Case Report

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Pericardial Tamponade in Infant with upper Respiratory Tract Infection

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Abstract

Infectious pericarditis is a rare phenomenon in the era of antibiotics and vaccines. The number of patients with *Haemophilus influenzae* are rising (in rare cases) and commonly affect the adult population. *Haemophilus influenzae* is rarely seen in children due the advancement of vaccination. We describe a case where a 1 year infant suffering from cardiogenic shock, its management in the emergency room.

Keywords: Pericardial tamponade; Haemophilus influenzae; Cardiogenic shock.

INTRODUCTION

The epidemiological triad and clinical manifestations of Haemophilus influenzae infections has undergone drastic changes in the last 2 decades. The advancement in the development and widespread use of Haemophilus influenzae type b (Hib) conjugate vaccines have nearly eradicated invasive Hib disease in children in countries where the vaccines are used widely. The Haemophilus influenzae type b conjugate vaccines induce protective humoral immune response.[1]

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Haemophilus influenzae type b rarely results in invasive disease, pericarditis and endocarditis are the rarest. The condition may be associated with respiratory disease processes such as pneumonia or empyema, but it can be a sequela of endocarditis, chest trauma, chest surgery, or the hematogenous spread of infection from elsewhere in the body.[2] We present to you an interesting case where an infant was found to have purulent endocarditis, treated and managed, recovered well.

CASE

A 1 year old infant was referred from a rural primary health center to our emergency room with a history of recurrent generalized tonic clonic seizure activity. Patient was managed with antiepileptic measures. On examination, the patient was found to be febrile with increased pulse rate and capillary refill time >8 seconds. The seizure activity subsided but the patient was drowsy (? postictal state / hypotensive shock). Fluid resuscitation was done

but the hypotension did not improve. Inotropic support was started, resuscitation was continued but still, the mean arterial pressure was below the normal reference range.

Proper detailed history by the patient mother was obtained which revealed a 1 year old non immunized child with a history of cough, running nose and fever since last 7 days. Immediate bedside echocardiography was done in the emergency department which revealed massive pericardial tamponade (image). Pediatric cardiologist was called immediately and emergent pericardiocentesis was done, around 800 ml of serosanguinous was drained by pericardiocentesis, which was sent for microbiological study (gram stain, culture, Acid Fast stain, RT PCR), pathological study (malignant cells). Patient condition improved after pericardiocentesis, no seizure activity but fever persists.

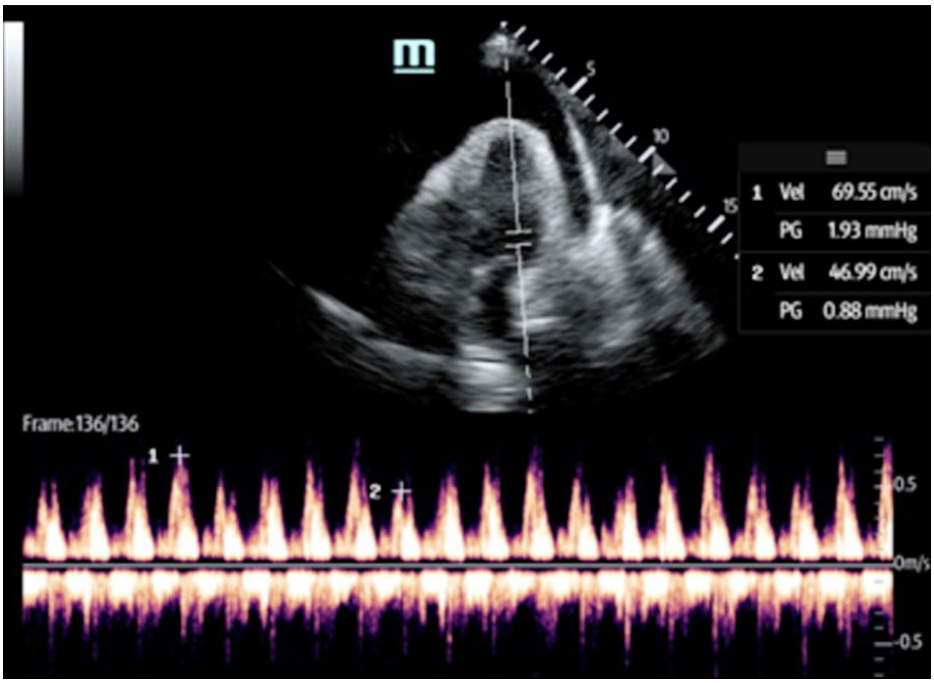

Fig. 1:

Microbiological Gram stain study revealed gram negative coccobacilli, negative acid fast bacilli, culture was unreported, pathological study was normal. Patient antibiotics were changed to levofloxacin with other supportive care. The infant recovered well, inotropic support tapered off and the infant was discharged in stable condition after 7 days of pediatric hospitalization. The parents were counseled regarding the proper immunization schedule (as per the National immunization schedule) and importance of immunization in infants. The rest follow up, the infant was immunized and was healthy.

