

## Case Report

# Atypical symptoms with typical signs in a patient with *Propionibacterium acnes* related mitral valve endocarditis

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### ABSTRACT

Infective endocarditis (IE) is a serious medical condition associated with an increase in morbidity and mortality if not treated promptly and adequately. The clinical outcome depends on the early diagnosis and aggressiveness of the causative organism. Patients usually present with typical features suggestive of Infective endocarditis but in some circumstances the presentations are atypical, and if not diagnosed and treated, may lead to serious consequences.

We present a case of atypical presentations of infective endocarditis caused by *Propionibacterium acnes* organism with no classical features of endocarditis and had symptoms suggestive of urinary tract infection. The diagnosis of IE can be very difficult in patients with atypical clinical presentation, particularly caused by low-pathogenicity organisms. Appropriate clinical assessment and high level of suspicion especially in the patients with previous history of infective endocarditis or having prosthetic valves in situ is crucial.

**Keywords:** Infective endocarditis, *Propionibacterium acnes*, Splinter haemorrhage

### INTRODUCTION

Infective endocarditis (IE) is a serious medical condition which increases morbidity and mortality if not treated early and effectively.<sup>1-3</sup> *Propionibacterium acnes* (*P. acnes*) is usually the main constituent of the normal flora of human skin. It is a facultative anaerobe, non-spore-forming, gram-positive bacilli and mostly associated with acne vulgaris infection.<sup>4</sup> *P. acnes* however, can also cause numerous other severe infections like endocarditis, arthritis, spondylodiscitis, endophthalmitis, osteomyelitis and ventriculoperitoneal shunt infections.<sup>5</sup>

High risk patients for developing infective endocarditis are usually the patients who have undergone previous implantation of a prosthetic valve, devices or lead.<sup>6</sup>

*Propionibacterium* endocarditis is usually challenging in diagnosis due to the lack of classical signs and symptoms of infective endocarditis with lack of elevated inflammatory markers.<sup>7,8</sup>

### CASE REPORT

We report a 60-year-old male who presented to our family-medicine practice with a 4-days history of generalized fatigue and episodes of rigors and chills at night. He experienced pain in his flanks bilaterally, passing dark urine associated with dysuria. He denied any fevers, chest pain, dyspnoea, cough or night sweats. There was no history of weight loss. His past medical history included chronic atrial fibrillation, congestive heart failure, ischemic strokes and severe mitral valve regurgitation

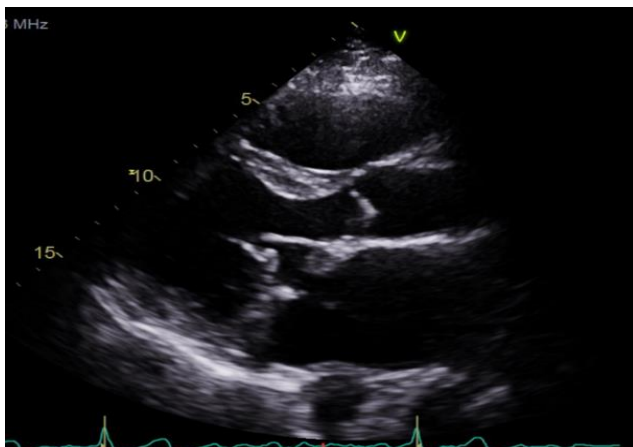
secondary to mitral valve prolapse, for which he underwent elective mitral valve repair surgery in 2013 using a 36 mm Physio annuloplasty ring. In August 2018, he suffered a myocardial infarction, where the angiogram did not show any stenotic coronary artery disease. However, a very distal occlusion of the left anterior descending artery (LAD) was noted and the suspected diagnosis was embolization to the LAD.

On physical examination, he was afebrile and normotensive. He was alert and looked well. Auscultation of the heart revealed pansystolic murmur, best heard at the apex and radiated to the axilla. He had few splinter haemorrhages with no ankle oedema. Rest of the examination was unremarkable. ECG showed atrial flutter with variable atrio-ventricular block. The ventricular rate was controlled at 60 beats per minute. Urine dipstick was positive for erythrocytes only.

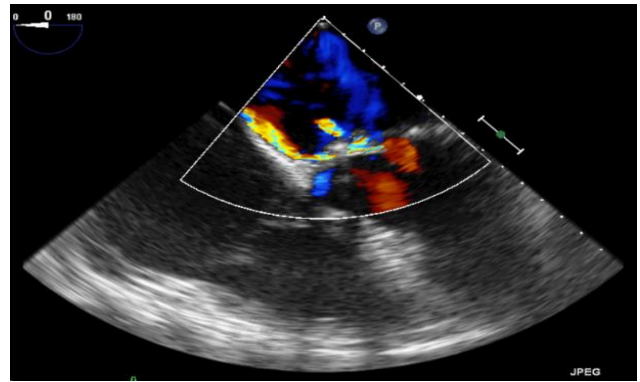
Investigations including, FBC, U&E's, LFT's, CRP, ESR, Urine for MCS and Blood cultures were as follows: ESR <5 mm/hour, CRP= 12 mg/l, WBC=  $9.2 \times 10^9/l$ , urine showed erythrocytes  $>10 \times 10^6/l$ . His U&E's and LFT's were within normal limits.

Based on the above history, physical examination and investigations, at this stage, the differential diagnosis included; probable viral infection or urinary tract infection. The patient had splinter haemorrhages documented, therefore blood culture were requested. The blood culture grew gram positive bacilli, confirmed to be *P. acnes*, which was sensitive to penicillin, clindamycin and vancomycin. Based on positive blood cultures, he was referred for an urgent echocardiography.

