BMH MEDICAL JOURNAL

BMH Medical Journal 2015;2(3):84-88 **Case Report**

Prosthetic Valve Endocarditis - Successful Management With Antimicrobial Treatment

C Ashokan Nambiar[1], Sudarsana J[2], Bindu AV[3]

[1]Senior Consultant & Head of Cardiology Department
[2]Senior Consultant & Head of Microbiology Department
[3]Clinical Resident, Cardiology Department
Baby Memorial Hospital, Kozhikode, Kerala, India. PIN: 673004

Address for Correspondence: Dr. Ashokan Nambiar C, Senior Consultant & Head of Cardiology Department, Baby Memorial Hospital, Kozhikode, Kerala, India. PIN: 673004. E-mail: hrdya44@yahoo.com

Keywords: Prosthetic Valve Endocarditis, Antimicrobial Treatment

Case report

Middle aged male was admitted with high fever, rigor and chills of 2 days duration. He was seen in the clinic two years back for syncope. He gave history of Mitral (Starr-Edward) and Aortic (Medtronic) valve replacement ten years earlier from another center and was on regular anticoagulation with dose-adjusted acenocoumarol. On evaluation he had normal prosthetic valve function by trans-thoracic echo, but Holter monitoring showed Paroxysmal Atrial Fibrillation. He had mild wall motion abnormalities and left ventricular dysfunction suggestive of coronary artery disease also and was put on additional Metoprolol.

A few weeks prior to present episode, he had cranio-cerebral injury after a fall which he could not remember clearly. He underwent burr-hole evacuation of a hematoma from elsewhere. He had a short febrile episode during his hospital stay there and was treated with antibiotics, the details of which were not available.

Physical examination on admission showed a very pale, ill-looking febrile person. Heart rate was 120/ min, in AF and BP was 100/70 mm Hg. Clubbing was present, but no petichiae, splenomegaly or other stigmata of infective endocarditis. Immediate trans-thoracic echo showed shagginess of mitral prosthetic valve, but no obstruction or significant regurgitation. Routine blood counts showed leucocytosis, Hb 11g/dl and ESR of 88 mm first hour. Blood cultures were sent. Trans-Esophageal Echo (TEE) was done on the same day and showed characteristic vegetation with independent motion, 9 mm x 4 mm on the mitral prosthetic valve (**Figure 1** and **Figure 2**).

With the diagnosis of Prosthetic valve endocarditis he was started on Vancomycin, Gentamicin and Rifampicin. On day 3 he developed jaundice. Serum bilirubin was 7.9 mg/dl (total) with 4.1 mg /dl conjugated fraction. We also got information from Microbiology department that Gram negative bacilli were being grown, which was not properly identified but sensitive to Imipenam and resistant

to Vancomicin and Gentamicin. He was still febrile, temperature ranging from 104 to 102 degrees Centigrade. So all the antibiotics were changed and was started on Imipenam 500 mg 8-hrly and Levofloxacin 750 mg daily IV. On day 5 we got the detailed culture and sensitivity report (**Figure 3**). Serratia Marcescens were grown from all 4 samples of blood drawn on day 1 and the two drugs we chose showed high sensitivity. From day 5 jaundice subsided and bilirubin level came down to 2.8 mg/dl. Renal parameters were normal. Temperature started falling and from day 10. He was afebrile and remained so after that till his discharge from the hospital. He was continued on small doses of Acitrom and INR remained around 2.5 throughout.

