Case Report

Periaortic Abscess Forming Pulsatile Sac around Graft in a Patient with Prosthetic Valve Endocarditis after Bentall Operation

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Abstract

A 62-year-old man with high fever, general fatigue, and history of transient ischemic attack was transferred to our cardiology clinic with high clinic suspicious of endocarditis. He had a history of mitral ring annuloplasty and coronary artery bypass grafting operation before many years ago and reoperation for aortic dissection as Bentall procedure about 3 months ago. Blood tests showed leukocytosis with massive elevation of C-reactive protein, modest elevation of troponin, marked elevation of International Normalized Ratio, mild anemia, and hypoalbuminemia. Transesophageal echocardiogram (TEE) revealed a 4-mm × 15-mm round mobile mass originating from the anterior part of the mitral annular ring. In addition, there were a sac surrounding aortic graft and surrounding aneurismal aorta suggests a separation of graft because of possible aortic perivalvular abscess. There was blood flow into the sac and extensive thrombus with mobile component was seen in it. Blood cultures were positive for *Streptococcus pneumoniae*. Vancomycin, gentamicin, and rifampicin were chosen as antibiotic regimen. Early surgery planned for endocarditis and drained abscess cavity. However, the patient was persistently refused the third heart surgery operation. Repeat TEE showed the absence of vegetation on mitral valve and evident shrinkage of thrombus. Chest X-ray showed large left pleural effusion. Computed tomography with contrast enhancement confirmed this finding and revealed that contrast leak to the periaortic area and spreading a path under pulmonary artery to adjacent of the anterior wall of left ventricle. Thoracentesis was performed. Fistula to left pleura was suspected but not clearly confirmed. At 6 weeks of hospitalization, he clinically deteriorated. Due to confusional state, informed consent was obtained from attending relatives. The patient was transferred to the operating room. Cardiopulmonary resuscitation was initiated and thoracotomy was performed. Dehiscence of the aortic valve was seen. Infected tissues were extracted and repair with new prosthesis aortic valve was performed. Despite all resuscitation efforts, the patient died.

Keywords: Abscess, aortic valve, Bentall, dehiscence, pulsatile sac

Introduction

The Bentall procedure was first described by Bentall and De Bono in 1968. Since then, composite replacement of the aortic valve and ascending aorta has been considered the gold standard for treating ascending aortic dissection complicated by aortic regurgitation.[1] Cardiac surgery is usually required

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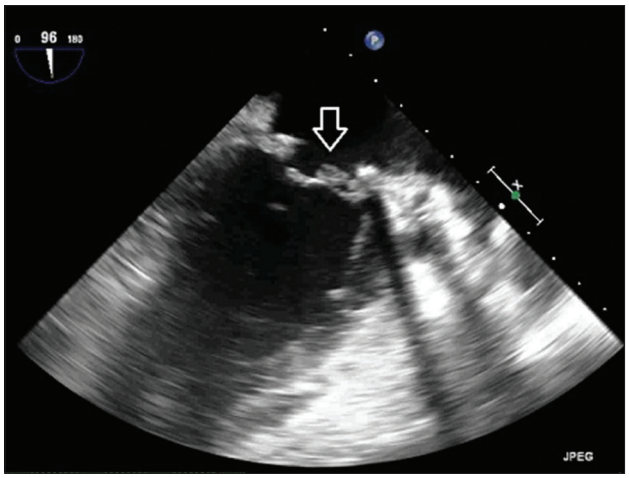

Figure 1: Transesophageal echocardiogram revealed a 4-mm × 15-mm round mobile mass originating from the anterior part of the mitral annular ring

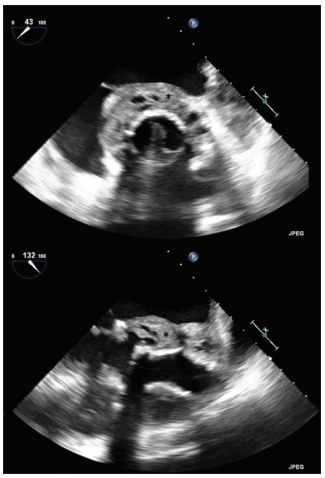

Figure 2: There was a sac surrounding aortic graft and surrounding aneurismal aorta suggests a separation of graft because of possible aortic perivalvular abscess

