

Case Report

Open Access

Bacillus Cereus Endocarditis in a permanent pacemaker: a case report

Salaheldin Abusin*¹, Arvind Bhimaraj² and Suhail Khadra²

Address: ¹Department of Medicine, John H. Stroger Hospital of Cook County, Chicago, IL, 60612, USA and ²Division of Cardiology, John H. Stroger Hospital of Cook County, Chicago, IL, 60612, USA

Email: Salaheldin Abusin* - sayabusin@hotmail.com; Arvind Bhimaraj - arvind.bhimaraj@gmail.com; Suhail Khadra - skdra@aol.com

* Corresponding author

Published: 18 August 2008

Received: 13 July 2008

Cases Journal 2008, 1:95 doi:10.1186/1757-1626-1-95

Accepted: 18 August 2008

This article is available from: <http://www.casesjournal.com/content/1/1/95>

© 2008 Abusin et al; licensee BioMed Central Ltd.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/2.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract

Introduction: *Bacillus Cereus* endocarditis is a rare condition which has been implicated in intravenous drug users, and in patients with prosthetic heart valves. We report a rare case of *Bacillus Cereus* infecting a permanent pacing wire.

Case presentation: A 69 year old female with a permanent pacemaker presented with rigors, sweats and weight loss. Blood cultures grew *Bacillus Cereus*; Transesophageal echocardiogram demonstrated a mobile lesion attached to the pacing wire. She was treated with appropriate intravenous antibiotics for 6 weeks with a good clinical recovery at 6 months follow up.

Conclusion: This case reminds the clinician to have a high index of suspicion for endocarditis in any patient with cardiac prosthesis and to pursue the blood culture results even for rare and unexpected organisms. It also suggests the possibility of a trial of antibiotic therapy prior to prosthesis removal in select patients who are not in heart failure and hemodynamically stable.

Introduction

Bacillus Cereus (BC) is a spore forming bacteria widely distributed in the environment, and as a result when isolated in blood cultures it is sometimes dismissed as a contaminant. It is a significant cause of food poisoning. Non gastrointestinal disease is rare, mainly in the form of local wound infection and ocular infections. It can also cause other infections namely, pneumonia, meningitis, encephalitis, in addition to brain and liver abscesses [1].

It is a rare cause of endocarditis [2] reported in patients with prosthetic heart valves, rheumatic heart disease, intravenous drug use (IVDU), and in a patient with leukaemia.

Case presentation

A 69 year old lady was admitted to our institution with one month history of shortness of breath, rigors, sweats and significant loss of weight. She had a dual chamber pacemaker fitted in six years prior to this admission. She also suffered from Diabetes Mellitus and Hypertension. On examination, she was afebrile, with stable vital signs, and a 3/6 systolic murmur that was louder with inspiration. A series of peripheral blood cultures were collected, (10 sets in total), and all grew BC.

Transesophageal echocardiogram revealed a mobile lesion attached to the pacing wire (Figure 1&2) and moderate tricuspid regurgitation (TR). She was diagnosed with pacemaker associated infective endocarditis. She was