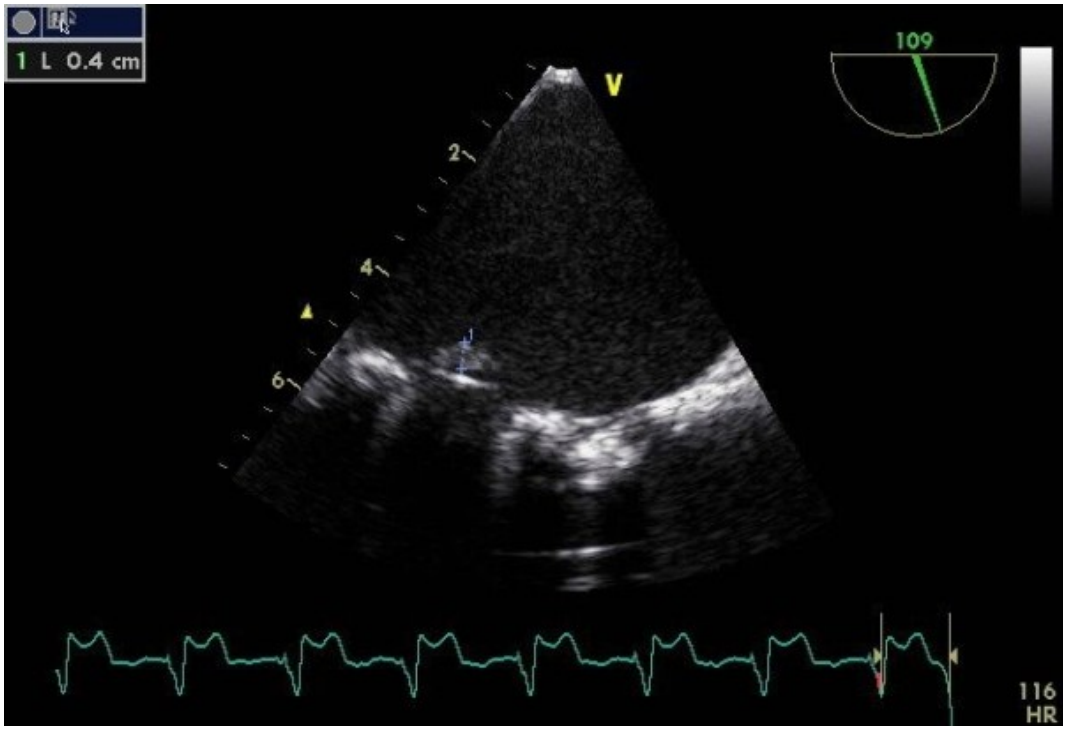

Figure 1: Vegetation on prosthetic valve (marked 1)

