the cardiology department complaining of fever and cough for four day. She had a history of balloon pulmonary valvuloplasty 10 years ago. Physical examination: Her blood pressure was 110-60 mmHg, pulse 116 per minute, temperature 38.4°C, respiration rate 24 per minute. Her lungs were clear and a systolic murmur of grade 3-4/6 was heard over the pulmonic areas. The liver and spleen were nonpalpable. Fundoscopic examination was normal. Chest X-Ray yielded normal results. An electrocardiogram showed right ventricular hypertrophy. Abdominal ultrasonography was normal. Transthoracic echocardiography showed dilated right heart chambers, pulmonary stenosis (transvalvular gradient 135

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mmHg) and vegetation both on the pulmonic valve and main pulmonary artery (Figure1).

Laboratory results were as follows: erythrocyte sedimentation rate 50 mm/hour, C reactive protein 28 mg/l, hemoglobin 9.4 g/dl, hematocrit 29%, white blood count 7300/mm³, platelets 84.000/mm³. Biochemical tests of liver and renal function were within normal limits. Her prothrombin time was 13 seconds and partial thromboplastin time was 34 seconds (controls 13 and 33 seconds respectively). Urinalysis showed microscopic hematuria. Blood cultures grew Nutritionally Variant Streptococcus spp, and antibiotic treatment was initiated with penicillin and gentamicin with the diagnosis of infective endocarditis.

Antibiotic therapy was given for six weeks. Clinical findings were elapsed but echocardiographic imaging of vegetation was persevering. Surgical intervention was planned due to both severe restenosis and persevering valvular and pulmonary arterial vegetations. Cardiopulmonary bypass was established with the cannulation of ascending aorta, superior and inferior vena cavae. Moderate systemic hypothermia, a hypothermic hyperkalemic cardioplegic solution, and topical cooling of the myocardium were employed for myocardial protection. Pulmonary arteriotomy was made and then incision was carried on to pulmonary artery bifurcation and right ventricular outflow tract. The pulmonary valve leaflets were thick, fibrotic and nonpliable. The pulmonary valve, with the vegetation, was removed. Also septal and parietal muscle bundles were resected. Right ventricular outflow tract was enlarged with pericardial patch after replacement of a 19 no Medtronic freestyle aortic root bioprosthesis between pulmonary valve annulus and pulmonary artery bifurcation.

Antibiotic treatment was continued two weeks postoperatively. There were no postoperative complications, and the hospital course remained uneventful. Postoperative echocardiography showed 20 mmHg gradient between bioprosthesis valve and right ventricle. The patient was discharged with aspirin therapy.

Discussion

The pulmonic valve is the least commonly involved valve in infective endocarditis [1-4]. The predisposing factors for developing pulmonic valve endocarditis include a congenitally anomalous pulmonic valve, intravenous drug abuse, and the presence of indwelling intravenous or flow-directed pulmonary artery catheters [2,4]. Pulmonary valve endocarditis can be also seen in structurally normal heart without any predisposing factors [3]. Surgery is necessary when antibiotic treatment has failed [1-4]. Isolated pulmonic valve endocarditis has been caused by a variety of microorganisms; the most common are Staphylococcus aureus and Streptococcus viridans. The other microorganisms that have been reported to cause isolating pulmonic valve endocarditis include Staphylococcus epidermidis, Pseudomonas aeruginosa, Candida albicans, Neisseria gonorrhoeae, Haemophilus parainfluenzae, enterococcus, and group B streptococcus [2].

The operation of some heart lesions requires the use of a valve, either as a pulmonary valve replacement or as a part of conduit from the right ventricle to the pulmonary artery. A variety of various valve substitutes have been used for this purpose including mechanical valves, xenograft valves, homograft valves, and autologous pericardial valves with varying degrees



Figure 1. Transthoracic echocardiography. Arrow shows vegetations.

of success. The ideal valve would be readily available, have good hemodynamics, have excellent durability, be reasonably easy to implant, would not require long-term anticoagulation, and would be reasonably priced [5,6,7].

Recently, the Medtronic Free style porcine aortic root was introduced as a stentless valve substitute in the aortic position. We explored the utility of this particular valve for reconstruction of the right ventricular outflow tract in an 18-year-old girl who had pulmonary valve restenosis and endocarditis. Medtronic Freestyle bioprosthesis demonstrates the following characteristics that make it an acceptable alternative to homograft conduits: 1) availability in all sizes, 2) satisfactory early hemodynamic performance in the right ventricle-pulmonary artery position, 3) freedom from thromboembolism and endocarditis in short term, and 4) freedom from calcification after greater than 2 years after implantation in neonates [7].

Pulmonary valve endocarditis and restenosis occurred in this case in whom balloon valvuloplasty had been performed for pulmonary stenosis 10 years ago. After antimicrobial therapy the operation was planned for both severe restenosis and valvular and pulmonary arterial vegetations. Postoperative systolic gradient measured by Doppler echocardiography was 20 mmHg. Patient followed-up 6 weeks postoperatively and pulmonary regurgitation was not seen during this period. Medtronic freestyle bioprosthesis seems to be a reasonable alternative for right ventricle-pulmonary artery conduit in the short term, but long-term durability remain unanswered.

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