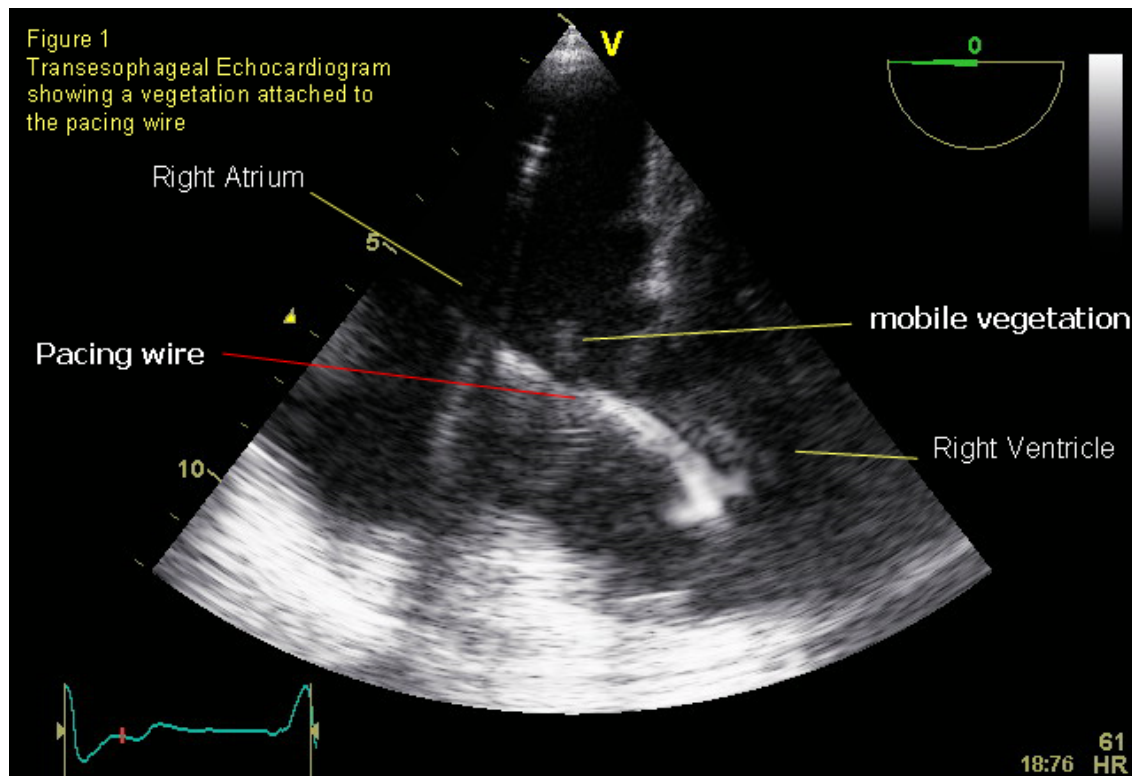


Figure 1
Labelled Transesophageal image.

known to have TR (secondary to pacemaker lead) and comparison to prior echo showed no significant change.

Because the patient was clinically stable, we elected for a trial of intravenous antibiotic therapy prior to surgical removal of the pacemaker. The patient was treated with intravenous Cefazolin, to which the organism was sensitive, for six weeks. She was closely followed after discharge, and at six months follow-up the patient had made a good clinical recovery. A good quality follow-up transthoracic echocardiogram was performed and showed no evidence of vegetation (Figure 3).

Discussion

There are 14 reported cases of BC Endocarditis in the literature. When it occurs as native valve endocarditis in IVDU patients (6 reported cases), it has an excellent clinical response to antibiotic therapy alone [3-5].

However, in patients with prosthetic heart valves, BC endocarditis has been reported to cause death when treated with antibiotics alone (one reported case) [6]. Surgical replacement of the affected valve is required (4 reported cases) [7-10].

It is also a cause of death in immunocompromised patients and can be difficult to diagnose in this patient population [11] (one reported case at autopsy).

There is one previous case where *Bacillus* species infected a pacing wire and required removal of the pacemaker [12]. In another report, *Bacillus* species infected an implantable cardioverter-defibrillator (ICD) lead [13]; the patient was successfully treated with antibiotics alone without the need for removal of the ICD.

In our patient, we collected a large number of blood cultures to refute the possibility of a skin contaminated sample. Although, recent guidelines generally recommend removal of the cardiac prosthesis [14], we elected a trial of antibiotic therapy given the fact that the patient was clinically stable and the peri-operative morbidity associated with the surgical removal of the pacemaker. This approach achieved a good clinical response in our patient.

Conclusion

This case reminds the clinician to have a high index of suspicion for endocarditis in any patient with cardiac prosthesis, and try to pursue the blood culture results even for rare and unexpected organisms. It also suggests a trial of

