

Propionibacterium Acnes: A Rare Cause of Constrictive Pericarditis

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Abstract

A 49-year-old male presented with classic symptoms of constrictive pericarditis which had increased in severity over a few months despite adequate conservative management. Investigations showed classic findings of Right heart compression associated with cardiac liver cirrhosis.

A partial Pericardiectomy was performed with excellent results in relieving his symptoms. Cultures of the pericardium showed growth of *Propionibacterium acnes*. This proved to be an extremely rare organism to cause Pericarditis with limited evidence in the literature to support similar cases.

The patient had a stable in hospital post-operative course. Ongoing consultation with the infectious disease team at our hospital resulted in a successful discharge on long term antibiotics.

Propionibacterium acnes is a rare cause of pericarditis, however if diagnosed, treatment is relatively straightforward with either conservative antibiotic management, surgery or preferably as in our case, both. Long term antibiotic cover is usually needed.

Keywords: Pericarditis; *Propionibacterium*; Pericardiectomy

Introduction

Acute Pericarditis can range from mild cases to life-threatening conditions and should therefore be managed aggressively especially in the elderly and debilitated patients. Treatment usually involves rest, non-steroidal anti-inflammatory drugs or aspirin, and sometimes colchicine. However, depending on the cause, treatment may involve antibiotics.

If left untreated, acute pericarditis may lead to more long-term and complex problems. This is namely a progression to chronic pericarditis which involves scarring, thickening and calcification of the pericardium which may lead to constrictive effects especially to the Right ventricle giving symptoms of heart failure.

Case Report

We present a 49-year-old gentleman who was referred to our unit for consideration of a pericardiectomy. His presentation included episodes of shortness of breath, chest discomfort in the mid portion with no radiation and episodes of palpitations. These symptoms had been more severe in the past 4 months before he was referred.

His history included a severe upper respiratory viral infection twenty years prior, this had resulted in some cardiac effect and symptoms at the time. Since then, he has had three episodes of acute pericarditis all relieved with medical management. He

also has had episodes of abdominal right upper quadrant pain and tenderness. On examination there was some mild tenderness in that region and evident splenomegaly. Two liver biopsies had confirmed cirrhotic changes.

Other investigations showed normal coronary anatomy, an elevated right atrial pressure of 14mmHg, right ventricular pressure of 35/16mmHg, a pulmonary artery pressure of 37/18mmHg with a wedge of 15mmHg. His cardiac echocardiogram and MRI showed a normal left ventricular function with thickened pericardium particularly over the Right ventricle with interventricular dependence. All these findings were clearly consistent with constrictive pericarditis. No valvular pathologies were noted and for these reasons and due to worsening symptoms, he was referred for a pericardiectomy.

We performed an open sternum pericardiectomy which showed a severely thickened pericardium with some calcific areas, the thickened pericardium was removed from phrenic to phrenic with no complications. No pericardial fluid was noted. Pericardial samples were sent to the lab for histopathology and multiple cultures including Tuberculosis, fungal and bacterial. These samples showed mild leucocytosis but also grew *Propionibacterium acnes* on cultures. No other growths were noted. The patient underwent routine post-operative care on the ward and received Intra Venous Cephazolin 6gms Daily as per the infectious disease team. He made a full recovery and was

discharged home 7 days post-surgery on IV Cephazolin for 4 weeks followed by 10 weeks of Amoxicilline/Clavulanic acid twice daily. His review in clinic was unremarkable and his symptoms had resolved.

Discussion

Acute Pericarditis is by definition swelling and irritation of the pericardium. Chest pain is the most common symptom and usually feels sharp or stabbing but may be dull or pressure-like discomfort. Other symptoms may include Fatigue, Low-grade fever, palpitations and Shortness of breath when lying down. Most cases resolve with medical treatment. However, constrictive pericarditis occurs in approximately 8-9% of cases, more so in recurrent episodes.

Constrictive pericarditis is an uncommon cardiac condition characterized by encasement of the heart in a thickened, adhesive, fibrotic, non-pliable pericardium, resulting in impaired diastolic filling of all cardiac chambers leading to heart failure. The predominant clinical symptom of constrictive pericarditis is asthenia, chest pain, palpitations, and symptoms of heart failure. A combination of culture results, echocardiograms, magnetic resonance imaging and cardiac catheterization are used to ascertain the diagnosis [1,2].

The most common causes of constrictive pericarditis are Heart Surgery, Radiation to the chest and both viral and bacterial infections with Tuberculosis bacilli being one of the commonest causative organisms. Constrictive Pericarditis caused by Propionibacterium acnes is rare and poorly reported.

Propionibacterium acnes is a slow growing gram-positive anaerobic bacillus that is part of the normal flora of the oral cavity, large intestine, conjunctiva and skin in humans and is involved in the pathogenesis of acne [3]. Previously known by the name Corynebacterium Parvum, it has been studied extensively by immunologists for its ability to stimulate the reticuloendothelial system [4].

Propionibacterium has a low virulence and the ability to form a biofilm, this can result in infections with few clinical signs at initial presentation, this in turn causing diagnosis to be delayed. Infections with Propionibacterium acnes has been reported with a higher incidence in immunocompromised patients [5], however, as seen in our patient, invasive infection can occur in immunocompetent patients without predisposing factors.

Diagnosis may be difficult and sample contamination has been reported, therefore the incubation time of clinical samples

should be prolonged and/or supported by polymerase chain reaction techniques. In the presence of clinical symptoms, patients with positive samples should be considered as clinically relevant and not dismissed as contamination [6].

Due to the indolent course of infections caused by Propionibacterium acnes, pericardial calcification in association with constrictive pericarditis often occurs as seen in our patient. Another possible cause for calcification of the pericardium is the association of Propionibacterium acnes with Sarcoidosis, resulting in a similar mechanism to the classic eggshell calcification seen in Sarcoidosis [7].

Antibiotics used to treat anaerobic infections usually suffice for other types of Cutibacterium infections. Propionibacterium acnes generally is highly susceptible to a wide range of antibiotics. These include the Penicillins, Carbapenems and Clindamycin. In addition, Teicoplanin has been used.

Experts suggest penicillin G and Cephalosporins for initial treatment of severe Propionibacterium acnes infection until the antimicrobial susceptibility results. These antibiotics are effective against Biofilm in vitro. Vancomycin may be used in allergic patients. Optimal duration of antibacterial therapy is unknown and should be individualized, however, a minimum of six weeks has been recommended by our infectious disease team after Pericarditis infections.

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