

Case Report

Complicated staphylococcal pericarditis in a child: a case report

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ABSTRACT

Although primary pericarditis is unusually experienced and diagnosed in paediatric population, it has probable life threatening sequel. This case report presents a case of complicated community acquired staphylococcal pericarditis, which illustrates how evasive the diagnosis of pericardial effusion can be. Early identification of pericarditis and pericardial effusion is vital to enable emergent intervention to enhance prognosis and alleviate mortality. The purpose of this report is to probe into the etiology of acute pericarditis and also to review the clinical presentation, the management and complications connected with acute pericarditis.

Keywords: Acute pericarditis, Pericardial effusion, Community acquired staphylococcal

INTRODUCTION

Pericardial diseases are the rarest in paediatric population. Acute pericarditis in children may present as purulent pericarditis alone or with massive effusions. The exact incidence of the disease and recurrence rates remains unclear as the available literature is limited. Purulent pericarditis has become a rare entity in the advent of antibiotics. The cause may be infectious either bacterial or viral, or non-infectious. However, the most common being idiopathic in 80-90% of the children followed by viral infections.¹

We here by present a case of primary purulent pericarditis in a 4 year old girl with no other focus of infection and predisposing conditions. The child was successfully treated with antibiotics, percutaneous drainage with temporary catheter and antifibrinolytics. There were no residual complications in the child in further follow up.

CASE REPORT

A 4 year old female child presented with high grade fever, chest pain and fast breathing for the past 3 days. There were no remarkable complaints in the past. At presentation child was toxic, tachypnoeic, tachycardic with moderate respiratory distress. Blood investigations showed neutrophilic leucocytosis and elevated CRP. Chest X-ray revealed left pleural effusion with cardiomegaly (Figure 1). Child was started on first line IV antibiotics along with high flow nasal canula oxygen. 2D echo revealed significant pericardial effusion and a good LV function (Figure 2). Pericardiocentesis was done and drained 25 ml of blood stained fluid and was sent for analysis, culture and CBNAAT. Pericardial fluid grew methicillin sensitive *Staphylococcus aureus* (MSSA) and antibiotics were changed according to sensitivity pattern. There were no malignant cells seen in analysis. Left sided pleural effusion was also tapped and culture was sterile.

There was an initial improvement with above treatment, but her distress increased again after 3 days of pericardiocentesis. Repeat 2D echo showed significant

recollection of fluid and hence pig tail catheter was introduced under ultrasound guidance and fluid was drained daily for 3 days (Figure 3). Further, child developed fibrinous strands (Figure 4) with tamponade effect for which fibrinolysis with streptokinase was needed for three times. During further stay, child responded well and collection was slowed down with no loculations. Child was able to wean down from high flow to room air with no distress and pigtail catheter removed. Her blood cultures done twice were sterile. After a total of 14 days of IV antibiotics, child was discharged with oral antibiotics for a total of 4 weeks. On follow up till 6 months child was healthy, asymptomatic with no comorbidities.

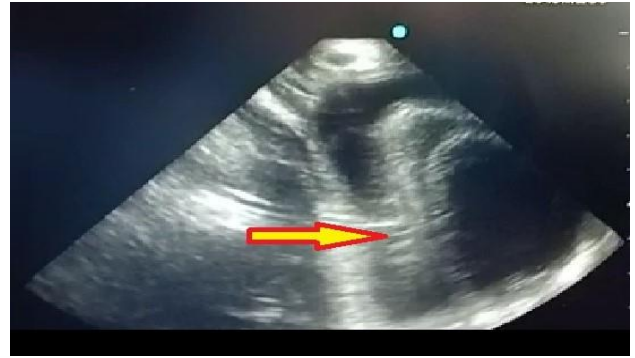


Figure 4: Fibrinous strands seen on 2D ECHO.

