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JSM Cardiothoracic Surgery

Case Report

Prosthetic Valve Endocarditis, Re-Presentation Following Non-Compliance with Treatment

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Submitted: 23 April 2018

Accepted: 07 May 2018

Published: 09 May 2018

ISSN: 2378-9565

ISSN: 2573-1297

OPEN ACCESS

Keywords

• Endocarditis; Prosthetic valve; Non-compliance; Aortic valve; Aorta

Abstract

Prosthetic valve endocarditis (PVE) is a rare but severe complication of infective endocarditis, associated with a high risk of developing aortic root complications and a high mortality rate. Surgical intervention is often the preferred treatment in complicated cases of aortic root aneurysm following prosthetic endocarditis. However, non-compliant patients with recommended treatment are at an increased risk of recurrent infection despite surgical valve replacement, introducing the ethical debate between surgical intervention and conservative palliative care in such patients. Our case highlights the management of this condition, and demonstrates the need to develop nationwide policies regarding the critical decision made for the management of non-compliant patients with aortic complications following prosthetic valve endocarditis.

CASE REPORT

A 29 year old active smoker male patient presented to the Emergency Department with a history of recent onset shortness of breath, poorly healed leg ulcer and cellulitis. His past medical history consisted of active intravenous heroin use (IVDU), chronic osteomyelitis in the left tibia and fibula, hepatitis C and deep vein thrombosis, for which he was previously treated with warfarin. On examination, a new pan-diastolic murmur was found. Other significant examination findings included self-inflicted wounds and bruises over the body and tender hepatomegaly. The patient was otherwise haemodynamically stable and apyrexial with sinus tachycardia at 102bpm and mild hypotension (121/58mmHg). His admission transthoracic echocardiogram (TTE) showed severe aortic regurgitation, a dilated left ventricle at 7.1cm of left ventricular diastolic dimension and calcified vegetations on all three aortic valve leaflets. Blood culture revealed the causative micro-organisms being methicillin-sensitive *Staphylococcus aureus* (MSSA) and vancomycin-sensitive *Enterococcus faecalis*. The patient therefore underwent urgent mechanical aortic valve replacement with a 23mm ON-X® valve via standard median sternotomy. Intra-operative findings included a distended heart, poor biventricular function and severely destroyed trileaflet aortic valves and multiple vegetations. The patient was weaned off cardiopulmonary bypass (CPB) in sinus rhythm. Histolopathology confirmed a diagnosis of poly-microbial infective endocarditis, with excised valve tissue being colonised by *Streptococcus dysgalactiae* as well as MSSA and *Enterococcus faecalis*. He remained haemodynamically stable with normal prosthetic valve function post-operatively and was discharged on Day-29 on a 6-week course of ceftriaxone (2g once a day) and linezolid (600mg twice a day). The patient was also prescribed methadone (70mg) for heroin rehabilitation, as well as referral to drug addiction services. Psychiatric consultation was requested as the patient was not engaging with care, which noted that he suffered from mild depression, but did not require pharmacological treatment.

The patient was re-admitted on Day 83 post-operatively with left-sided pleuritic chest pain and slight shortness of breath. On examination, he was hypotensive and tachycardic. The patient later admitted to have been injecting heroin into the femoral artery on several occasions since the aortic valve replacement. He also noted that he recently became homeless with no family support and did not attend his latest out-patient Cardiology clinic 3 days prior to this admission. Computed Tomography (CT) scan (Figure 1) showed a large unilateral left-sided pleural effusion with left lower lobe collapse, consistent with an infective effusion from a suspected ruptured mycotic aortic root aneurysm (Figure 2). Blood cultures revealed the presence of *Staphylococcus aureus* and *Enterococcus faecalis*, indicating a relapse episode of the previous infective endocarditis. Further CT Aorta angiogram showed a saccular aneurysm at the base of the ascending aorta with a neck diameter of 23mm. Medical management consisting of ceftazidime (2g), gentamicin (70mg) and teicoplanin (700mg) was commenced awaiting for surgical review.

