

Stenotrophomonas maltophilia endocarditis treated with moxifloxacin-ceftazidime combination and annular wrapping technique

Moksifloksasin-seftazidim kombinasyonu ve annuler sarma tekniği ile tedavi edilen stenotrophomonas maltophilia endokarditi

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Introduction

Stenotrophomonas maltophilia is a gram-negative bacillus, which is increasingly associated with serious nosocomial infections, especially in immunocompromised patients. However, the incidence of endocarditis related to this organism is rare. Review of the literature revealed only 28 cases, including one case in Turkey (1-4). Stenotrophomonas maltophilia endocarditis carries high complication and mortality rates because of its resistance to a number of agents generally used for the treatment of hospital-acquired infections (1, 5). We present an early prosthetic aortic valve endocarditis (PVE) due to Stenotrophomonas maltophilia, which was treated with prosthetic aortic valve re-implantation and antibiotic therapy.

Case report

A 28-year-old male patient underwent aortic valve replacement (27 mm Carbo Medics) operation for severe aortic valve insufficiency. Three weeks later, he was admitted to our hospital with fever. On physical examination, blood pressure was 120/70 mmHg, heart rate 90 beats/min, and body temperature 38 °C. The cardiac examination revealed normal S1, S2 with metallic heart sound and 2/6 diastolic murmur on the right second intercostal space. The remainder of the physical examination was unremarkable. Laboratory tests showed that white blood cell count (WBC) was 5.500/ L, erythrocyte sedimentation rate (ESR) - 48 mm/hr, and C-reactive protein (CRP) - 4.7 mm/dL and urine analysis was normal. Electrocardiogram revealed normal sinus rhythm. The transthoracic echocardiogram demonstrated moderate paravalvular leakage on the prosthetic aortic valve, but vegetation was not detected. These findings were confirmed with the transesophageal echocardiogram (TEE). Because of the probable early PVE, the patient was treated with an empiric antibiotic regimen, consisting of vancomycin (15 mg/kg q 12 hr) and gentamycin (1 mg/kg q 8 hr). Since Stenotrophomonas maltophilia was isolated from all of the three blood cultures, antibiotic therapy was changed to trimetoprim-sulfamethoxazole (20 mg/kg trimetoprim/day/divided 4 doses) and ceftazidime. The patient was treated with this combination for 9 days, WBC count of the patient was found to be 3.070/mm³ and decreased down to 2500/mm³ despite folinic acid administration. In addition, a morbilliform skin rash has developed and the patient was still febrile. Trimetoprim+sulfamethoxazole

were discontinued at the 13th day of treatment and moxifloxacin 400 mg 1X1 was added to ceftazidime. Patient became afebrile on the 4th day of this treatment. Since TEE revealed paravalvular leakage, the operation was planned. It was intended to perform a new prosthetic valve replacement with a suitable sized (25-26mm) homograft because of the ongoing infectious process. We could not find a homolog graft in the appropriate size and the aortic root was very large to perform Ross procedure. We decided to replace the mechanical heart valve.

Surgical technique: The infected prosthesis was removed by the known technique. The vegetations, which seemed like thread-like structures around the annulus, were purified. Before re-implantation of the new valve, infected annulus was wrapped with 1.5-2 cm homologous pericardial ribbon to prevent local dissemination to the new prosthesis. The non-pledgeted 3/0 Polypropylene sutures were passed through the inferior margin of the pericardial ribbon, the native aortic annulus and the superior margin of the pericardial ribbon, respectively (Fig. 1). Following the annular wrapping, the new 27 mm Carbo Medics mechanical valve was implanted with the same sutures. Stenotrophomonas maltophilia was isolated from the heart valve culture.

Postoperative course was uneventful. The patient was treated with moxifloxacin and ceftazidime for 4 weeks more but moxifloxacin had to be stopped because of Q-T interval prolongation and amikacin was initiated. Ceftazidime and amikacin were given for two weeks. The patient remained afebrile and asymptomatic for 6 months after he was discharged.