The echocardiogram demonstrated mild to moderately reduced left ventricular systolic function. There was a large vegetation attached to the posterior mitral valve leaflet tip (8x6 mm) and partial dehiscence of the annuloplasty ring causing significant eccentric mitral regurgitation outside the ring (Figure 1-2).

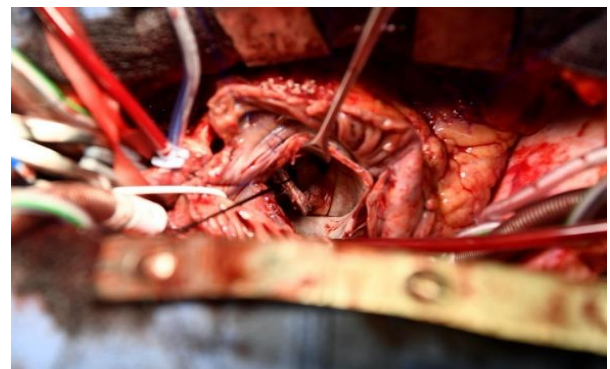


**Figure 1: Transthoracic echo demonstrates the vegetation in a parasternal long axis view.**



**Figure 2: Tranoesophageal echo shows an eccentric jet of mitral regurgitation secondary to the dehiscence of mitral annuloplasty ring.**

He was treated with intravenous antibiotics, IV benzyl penicillin, guided by the blood culture results, sensitivities and local antimicrobial guidelines. After completing six weeks of antibiotics, he underwent cardiac surgery which involved redo sternotomy and institution of cardiopulmonary bypass. Dehiscence of the annuloplasty ring in the anterior annulus was confirmed on exposure of the mitral valve (Figure 3-4).



**Figure 3: Intraoperative picture with exposure of mitral valve via bi-atrial superior septal approach with dehiscence of mitral annuloplasty ring.**



**Figure 4: The explanted annuloplasty ring.**

The annuloplasty ring was explanted and mitral valve replacement was performed with a 31 mm mosaic bioprosthetic valve following preservation of commissural

chordae and posterior leaflet. No evidence of active infection was identified on culture sensitivity or histopathology. He recovered well with nil peri-operative complications and was discharged home. At the time of follow up the patient was doing well with no evidence of recurrence of infection.

## DISCUSSION

Early accurate diagnosis and prompt treatment of IE has been associated with better clinical outcomes.<sup>1-3</sup> *P. acnes* has been regarded as an organism of low pathogenicity, but in recent years it has emerged as a significant cause of serious infections.<sup>7,20</sup> *P. acnes* infection has also been associated with various prosthetic material in the body including cardiac prosthetic valves, cardiac valves annuloplasty rings, shoulder prosthesis, cerebrovascular shunts and other cardio-vascular devices.<sup>9</sup> IE caused by *P. acnes* is rare and comprising approximately 0.3% of all IE cases.<sup>11</sup> Most of blood cultures for infective endocarditis grow organisms within 5-7 days, but in our patient, it took longer duration, which is not uncommon with slow growing organisms. This poses a challenge to reaching the diagnosis in a timely fashion.<sup>9</sup> *P. acnes* can be difficult to grow. One of the major reasons is its prolonged incubation time. Prolonged aerobic and anaerobic blood and tissue cultures for up to 2 weeks might be required for detection.<sup>11</sup> Interestingly the deep-seated infection with low virulence organisms usually can have negative blood culture results in up to 30% of the cases. This is particularly challenging in device induced endocarditis. The diagnosis of the *P. acnes* endocarditis may be delayed because endocarditis may take several years after the valve replacement surgery, negative blood cultures and the growth of *P. acnes* in blood culture may be regarded as contaminants.<sup>10,12</sup> Our patient had previous mitral valve annuloplasty ring repair.

Similarly, in our case the ESR and CRP were not significantly raised, which has been previously reported with *P. acnes* infections. It is therefore advisable to mention suspected infective endocarditis on the pathology request, so that the blood samples can be incubated for extended period of time. *P. acnes* can be a result of contamination, however clinical presentations and physical examination is very important to co-relate.<sup>13</sup> There have been reports of poor clinical outcomes in *P. acnes* induced endocarditis due to negative or delayed culture results and more tendency to consider the organism as a skin contaminant.<sup>14</sup> IE can be treated with either medical therapy or combined medical and surgical therapy. IE Mortality remains high (upto 25%) even with the best medical therapies.<sup>17</sup> *P. acnes* is generally susceptible to benzy-l-penicillin as was the case in our patient.<sup>15,16</sup> Due to the slow-growing course of *P. acnes*, extensive destruction of valvular and perivalvular tissues can be observed before the diagnosis is made.<sup>11,12,18</sup> Therefore, strong consideration should be given to Propionibacterium endocarditis in patients whose blood cultures grow this organism, particularly in patients with

abnormal native cardiac valves or underlying cardiac devices because they may require surgical intervention.<sup>12</sup> If not properly treated, the mortality with *P. acnes* endocarditis can be up to 16% of patients.<sup>19</sup> In our patient despite medical therapy with course of antibiotics, he needed surgical intervention.

## CONCLUSION

The diagnosis of IE caused by low-pathogenicity organisms can be very challenging and is usually delayed. Having a high index of suspicion combined with thorough clinical assessment is very crucial for prompt diagnosis and management. This is particularly important because symptoms caused by these organisms vary and that can be missed easily which can lead to devastating clinical consequences.

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