Following surgical review, multi-disciplinary discussion as well as the patient himself, palliative care was considered the

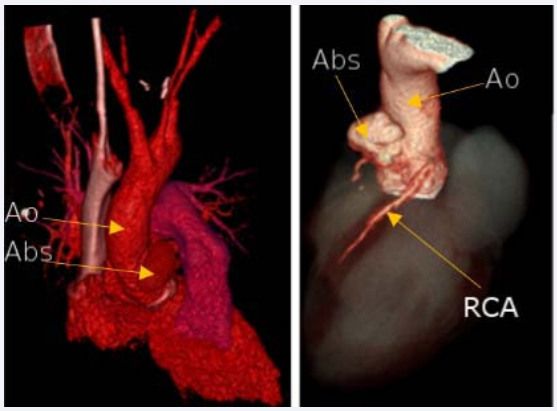

Figure 1 Computed Tomograph (CT) scan of the patient on day 83 post-operatively. Arrow (Orange) shows the suspected aortic root aneurysm; Arrow (blue) highlights the correctly positioned mechanical aortic valve.

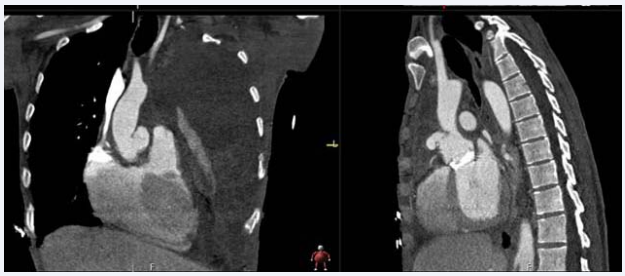

Figure 2 3-dimensional rendering of chest CT-angiogram showing a mycotic aneurysm.
Ao: Aorta; Abs: Mycotic Abscess; RCA: Right Coronary Artery

most appropriate management considering the poor prognosis and the on-going intravenous drug use and patient's refusal to give up the practice.

DISCUSSION

Prosthetic valve endocarditis (PVE) represents the most severe complication of infective endocarditis with a mortality rate of 22.8% [1], affecting up to 6% of patients with valve prosthesis [2] and accounting for 20% of all infective endocarditis cases [1]. Prosthetic valve endocarditis can have life-threatening consequences, especially when involving the aortic valve as it often presents with septic events [3]. Clinical diagnosis is made using the Duke criteria [4], with TOE imaging to identify any evidence of valvular vegetations and para-valvular lesions [4].

The management of prosthetic endocarditis is still debated between surgical treatment and conservative medical management [1]. Conservative treatment consists of intravenous Gentamicin pending blood cultures, followed by specific narrow-spectrum antibiotic therapy depending on the blood cultures findings and histopathology. There are no randomised controlled trials to date investigating the clinical outcome of surgery versus medical therapy, and previous case series report contradicting findings. Hill et al. reported that 6-month mortality was significantly lower in conservatively treated than in surgically treated patients [4]. However, Habib et al., found that the 1-year mortality was lower in surgically treated patients (23% versus 56% in medically treated patients) [5]. Active history of intra-venous drug use has been associated with a high rate of re-operation and reinfection, as well as an increased rate of failed cardiac abscess repair [6], and so conservative medical management is often the preferred method of treatment for this sub-category of patients with PVE.

Patients with prosthetic valve endocarditis are more likely to develop aortic complications [7], such as aortic root abscesses and mycotic aortic aneurysms. Nagpal et al., reported that patients with PVE had a higher incidence of aortic root abscesses compared to native valve endocarditis (29.7% vs 11.7%) [1], and had a longer hospital stay [1]. Such aortic complications are most commonly occurring with Staphylococcal infection [8]. Prompt surgical intervention is often indicated in complicated cases with aortic root abscess, and has shown to improve prognosis in patients with associated cardiac failure due to valvular dysfunction, as seen in our patient [7]. That being said, surgical intervention of aortic root abscess following Prosthetic endocarditis is associated with a high recurrence of infection and high risk of mortality [8], suggesting that appropriate palliative care may be the preferred management option in demonstrable non-compliant patients with significant co-morbidities, as seen in our patient.