Discussion

Prosthetic valve endocarditis is a serious complication of valve replacement operations. Various options are available for surgical reconstruction and, overall, biological materials are preferred (6). In younger patients, especially with large aortic annulus, biological materials may not be used and replacement with a new valve remains as the only reasonable treatment. In recent papers, replacement of the valve affected by endocarditis with a mechanical or bioprosthetic valve has similar outcomes in PVE (7). Because of the high resistance of the responsible organism to various antibiotics and high complication and mortality rates, an additional procedure was applied to the patient. The technique of annular wrapping has not been described previously and there is no evidence to support our opinion, we think that this technique can be useful to prevent local dissemination.

Stenotrophomonas maltophilia endocarditis is a rare disease. The risk factors associated with *Stenotrophomonas maltophilia* endocarditis include intravenous drug abuse, dental treatment, previous cardiac surgery, and infected intravascular devices (1, 3, 8). Twenty-five cases of *Stenotrophomonas maltophilia* endocarditis were identified and reported previously in the literature. Endocarditis in a prosthetic valve is more common than the native valve. Among the native valves, the aortic valve was the most frequently involved one. Many of patients had at least one of the underlying risk factors for the development of endocarditis, such as prior cardiac surgery, intravenous drug abuse, and infected intravascular lines. Complications including septic embolism, cardiac abscess, and congestive heart failure were frequently detected among the patients. The mortality rate of *Stenotrophomonas maltophilia* endocarditis was documented as 36% and was equally distributed between patients with prosthetic and native valve endocarditis (1, 3, 8).

Treatment of *Stenotrophomonas maltophilia* endocarditis is very difficult. The best antibiotic therapy is not known. Combination of trimetoprim-sulfamethoxazole and ticarcillin-clavulanate is the generally recommended treatment of choice (5). Since, ticarcillin-clavulanate is

not available at the market in Turkey, we treated the patient with a combination of trimetoprim-sulfamethoxazole and ceftazidime. Because the patient could not tolerate high dose of trimetoprim-sulfamethoxazole and developed leukopenia and skin rash despite the concomitant use of folic acid, it has been replaced with moxifloxacin, the most effective fluoroquinolone against *Stenotrophomonas maltophilia*.

This was our first infective endocarditis experience caused by *Stenotrophomonas maltophilia* and treated with moxifloxacin and ceftazidime. Early surgery may be considered in patients with PVE, who do not respond to antibiotherapy (1, 3, 8).

Conclusion

In conclusion, *Stenotrophomonas maltophilia* endocarditis is a rare disease and carries a high morbidity and mortality rate. Moxifloxacin can be used for the treatment of infective endocarditis caused by *Stenotrophomonas maltophilia*, and removal and replacement of prosthetic devices is generally required. Annular wrapping is a good method to prevent local dissemination in endocarditis.

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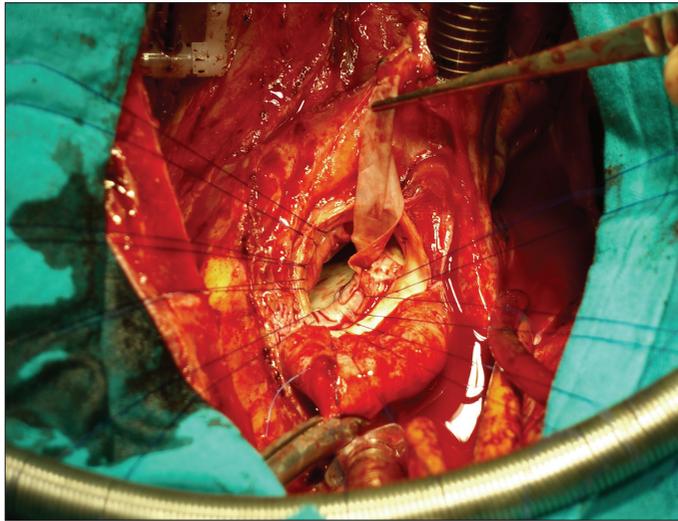


Figure 1. Intraoperative view of infected annulus wrapped with pericardial ribbon

Düzelme/Erratum

460. sayfadaki "This case was presented at 54th Congress of the Society for Cardiovascular Surgery- 2005 Athens/Greece" ifade yazar tarafından yanlışlıkla yazılmıştır (yazar beyanı) ve göz önüne alınmamalıdır.

The statement on the page 460 "This case was presented at 54th Congress of the Society for Cardiovascular Surgery- 2005 Athens/Greece" was mistakenly written by author (author disclosure) and should not be taken in account.