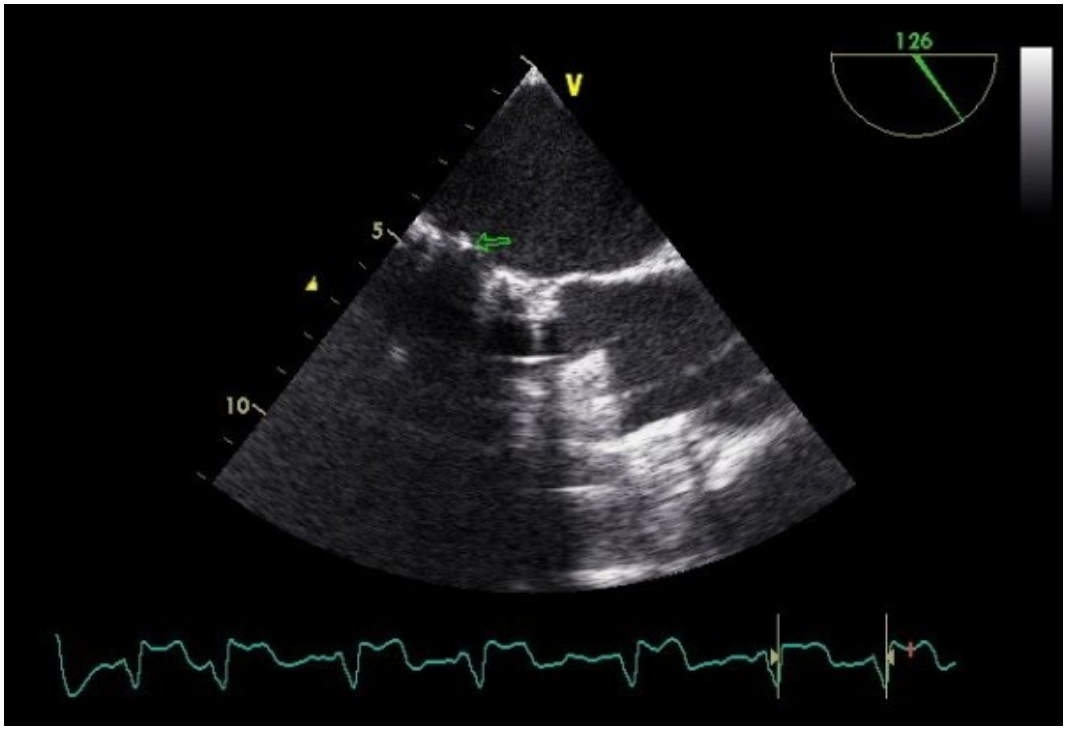

Figure 2: Another view of the vegetation (green arrow)

Specimen Received	: Blood
Report	: Serratia Marcescens grown after 24 hrs incubation in all four samples.

Antibiotic	MIC Value	Interpretation
Serratia Marcescens		
Cefuroxime		Resistant
Gentamicin		Resistant
Ciprofloxacin		Resistant
Amikacin		Sensitive
Ampicillin		Resistant
Ceftriaxone		Resistant
Cefepime		Resistant
Meropenem		Sensitive
Cefazolin		Resistant
Imipenem		Sensitive
Levofloxacin		Sensitive
Trimethoprim-sulfamethoxazole (Co-trimoxazc		Resistant
Piperacillin-Tazobactam		Sensitive
Tobramycin		Resistant
Amoxicillin-clavulanic acid		Resistant

Figure 3: Blood culture and sensitivity report

After 4 weeks of Imipenam and Levofloxacin he was discharged from hospital and he was advised to continue Amikacin 750 mg IV for another 2 weeks. Oral Doxycycline was also prescribed at discharge but he could not continue it because of vomiting. He was reviewed after 6 weeks. Echocardiogram showed no evidence of vegetations (**Figure 4**). Prosthetic valve function was normal. Left ventricular function was mildly depressed as before. All antibiotics were discontinued. Blood counts, Hb level and ESR returned to near normal values. At 8 weeks he remained afebrile, stable and not on any antibiotics.

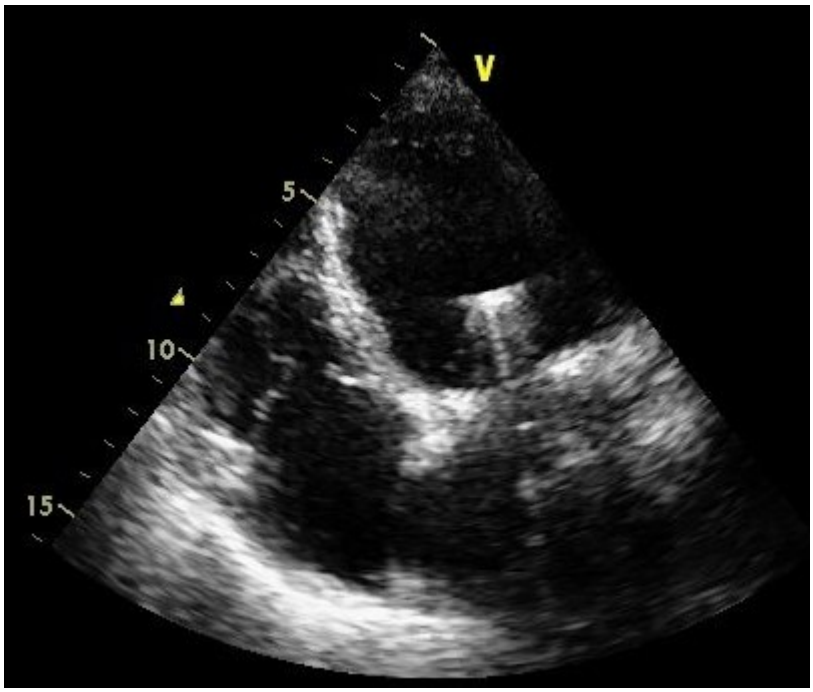

Figure 4: Echocardiogram after treatment - no vegetation seen

Discussion

Here we present a case of successful medical treatment of prosthetic valve endocarditis caused by an unusual organism. Serratia Marcescens is a rod-shaped Gram negative organism belonging to family Enterobacteriacea, tribe Klebsiellae. It is abundantly present in the environment in damp conditions especially bath-rooms. Recent studies have described it in 1.4% of Hospital-Acquired Infections (HAI). Most S. marcescenes are resistant to many antibiotics because of R-Factors-a type of plasmid that carry 1 or more genes that encode resistance. The successful outcome in this case is mainly because we could start the appropriate antibiotics quite early.

