To TEE or not to TEE? That is the Question

Timothy Kaddis, MD[1] & Joseph Chiovaro, MD[2]
[1]Oregon Health & Science University, [2]Veterans Affairs Portland Medical Center

INTRODUCTION

- Cardiac device-related endocarditis is a relatively uncommon diagnosis that requires a high index of clinical suspicion and targeted workup to establish
- Here we present a case of pacemaker endocarditis manifesting as chronic fevers, and address two diagnostic issues:
  - Transthoracic echocardiogram (TTE) vs. Transesophageal echocardiogram (TEE) for diagnosis
  - Presence of an unusual organism on culture

CASE OVERVIEW

History of Present Illness:
- Chief complaint: Shortness of breath x 2 weeks
- Other symptoms: 1 month of nausea, vomiting, cough, night sweats. 1 year of daily fevers

Past Medical History:
- Sick Sinus Syndrome s/p pacemaker placement in 2011
- Asthma, mild persistent
- Hypertension

Physical Exam:
- Vitals: Afebrile (initially), BP 140/70, HR 59, R 24, SpO2 97% on RA
- General: Ill appearing male in no acute distress
- Cardiovascular: Regular rate & rhythm, no murmurs
- Pulmonary: Intermittent non-productive cough. Lungs clear to auscultation bilaterally. Normal work of breathing.
- Abdomen: Soft, non tender, normoactive bowel sounds
- Extremities: No lower extremity edema. No skin rashes/lesions

Notable Labs:
- WBC 27.95, normal electrolytes & creatinine, procalcitonin 6.78, CRP >300, NT pro-BNP 787, serial HS-troponins negative
- Bacterial, fungal, viral antigen/serology tests negative except for positive HSV-1
- Hospital day 4: Blood cultures positive for *Cutibacterium acnes*

CLINICAL COURSE

Presentation
- 1 year of daily fevers without circadian pattern
- 1 month of nausea, vomiting, night sweats, cough
- 2 weeks of shortness of breath
- Pertinent negatives: No chest pain, sick contacts, recent travel, or IVDU

Interventions
- Chest X-ray with right hilar opacity, follow up chest CT with pulmonary embolism & surrounding lung opacity
- Blood cultures positive for C. acnes
- TTE without vegetations (6/11/21), TEE showed 3cm RA mass (6/17/21)
- Penicillin G initiated/pacemaker extracted

Outcome
- Resolution of fevers
- Improvement in leukocytosis (15 at discharge)
- Prolonged hospital stay for recovery & rehabilitation
- Resolution of other symptoms within weeks to months

Figure 1. Initial CXR with right hilar opacity

Figure 2. Follow-up CT Chest (PE protocol) with right main pulmonary arterial embolism & surrounding lung opacity

DISCUSSION

- Cardiac device related endocarditis should never be ruled out based on transthoracic echocardiogram (TTE) alone
- Sensitivity of TTE is less than 30%[1]
- Sensitivity of Transesophageal Echocardiogram (TEE) is 96%[1]
- *Cutibacterium acnes* is an uncommon pathogen, part of the normal flora of the skin, oral cavity, gastrointestinal tract
- Only 3.5% of *C. acnes* positive blood cultures are associated with clinically significant infection[2]
- *C. acnes* infections are most common in prosthetic joints, breast implants, neurosurgical shunts, and cardiovascular implantable electronic devices (CIEDs)[3]
- *C. acnes* is responsible for an estimated 2.3% of all CIED infections

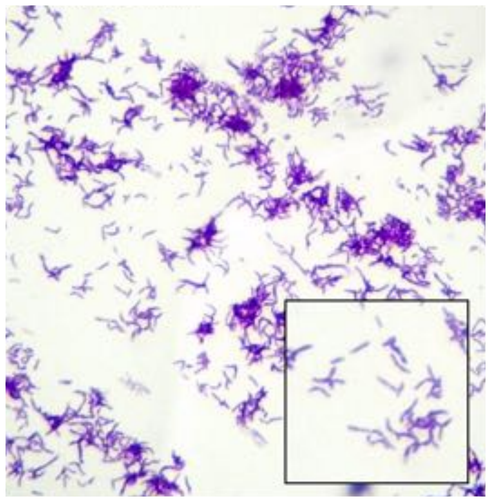

Figure 3. Gram stain of *Cutibacterium acnes*

REFERENCES

1. Cacoub P, Leprince P, Nataf P, et al. Pacemaker infective endocarditis. Am J Cardiol. 1998;82(4):480-484.
2. Park HJ, Na S, Park SY, et al. Clinical significance of Propionibacterium acnes recovered from blood cultures: analysis of 524 episodes. J Clin Microbiol. 2011;49(4):1598-1601.
3. Portillo ME, Corvec S, Borens O, Trampuz A. Propionibacterium acnes: an underestimated pathogen in implant-associated infections. Biomed Res Int. 2013;2013:804391.
4. El Rafei A, Desimone DC, Sohail MR, et al. Cardiovascular implantable electronic device infections due to propionibacterium species. Pacing Clin Electrophysiol. 2016;39(6):522-530.