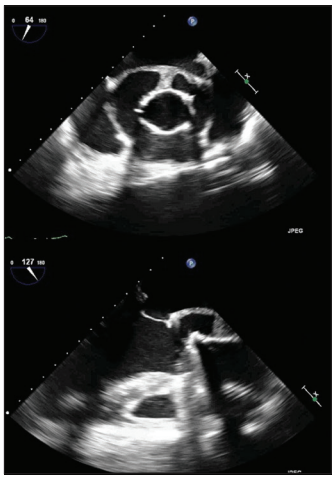

Figure 3: Repeat transesophageal echocardiogram showed the absence of vegetation on mitral valve and evident shrinkage of thrombus

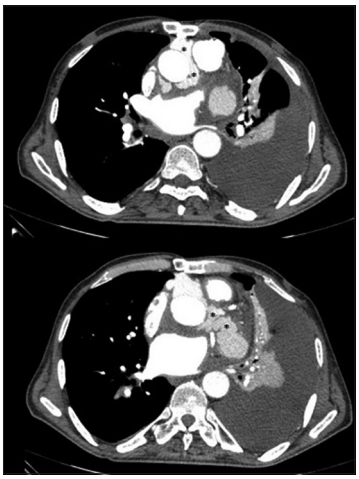

Figure 4: Computed tomography with contrast enhancement confirmed this finding and revealed that contrast leak to the periaortic area and spreading a path under pulmonary artery to adjacent of the anterior wall of the left ventricle

for infections of the mechanical valved conduit because of the high likelihood of resistant organism, and the possibilities of heart failure and embolization. Here, we report a case of early infective endocarditis complicated by periaortic abscess.

Case Report

A 62-year-old man with high fever, general fatigue, and history of transient ischemic attack was transferred to our cardiology clinic with high clinic suspicious of endocarditis. He had a history of mitral ring annuloplasty and coronary artery bypass grafting (CABG) and mitral ring annuloplasty operation 12 years ago and reoperation for aortic dissection as Bentall procedure about 3 months ago. He has diabetes, moderate chronic obstructive pulmonary disease, and right nephrectomy for several years ago. His medication was warfarin, spironolactone plus hydrochlorothiazide, gliclazide, metformin, digoxin, furosemide, and tiotropium. The patient has tachycardia with 2/6 systolic aortic murmur. Bilateral lung sounds were normal. The embolic and rheumatic phenomenon of endocarditis were absent and other findings were normal. Electrocardiogram showed that sinus rhythm with 120 BPM. Blood tests showed leukocytosis with massive elevation of C-reactive protein (CRP), modest elevation of troponin, marked elevation of International Normalized Ratio (INR) value, mild anemia, and hypoalbuminemia [Table 1]. Minimal left pleural effusion was seen on chest X-ray. Transesophageal echocardiogram (TEE) revealed a 4-mm × 15-mm round mobile mass originating from the anterior part of mitral annular ring [Figure 1]. In addition, there were a sac surrounding aortic graft and surrounding aneurismal aorta suggests a separation of graft because of possible aortic perivalvular abscess [Figure 2, Video 1a and b]. There was blood flow into the sac and extensive thrombus with mobile component was seen in it. Blood cultures were positive for *Streptococcus pneumoniae*. Vancomycin, gentamicin, and rifampicin were