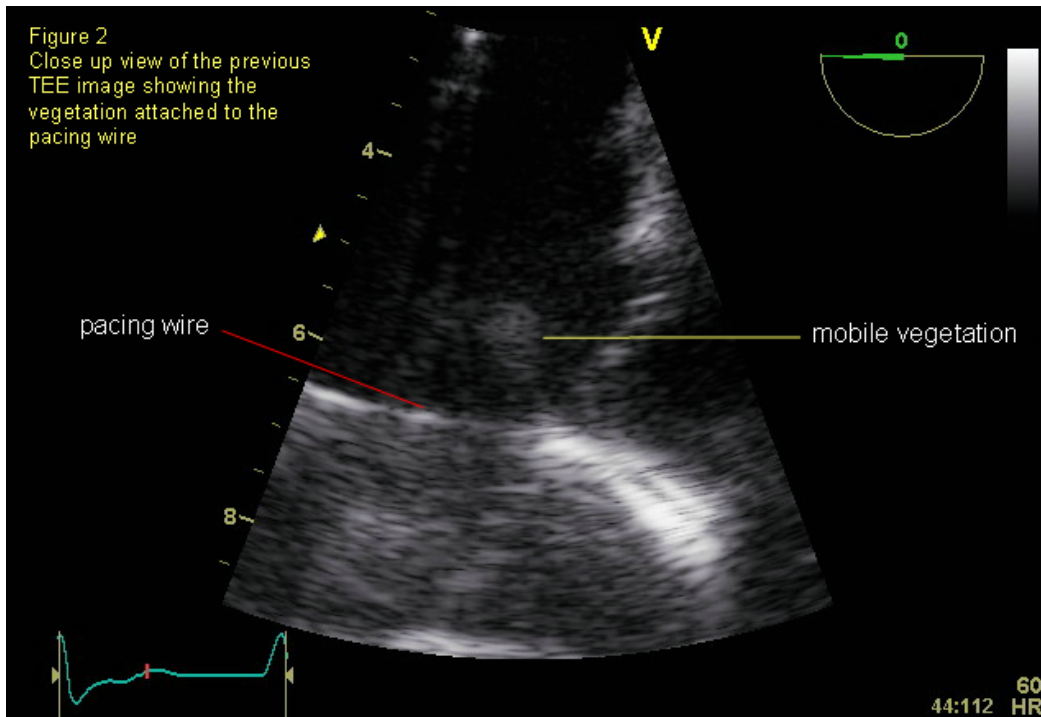


Figure 2
Labelled Transesophageal image.

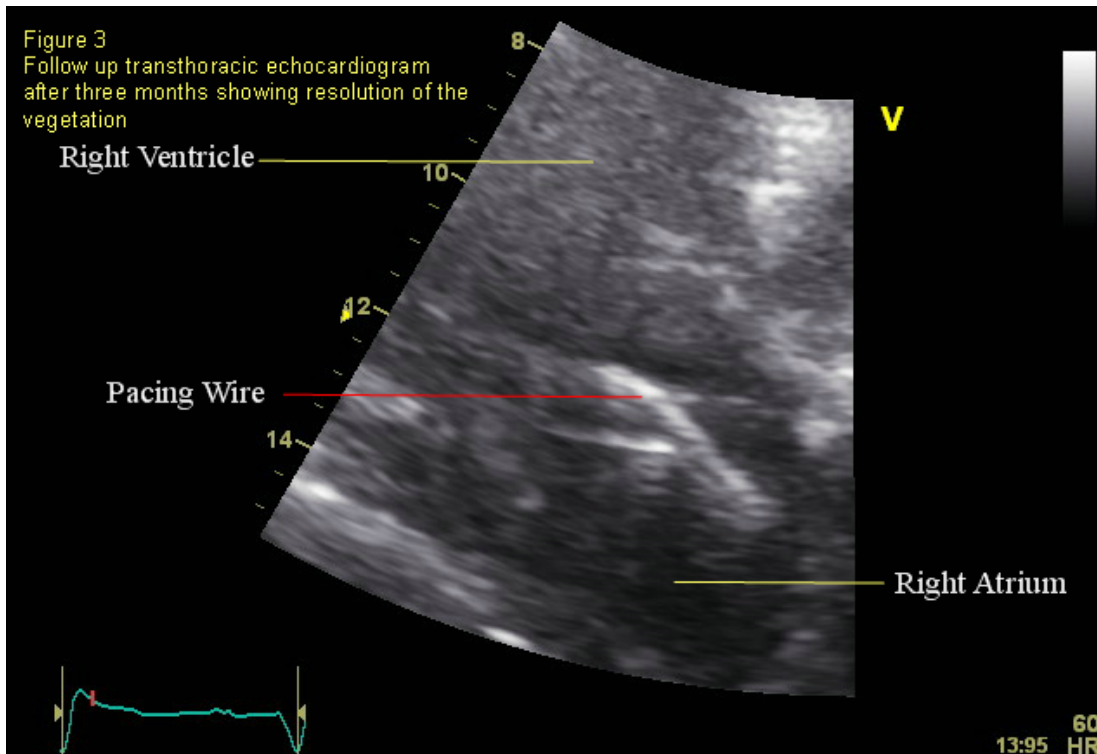


Figure 3
Labelled transthoracic image.

antibiotic therapy prior to prosthesis removal in selected patients who are not in heart failure and hemodynamically stable.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

SA, was involved in the clinical care of the patient, and contributed to the writing of the manuscript, AB analyzed and interpreted the patient data and was a major contributor to the writing of the manuscript, SK was the cardiology attending in charge of the patient, and was a major contributor to the writing of the manuscript.

