



A Case of Triple Valve Endocarditis in a Patient on Haemodialysis

Bir Hemodiyaliz Hastasında Üç Kapak Tutulumu Olan Endokardit Vakası

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Abstract

A 22 year-old male patient referred to cardiology clinic with complaints of fever, chills and malaise. He had been on haemodialysis for 12 months due to immunoglobulin A nephropathy. On admission his body temperature, pulse rate and blood pressure was 38.6°C, 115 beats/min and 110/70 mmHg, respectively. In the laboratory examination there were leukocyte, C-reactive protein and erythrocyte sedimentation rate elevation. There were vegetations on the mitral, aortic and tricuspid valves. Blood cultures were positive for *Enterococcus faecalis* which was susceptible to vancomycin. Since the patient did not accept the surgical operation, he died because of multi-organ dysfunction.

Key words: Infective endocarditis, chronic renal failure

Özet

On iki aydır immünglobulin A nefropatisi tanısıyla hemodiyaliz yapılan yirmi iki yaşında erkek hasta ateş, terleme ve halsizlik şikayeti ile kardiyoloji kliniğimize yönlendirildi. Hastanın başvurusunda vucut sıcaklığı 38,6°C, kalp hızı 115 atım/dk ve tansiyon arteriel 110/70 mmHg idi. Labaratuvar tetkiklerinde lökosit, eritrosit sedimentasyon hızı ve C-reaktif protein değerleri yüksekti. Mitral, aort ve triküspit kapakta vejetasyon vardı. Kan kültüründe vankomisine duyarlı *Enterococcus faecalis* üredi. Cerrahi operasyonu kabul etmeyen hasta multiorgan disfonksiyonu nedeniyle kaybedildi.

Anahtar kelimeler: İnfektif endokardit, kronik böbrek yetersizliği

Introduction

The population of patients with chronic renal failure (CRF) are increasing worldwide. Haemodialysis is widely used in the treatment of CRF. Patients on haemodialysis are at increased risk for infective endocarditis (IE). Here, we are presenting a rare case of IE with triple valve involvement in a patient undergoing hemodialysis.

Case report

A 22 year-old male patient referred to cardiology clinic with complaints of fever, chills and malaise. He had been on haemodialysis for 12 months due to IgA nephropathy. On admission his body temperature, pulse rate and blood pressure was 38.6°C, 115 beats/min and 110/70 mmHg, respectively. Cardiac auscultation revealed a grade 4/6 pansystolic

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murmur at the left sternal border and a grade 2/4 diastolic murmur at the aortic focus. Decreased breath sounds and crepitating rales were heard over basal lung fields. Laboratory examination showed a white blood cell count of 17500 cells/mm³, a hematocrit level of 32% and an erythrocyte sedimentation rate of 65 mm/hr. C-reactive protein level was 110mg/dl. A chest X-ray showed an increased cardiothoracic ratio and bilateral pleural effusion. Transthoracic echocardiography revealed 6x4 mm sized vegetations on both anterior and posterior leaflets of the mitral valve, 9x8, 9x7 and 12x10 mm sized mobile vegetations on the right, left and non coronary cusps of aortic valve, respectively. There were moderate aortic and mitral regurgitations. Also a 23x9 mm sized mobile vegetation on the tricuspid valve with a severe regurgitation due to the chordal rupture was detected (Figure 1A,

B, C). The systolic pulmonary artery pressure was 46 mmHg. The patient refused the transesophageal echocardiography. After blood cultures were obtained, intravenous treatment of vancomycin was initiated empirically. Blood cultures were positive for *Enterococcus faecalis* which was susceptible to vancomycin. An improvement in clinical course was achieved during two weeks of treatment. Despite recommended surgical operation, the patient refused to have an operation and was discharged on his own decision. Three weeks later, the patient admitted again with same clinical complaints and poor general condition. The echocardiographic findings were worse than his previous examination with increased size of vegetations (Figure 2A, B, C). Since the patient did not accept the surgical operation, he died because of multi-organ dysfunction.



Figure 1. Transthoracic echocardiogram showing **A.** vegetation on tricuspid valve and chordal rupture of anterior leaflet. **B.** vegetation on mitral and aortic valves **C.** vegetation on all three cusps of aortic valve. LA:Left atrium, RA:Right atrium, LV:Left ventricle, RV:Right ventricle, Ao:Aorta.