Table 1: Blood tests on admission

Parameter	Result	Unit	Reference
Glucose	88	mg/dl	74-106
Urea	34	mg/dL	17-49
Creatinin	0.8	Mg/dl	0.5-0.9
AST	17	U/L	0-32
ALT	7	U/L	17-49
LDH	454	U/L	135-214
Sodium	134	mmol/L	136-145
Potassium	3.99	mmol/L	3.5-5.1
Chloride	96.6	mmol/L	98-107
CK	25	U/L	20-170
CK-MB	20	U/L	<25
Troponin T	0.296	ng/mL	<0.014
WBC	19.720	$10^{-3}/mm^3$	3.9-11.7
Neutrophil	17.060	$10^{-3}/mm^3$	1.9-8
RBC	4.25	$10^{-3}/mm^3$	3.85-5.16
Hb	11.68	gr/dL	12-15
Hct	37.5	RU	34.8-45
PLT	323	$10^{-3}/mm^3$	130-400
Albumin	2.6	g/dL	3.5-5.2
Total protein	6.2	g/dL	6.4-8.3
Prothrombin time	62.6	sec	11-16
INR	6.59		0.8-1.3
aPTT	40.4	sec	30-40
T. Bilirubin	1.21	mg/dl	0.3-1.4
D. Bilirubin	0.65	mg/dl	0.01-0.3
CRP	> 275	mg/dl	0-5

chosen as antibiotic regimen. INR values were high during the 1st week (>5) despite K-vitamin replacement. Leukocytosis and CRP values are gradually decreased with antibiotic regimen and subsequent blood cultures were negative. After clinical stabilization and the fall of INR value to therapeutic range, early surgery planned for endocarditis and drained abscess cavity. The patient informed about his clinical status and requirement of surgical operation. However, the patient was persistently refused third heart surgery operation. At 3rd week of treatment, repeat transesophageal echocardiogram.

TEE showed absence of vegetation on mitral valve and evident shrinkage of thrombus [Figure 3, Video 2a and b]. The leukocyte count was 10900/mm^3 and CRP was 108 mg/L. However, mild-to-moderate dyspnea was developed after a few days. Chest X-ray showed large left pleural effusion. Computed tomography with contrast enhancement confirmed this finding and revealed that contrast leak to the periaortic area and spreading a path under pulmonary artery to adjacent of the anterior wall of left ventricle [Figure 4]. Thoracentesis were performed. Fistula to left pleura was suspected, but not clearly confirmed by noninvasive tests. The patient was continued to refuse a heart operation. At 6 weeks of hospitalization, he suddenly gets hypotensive and clinically deteriorated. Because the patient was in a confusional state, informed consent was obtained from attending relatives. The patient was transferred to the operation room for emergency surgery. Cardiopulmonary resuscitation was initiated and thoracotomy was performed. Dehiscence of the aortic valve was seen. Infected tissues were extracted and repair with new prosthesis aortic valve was performed. However, postoperative myocardial functional recovery could not be achieved. Despite all resuscitation efforts, the patient died.

Discussion

Complications due infection after Bentall procedure are rare (1.4%)[2] but severe and not well documented. Staphylococci, alpha-hemolytic streptococci, and enterococci are the common causative organisms.[3] In a study consists ascending aorta prosthetic graft infections, most common organisms were coagulase-negative staphylococci, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Candida albicans*.[4] Our patient developed infective endocarditis caused by *S. pneumoniae* at 3 months after the procedure. Native valve endocarditis due to *S. pneumoniae* has become rare since the introduction of antibiotics.[5-7] Illicit drug use, altered mental status, and alcohol intake were found as risk factors for endocarditis. For prosthetic valves and graft infections, *S. pneumoniae* is very rare as causative organism.[8]

Austrian syndrome, the combination of meningitis, pneumonia, and infective endocarditis due to *S. pneumoniae* infection, is a rare entity.[9] Given its acute presentation and rapid course, patients should be closely monitored for any complications.

Treatment of pneumococcal endocarditis (PE) includes a prolonged course of intravenous antibiotics and if needed, surgery.[9] Our patient was treated conservatively, and surgical operation cannot be performed because of the refusal by the patient. However, he subsequently developed hemodynamic failure. Surgical evaluation must be pursued in any PE patients with suspicion for complication such as abscess, large vegetation, and valve perforation. The combined medical and surgical approach has improved outcomes, as compared to medical treatment alone in this group of patients.[9]

Conclusion

This case illustrates the need for closer monitoring after surgery. A redo-operation for active prosthetic valve endocarditis after Bentall operation rare in published series is a serious possible complication during follow-up. Its treatment comprises early complete removal of prosthetic material under suitable antibiotic therapy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest
There are no conflicts of interest.

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