All authors read and approved the final manuscript.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

References

1. Drobniowski FA: **Bacillus Cereus and related species.** *Clin Microbiol Rev* 1993, **6(4)**:324-38.
2. Fowler VG Jr, Miro JM, Hoen B, Cabell CH, Abrutyn E, Rubinstein E, Corey GR, Spelman D, Bradley SF, Barsic B, Pappas PA, Anstrom KJ, Wray D, Fortes CQ, Anguera I, Athan E, Jones P, Meer JT van der, Elliott TS, Levine DP, Bayer AS: **Staphylococcus aureus endocarditis: a consequence of medical progress.** *JAMA* **293(24)**:3012-21. 2005 Jun 22
3. Craig CP, Lee WS, Ho M: **Letter: Bacillus cereus endocarditis in an addict.** *Ann Intern Med* 1974, **80(3)**:418-9.
4. Weller PF, Nicholson A, Braslow N: **The spectrum of Bacillus bacteremias in heroin addicts.** *Arch Intern Med* 1979, **139(3)**:293-4.
5. Tuazon CU, Murray HW, Levy C, Solny MN, Curtin JA, Sheagren JN: **Serious infections from Bacillus sp.** *JAMA* **241(11)**:1137-40. 1979 Mar 16
6. Block CS, Levy ML, Fritz VU: **Bacillus cereus endocarditis. A case report.** *S Afr Med J* **53(14)**:556-7. 1978 Apr 8
7. Oster HA, Kong TQ: **Bacillus cereus endocarditis involving a prosthetic valve.** *South Med J* 1982, **75(4)**:508-9.
8. Steen MK, Bruno-Murtha LA, Chaux G, Lazar H, Bernard S, Sulis C: **Bacillus cereus endocarditis: report of a case and review.** *Clin Infect Dis* 1992, **14(4)**:945-6.
9. Yamamura M, Aoki K, Takanashi S, Tadokoro M, Furuta S, Mizokami T: **[A case of Bacillus cereus prosthetic valve endocarditis].** *Kyobu Geka* 1994, **47(3)**:232-4.
10. Castedo E, Castro A, Martin P, Roda J, Montero CG: **Bacillus cereus prosthetic valve endocarditis.** *Ann Thorac Surg* 1999, **68(6)**:2351-2.
11. Cone LA, Dreisbach L, Potts BE, Comess BE, Burleigh WA: **Fatal Bacillus cereus endocarditis masquerading as an anthrax-like infection in a patient with acute lymphoblastic leukemia: case report.** *J Heart Valve Dis* 2005, **14(1)**:37-9.
12. Sliman R, Rehm S, Shlaes DM: **Serious infections caused by Bacillus Species.** *Medicine (Baltimore)* 1987, **66(3)**:218-223.
13. Shalev A, Gilad J, Riesenberk K, Borer A, Kobal S, Schlaeffer F, Katz A: **Conservative management of implantable cardioverter defibrillator-related endocarditis due to Bacillus spp.** *Infection* 2007, **35(2)**:114-7.
14. Guidelines on Prevention, Diagnosis and Treatment of Infective Endocarditis Executive Summary: **The Task Force on Infective Endocarditis of the European Society of Cardiology.** *Eur Heart J* 2004, **25(3)**:267-76.

Publish with **BioMed Central** and every scientist can read your work free of charge

"BioMed Central will be the most significant development for disseminating the results of biomedical research in our lifetime."

Sir Paul Nurse, Cancer Research UK

Your research papers will be:

- available free of charge to the entire biomedical community
- peer reviewed and published immediately upon acceptance
- cited in PubMed and archived on PubMed Central
- yours — you keep the copyright

Submit your manuscript here:
http://www.biomedcentral.com/info/publishing_adv.asp