Discussion

Chronic haemodialysis(HD) patients are at significant risk for IE. Infective endocarditis in patients undergoing HD has been reported for the first time in 1966¹. Intravascular access, calcific valvular disease and immune impairment were reported as predisposing factors in HD patients². Infections are the second most common cause of death in this

population. The frequency of bacteraemia depends on the type of vascular access, for permanent vascular catheters it ranges between 1.6 and 7.7 episodes per 1.000 catheter-days and for arteriovenous fistulas 0.2-0.5 episodes per 1000 fistula-days³. The relative risk of bacteraemia in HD patients with permanent catheters has been estimated 128 approximately 10 times higher than the risk of

bacteraemia in HD patients with AV fistulas. The incidence of IE in HD patients is 10 to 18

times higher than the normal population⁴. In a study conducted by Hoen et al, the frequency

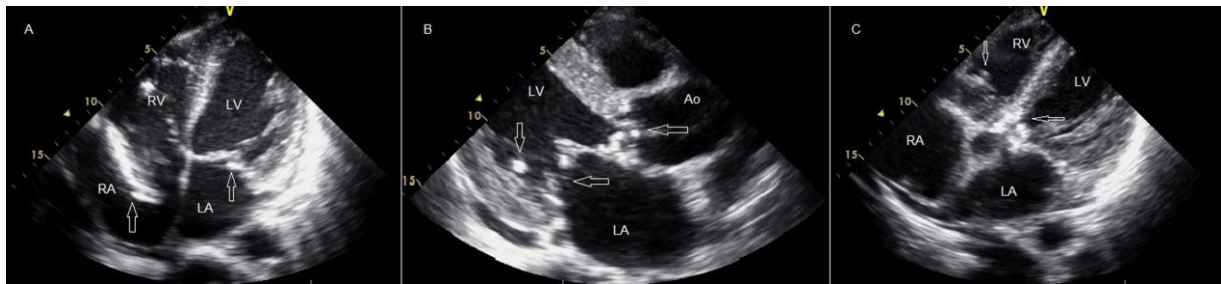


Figure 2. Transthoracic echocardiogram showing the increased size of vegetations on **A.** tricuspid valve **B.** aortic and mitral valves **C.** aortic and tricuspid valves.

of IE in HD patients was reported to be 1.7 to 2 in 1000 patients which is 50 to 60 times more frequent than general population⁵.

Staphylococcus aureus is the most common causative agent of IE in HD patients and general population in developed countries⁶. In a study of Spies et al⁷, the three most common isolated pathogens from the blood cultures were Staphylococcus aureus (50%), Enterococci (23%) and Staphylococcus epidermidis (12%).

Infective endocarditis is more common in the left heart chambers. Right heart endocarditis, is responsible for 5 to 10 percent of the cases⁸. Although vascular access is the main cause of bacteraemia in most of the HD patients, right-sided infective endocarditis is also rare in this population⁹. Aortic and mitral valves are affected in 40% and 50% of the cases, respectively. Simultaneous involvement of both valves has been reported in 20% of the cases⁷. These findings suggest that the changes in the laminar blood flow due to the degenerative left heart valve diseases increase susceptibility to endocarditis. Both sided and more than 2 valve involvement is quite rare.

Infective endocarditis is relatively common in HD patients and its course remains mortal. Especially in HD patients with permanent catheter suffering persistent fever, infective endocarditis should be kept in mind, and both heart chambers should be carefully evaluated in terms of multiple vegetations.

References

1. Brescia MJ, Cimino JE, Appel K, Hurwich BJ. Chronic hemodialysis using venipuncture and a surgically created arteriovenous fistula. *N Engl J Med* 1966;275(20):1089-92.
2. Robinson DL, Fowler VG, Sexton DJ, et al. Bacterial endocarditis in hemodialysis patients. *Am J Kidney Dis* 1997;30(4):521-4.
3. Minnaganti VR, Cunha BA. Infections associated with uremia and dialysis. *Infect Dis Clin North Am*. 2001;15(2):385-406.
4. Abbott KC, Agodoa LY. Hospitalizations for bacterial endocarditis after initiation of chronic dialysis in the United States. *Nephron* 2002;91(2):203-9
5. Hoen B, Alla F, Selton-Suty C, et al. Changing profile of infective endocarditis: results of a 1-year survey in France. *JAMA* 2002;288(1):75-81.
6. Marr K. Staphylococcus aureus bacteraemia in patients undergoing haemodialysis. *Semin Dial* 2000; 13(1):23-29
7. Spies C, Madison JR, Schatz IJ. Infective Endocarditis in Patients with End-stage Renal Disease: Clinical Presentation and Outcome. *Arch Intern Med*. 2004;164(1):71-75.
8. Morokuma H, Minato N, Kamohara K, Minematsu N. Three surgical cases of isolated tricuspid valve infective endocarditis. *Ann Thorac Cardiovasc Surg* 2010;16(2):134-8.
9. Maraj S, Jacobs LE, Maraj R, Kotler MN. Bacteremia and infective endocarditis in patients on hemodialysis. *Am J Med Sci* 2004;327(5):242-9.