The diagnosis of infective endocarditis in this case is well established. The Duke criteria for endocarditis was proposed in 1994 [1] but later it was modified and we applied the Modified Duke criteria [2]. The two major criteria were both present as evidenced by the typical vegetation on the mitral prosthetic valve and positive culture from multiple blood samples. It took almost 10 days of anti-microbial treatment for control of fever and there was no other disease to account for his illness. The well-known predisposition of prosthetic valve and the surgery involving scalp which took place in the preceding fortnight all point to Infective Endocarditis. The two major criteria namely typical vegetation and positive culture from multiple samples on day 1 confirm the diagnosis beyond any doubt.

Many previous reports recently have showed poor results from medical management with anti-microbials and the need for surgery in upto 56% cases [3]. Mortality of almost 20% was reported recently [4]. In Western countries intravenous drug abuse is emerging as a common pre-disposing cause and S. Maescecens is one of the microbe involved. Changing profile of the presentation of infective endocarditis is well recognized in several reports [5,6]. S. Aureus is the most difficult organism to treat because of resistance and fungal endocarditis poses difficulty in isolation and prolonged treatment. In developing countries difficulty in getting positive cultures and the cost of treatment are the main reasons for adverse results.

Though the weight of clinical evidence favours strict application of the Modified Duke Criteria for diagnosis considering the heterogenous presentation of the illness, the AHA scientific statement endorses clinicians to be guided by clinical judgment and to use the criteria only as a clinical guide [7]. The consensus is to use the Modified Duke Criteria with intelligent clinical judgment. This is particularly true when the patient is sick and blood culture reports are not helpful. Timing of surgery is also an area where judgment is crucial.

Summary

The epidemiology of Infective Endocarditis is changing. Prosthetic valve implantation is a well-known predisposing factor and recent surgery without adequate antibiotic prophylaxis should alert the clinician about this possibility. Strict application of the Modified Duke criteria and prompt, effective administration of appropriate antibiotics for 6 weeks would result in clinical and bacteriological cure in many instances as shown in our case. Surgery was not required here but poor response in two weeks would have directed us to that option.

References

1. Duracek D, Lukes A, Bright D et al. New Criteria for Diagnosis of Infective Endocarditis. Utilization of Specific Echocardiographic Findings. Duke Endocarditis Service. Am. J. Med. 1994; 96(3): 200-09.

2. Li JS, Sexton DJ, Mick N et al. Proposed Modification to the Duke Criteria for the Diagnosis of Infective Endocarditis. Clinical Infectious Diseases, 2000; 30(4): 633-38.

3. Kocabas U, Kaya E, Ozerkan Cakan F et al. Epidemiology, Clinical Characteristics and Predisposing Factors of Infective Endocarditis - A Review of 194 cases in a Tertiary Care Centre. J Am Coll Cardiol. 2013; 62 (18-S2): C81.

4. Ebtia M, da dewa. Infective Endocarditis Revisited: Clinical Manifestations and Echocardiographic Findings of Patients with Infective Endocarditis . J Am Coll Cardiol. 2012, 59: 13: s1.

5. Benito N, Miro J, de Lazzari F et al. Health Care Associated Native valve endocarditis, importance of non-nosocomial acquisition. Ann. Intern. Med. 2009; 150: 586.

6. Murdoch DR, Corey GR, Hoen B et al. Clinical Presentation, Etiology and Outcome of Infective Endocarditis in the 21st Century. The International Collaboration on Endocarditis - Prospective Cohort Study. Arch. Intern. Med. 2009, 169: 463.

7. Braunwald's Heart Disease, 9th Edition, 2012; p.1579