DISCUSSION

A normal pericardium is fibroelastic and the pericardial space is filled with 10-50 ml of plasma ultrafiltrate which acts a lubricant between pericardium and heart.² Accumulation of fluid and blood in large quantities in the pericardial cavity secondary to pericarditis is referred to as pericardial effusion. The effusion may develop gradually (sub-acute or chronic) or rapidly (acute). Rapid accumulation may lead to tamponade whereas slow effusions are usually well tolerated. Any disease involving pericardium may cause effusion, idiopathic being the most common. The incidence is more among the adolescent age group with a spike in male sex.³ Any disease involving pericardium may cause effusion idiopathic being the most common cause, followed by bacterial and viral infections. Purulent pericarditis is a life threatening infection of pericardium associated with hematogenous spread from a distant infection or direct spread from pericardium. Most common bacterial causes are *Staphylococcus aureus*, *Haemophilus influenzae* while *Neisseria meningitidis*, *Streptococcus pneumoniae* and *Salmonella* are other less common pathogens. MRSA is rare in the modern era of antibiotics. Other aetiologies may include metabolic and connective tissue disorders or any other inflammatory conditions, malignancy, trauma, surgery mostly in developed countries.⁴ Tuberculous pericardial effusion should be considered in developing countries and also in immunodeficiency children.⁵ In our child MSSA was grown. Clinical manifestations include chest pain, shortness of breath, fever. Presence of gastrointestinal symptoms like abdominal pain, nausea or vomiting indicates underlying large pericardial effusion. Tachycardia and tachypnoea are reported as nonspecific signs of cardiac tamponade. Other classic findings of tamponade like hypotension, venous distension and muffled heart sounds were rarely seen.⁶ Cardiovascular examination may be normal in the absence of tamponade. Chest radiography reveals a normal silhouette until the effusions are moderate. Separation of parietal pericardial fat and epicardium may result in fat pad sign in lateral view. The most sensitive and specific non-invasive gold standard technique for the diagnosis is 2D ECHO. Effusion is graded on the amount of fluid collected as minimal (50-100 ml), moderate (100-250 ml), and large

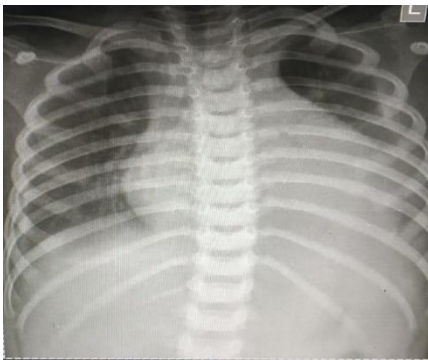


Figure 1: Chest X-ray showing cardiomegaly and left pleural effusion.



Figure 2: Pericardial effusion on 2D ECHO.



Figure 3: Pig tail catheter in-situ.

(250-500 ml).⁷ Sometimes even a large effusion may be asymptomatic and identified in workup for any other unrelated problem.⁸

Medical management is the preferred initial therapy based on clinical judgement. Many of the small effusions resolve spontaneously with the treatment of underlying condition or infections with NSAIDs and empirical antibiotics. Pericardiocentesis with pig tail catheter insertion must be reserved for those with moderate to large effusions and symptomatic children, for both diagnostic and therapeutic purposes. Pericardial biopsy for the diagnostic purpose is still controversial. Intrapericardial instillation of antifibrinolytics, preferably Streptokinase is being extensively used for thick secretions with positive results.⁹ Pericardiectomy is rarely needed.

Prognosis depends on the aetiology. Pericardial tamponade and constriction with or without septicaemia are the complications if any noted. Tuberculous effusions usually heal by calcifications. Recurrence is rare and has not been much reported in paediatric age group. Recurrence was associated with idiopathic aetiology and some autoimmune conditions.¹⁰ Our child was followed for 6 months with no residual disease.

Morbidity and mortality can be significantly reduced with timely diagnosis and management. A high index of suspicion is required in children with symptoms related to pericarditis and effusion. Careful evaluation and follow-up are the key in preventing and recognising recurrences.

CONCLUSION

Pericardial effusion though rare is still an important differential in all those children presenting with chest pain, dyspnoea. Empirical antibiotics along with pericardiocentesis are effective in resolution. Prognosis is good if diagnosed early and underlying aetiology is treated promptly. Recurrence is rare in children. However, the data in children is lacking and need further studies in this prospect.

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