Regarding the palliative treatment of patients with PVE, NICE guidelines [9], indicate the use of adequate pain control with morphine and Fentanyl patches. Symptom control will also depend on the patient assessed – relating to the symptoms of our patient; convulsions are treated with Midazolam subcutaneous infusion, and excessive respiratory secretions are treated with Hyoscine hydrobromide or Hyoscine butylbromide [9], as was the case for our patient. Non-compliance in intra-venous drug users following prosthetic endocarditis is a poorly documented ethical issue amongst clinicians when balancing the risk between repeated valve replacements and the consequences of palliative care [10]. Yeo et al., argues that recidivist intravenous drug abusers with clear non-compliance who sustain a recurrent episode of endocarditis should not be offered another valve. However, there are no existing governing policies regarding this clinical area, and would aid clinicians in introducing prompt palliative care if surgical intervention is contra-indicated in similar complicated patients.

CONCLUSION

Prosthetic endocarditis (PVE) is a severe complication affecting up to 6% of patients with valve prosthesis, most commonly occurring within the first year after valve surgery. There is controversy between the effect of surgical treatment versus medical treatment on the clinical outcome of patients with PVE. This case highlights the importance of palliative medicine in patients with PVE who are deemed ineligible for surgical treatment and the role of the multidisciplinary team in making the critical decision between curative and palliative treatment. The critical decision of delivering palliative care as opposed to curative therapy is still debated and evidence-based research is lacking. Decision making is still done on a case-to-case basis; hence the introduction of clear guidelines would aid clinicians in

balancing the benefits between surgical treatment and palliative therapy, especially in non-compliant patients with significant co-morbidities.

REFERENCES

1. Nagpal A, Sohail M, Steckelberg J. Prosthetic valve endocarditis: state of the heart. Clini Investig. 2012; 2: 803-817.
2. Nonaka M, Kusuhara T, An K, Nakatsuka D, Sekine Y, Iwakura A, et al. Comparison between early and late prosthetic valve endocarditis: clinical characteristics and outcomes. J Heart Valve Dis. 2013; 22: 567-574.
3. Harky A, Garner M, Popa M, Shipolini A. Missed aortic valve endocarditis resulting in complete atrioventricular block and redo mechanical valve replacement. BMJ Case Rep. 2017.
4. Hill E, Herregods M, Vanderschueren S, Claus P, Peetermans W. Management of Prosthetic Valve Infective Endocarditis. Am J Cardiol. 2008; 101: 1174-1178.
5. Habib G, Tribouilloy C, Thuny F, Giorgi R, Brahim A, Amazouz M, et al. Prosthetic valve endocarditis: who needs surgery? A multicentre study of 104 cases. Heart. 2005; 91: 954-959.
6. Fedoruk L, Jamieson W, Ling H, MacNab J, Germann E, Karim S, et al. Predictors of recurrence and reoperation for prosthetic valve endocarditis after valve replacement surgery for native valve endocarditis. J Thorac Cardiovasc Surg. 2009; 137; 326-333.
7. John R, Pugsley W, Treasure T, Sturridge M, Swanton R. Aortic root complications of infective endocarditis - influence on surgical outcome. Eur Heart J. 1991; 12: 241-248.
8. Chen G, Lo W, Tseng H, Pan S, Chen Y, Chang S. Outcome of surgical intervention for aortic root abscess: a meta-analysis. Eur J Cardiothorac Surg. 2018: 53; 807-814.
9. NICE Excellence. Prescribing in palliative care. Medicines guidance. BNF Provided by NICE. 2017.
10. Yeo K, Chang W, Lau J, Tan S. Valve replacement in endocarditis: setting limits in noncompliant intravenous drug abusers. Hawaii Med J. 2006; 65: 170-171.

Cite this article

Jullian L, Harrogate S, Harky A, Bashir M, Colledge J, et al. (2018) Prosthetic Valve Endocarditis, Re-Presentation Following Non-Compliance with Treatment. JSM Cardiothorac Surg 3(1): 1014.