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CASE REPORT

Successful Treatment of Early Prosthetic Valve Endocarditis infection caused by *Burkholderia cepacia*: a rare case report

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Background

Burkholderia cepacia (formerly *Pseudomonas cepacia*, *Pseudomonas multivorans* or *Pseudomonas kingii*) is an aerobic Gram-negative bacillus. They are inhabitants of environment (mainly aquatic) and are not considered part of normal human flora. It usually colonizes and infects patient with cyst fibrosis and chronic granulomatous diseases, immuno compromised patients. Rare case reports of infective endocarditis with this organism are described and very few cases of prosthetic valve endocarditis. This organism is uniformly resistant to many antibiotics with a high mortality of 33.3 %. It is intrinsically resistant to imipenem and the drug of choice is Trimethoprim- sulfamethoxazole (TMP-SMX). Here we report a case of early prosthetic valve endocarditis with *Burkholderia cepacia* which was successfully treated with six week parenteral antibiotics and redo valve replacement.

Case Report

28 year old housewife underwent mitral valve replacement (MVR) for chronic rheumatic heart disease, chronic severe mitral regurgitation (MR) on 23.12.2011 with 27 mm St.Jude prosthetic valve at an outside hospital. After uneventful post operative recovery and discharge on day 10, she came to follow-up on day 20 with mild fever but was otherwise healthy. Her INR (International Normalized Ratio) was adequate on oral anticoagulants and a routine

screening echocardiogram showed no abnormality with valve. 10 days later she was admitted in the same hospital with high grade intermittent fever of seven days duration with chills and rigors and loss of appetite. She was shifted to our hospital on 17 January 2012. She was admitted and thoroughly investigated including blood was sent for culture and sensitivity. On physical examination she appeared ill, febrile (102°F) had tachycardia (110 bpm regular), and tachypnea (22 breaths/min) her blood pressure was 110/70 mmHg. There were no signs of congestive heart failure, lungs were clear, prosthetic valve click was sharp and easily audible. 2D echo cardiogram revealed vegetations on the atrial side of mitral prosthetic valve but without valvular / paravalvular leak. The gradients across the mitral valve were normal. Her INR was 1.86 (on warfarin 4 mg daily), chest radiograph revealed clear lungs. The biochemistry reports revealed Hb 11.1 gms%, WBC 14400 cells/cumm. Her renal and liver parameters were normal. She was given symptomatic therapy without antibiotics waiting for culture reports. 3 days (27.01.2012) later her blood culture reports revealed growth of very rare bacteria- *Burkholderia cepacia* sensitive to trimethoprim- sulfamethoxazole (TMP-SMX), levofloxacin, and ceftazidime and resistant to imipenem, amikacin, gentamycin & tobramycin, tetracycline and ampicillin. As it was first time for us to hear about this bacterium we have reviewed literature (1) and found that TMP-SMX is the drug of choice which was started - 100 mg/kg body weight intravenously in 3 divided doses. She was also given Inj. Levofloxacin 500 mg IV - Once Daily, Inj. Ceftazidime 2 gms IV thrice daily. Patient became afebrile 72 hrs later and improved symptomatically. At that time we decided to give 6 weeks of IV antibiotic therapy continuously as the mechanical valve is functioning well. On day 10 of IV antibiotic therapy patient developed subacute onset of class III SOB (shortness of breath) resting tachypnea & tachycardia along with loud pansystolic murmur at apex radiating to axilla. The repeat Echo revealed multiple vegetations on the mitral prosthesis (as before) and severe paravalvular MR (a new finding). In view of echo findings a valve dehiscence is suspected and urgent surgery proposed, which was performed successfully very next day. Preoperatively, many large vegetations were observed on the prosthesis along with 2 cms valve dehiscence at around 7'o' clock position. She underwent redo-MVR with excision of the prosthetic

mitral valve in Toto along with vegetations and thorough debridement and local injection of susceptible antibiotics in to annulus. A new SJM 25 mm Mitral prosthetic valve was kept in situ and carefully resecured. Patient recovered smoothly post operatively and shifted to step down care on day 4. Later she was shifted to the wards. She was continued on triple parental antibiotics therapy till her levofloxacin is discontinued on day 21. She was discharged on day 10th of post operation and continued on IV TPM- SMX and ceftazidime (IV) for a total course of six weeks which she took at home. Patient was completely afebrile since third day after starting the IV antibiotics till 60 days post op. At the end of antibiotic therapy her general condition improved further and she was ambulatory. Her general condition further improved, with no signs of heart failure or recurrence of MR. Her repeat blood culture at the end of 6 weeks of antibiotic therapy was sterile.

Discussion

Our case is unique on several fronts

Infection with *Burkholderia cepacia* was mostly described in IV drug abusers and 80 % of cases were involved with tricuspid valve. The mortality in early prosthetic valve endocarditis (PVE) was substantial (up to 77% and more so with this species). Isolation of this organism was difficult and for that department of microbiology, KIMS did a commendable job. Fortunately patient didn't receive any antibiotics for controlling fever prior to blood culture was enhancing the chances of isolation of the organism. Anti microbial resistance of *Burkholderia cepacia* poses great challenge in treating this infection. This pathogen is intrinsically resistant to amino glycosides and polymyxins. Therefore combination of antibiotics was required apart from specific TMP-SMX drug. The sudden onset of severe MR was unforeseen and time was not lost in doing urgent surgery. Surgical outcomes in such situations were not good but in our case the patient recovered completely due to the timely intervention and committed team to circumvent the problem.

Till date, not more than 10 cases of *Burkholderia cepacia* endocarditis were described in literature (1). In 70 % IV drug addicts tricuspid valve was involved. One case of aortic valve and one case of native mitral valve was also described (1, 2). There were only 4 reports of prosthetic mitral valve involvement

causing endocarditis (1). Ours is the second case reported in world literature where early PVE by *Burkholderia cepacia* is treated successfully by IV antibiotics along with redo Mitral Valve Replacement (1).

References

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