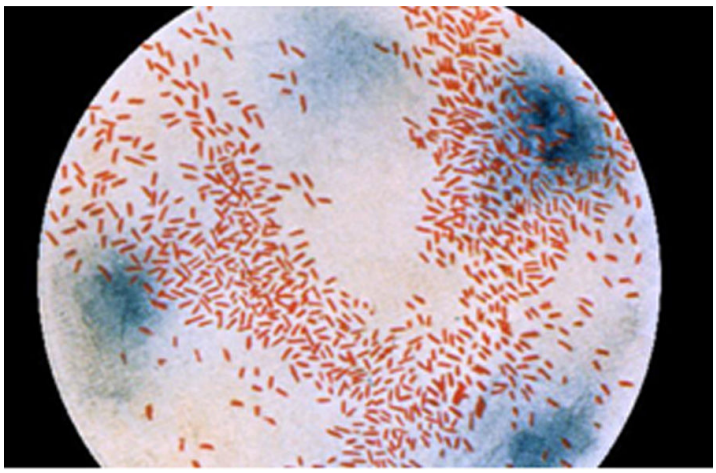

Fig. 2:

DISCUSSION

The patient was diagnosed with *Haemophilus influenzae* induced pericarditis with pericardial effusion (invasive pericarditis). We have searched for online reported cases of *Haemophilus influenzae* induced pericarditis (pericardial tamponade), but there are very few reported cases on this topic.

Haemophilus influenzae is a gram negative coccobacilli involved with the most common cause of invasive bacterial infection including life threatening bacterial meningitis in children prior to the invention of the Hib vaccine.[3] The infection is caused by encapsulated strains (including type b and other serotypes) involving invasion of the bloodstream and hematogenous dissemination, the capsular polysaccharide is the critical virulence factor that mediates invasion.[4]

Fig. 3:

Purulent pericarditis was first described by Galen almost 2,000 years ago[5] and has been reported less often since the widespread use of antibiotics; however, they still remain an important sequel of infectious diseases.[6] The abnormal accumulation of blood/fluid within the pericardial sac is called pericardial effusion. Early diagnosis is essential for complete recovery, and delayed diagnosis carries a high mortality rate.[7,8] High degree of clinical suspicion is required as the presenting symptoms are insidious and overlap with other medical conditions. Purulent pericarditis may be associated with many infectious organism, the most common are Tubercular (31% of cases), *Staphylococcus aureus* (in 36% of cases), *Streptococcus pneumoniae* (21%), and *H. influenzae* (12%)[9] all before the era of antibiotics use; currently, most typically present with noninfectious predisposing conditions such as alcohol abuse, malignancy, immunosuppression.[9,10]

The most sensitive marker of pericarditis is fever (88% of reported cases), dyspnea (61% of the cases) and pleuritic or non pleuritic chest pain (57% reported cases).[2] Late complications include constrictive pericardial disease, pericardial empyema.[2] Patients with purulent pericarditis have very poor clinical outcomes and despite treatment, up to 40% of patients die of cardiac tamponade, constriction, or cardiovascular toxicity.[11] Transthoracic echocardiography (2-D Echo) facilitates the detection and quantification of pericardial fluid, and also enables a visual evaluation of collapsed chambers and the appropriateness of percutaneous versus surgical pericardial drainage. Our patient was promptly diagnosed, drainage of tamponade was done quickly and correct antibiotic use helped in the fast recovery of the infant.

CONCLUSION

With the advent of antibiotics and vaccines, the incidence of purulent pericarditis has reduced but still, non-vaccination of infants (which is still present in rural India) leads to vaccine preventable disease to flourish and often these diseases are life threatening. Prompt use of technology like echocardiography is important in diagnosis and treatment. Clinical skill, sound theoretical knowledge and proper history taking ability still remains the major factor in making early diagnosis of disease.

REFERENCES

1. Adam H. J., et al. 2010. Changing epidemiology of invasive Haemophilus influenzae in Ontario, Canada: evidence for herd effects and strain replacement due to Hib vaccination. Vaccine 28:4073–4078
2. Hall IP. Purulent pericarditis. Postgrad Med J 1989;65(765):444–8.
3. Breukels M. A., Spanjaard L., Sanders L. A., Rijkers G. T. 2001. Immunological characterization of conjugated Haemophilus influenzae type b vaccine failure in infants. Clin. Infect. Dis. 32:1700–1705.

4. Murphy T. F., et al. 2009. Nontypeable Haemophilus influenzae as a pathogen in children. Pediatr. Infect. Dis. J. 28:43–48.
5. Galen C. De anatomicus administrationibus (Singer C, transl). New York: Oxford University Press; 1956. p. 192–3.
6. Rubin RH, Moellering RC Jr. Clinical, microbiologic and therapeutic aspects of purulent pericarditis. Am J Med 1975; 59(1):68–78.
7. Sagrista-Sauleda J, Barrabes JA, Permanyer-Miralda G, Soler-Soler J. Purulent pericarditis: review of a 20-year experience in a general hospital. J Am Coll Cardiol 1993;22(6):1661–5.
8. Gould K, Barnett JA, Sanford JP. Purulent pericarditis in the antibiotic era. Arch Intern Med 1974;134(5):923–7.
9. Parikh SV, Memon N, Echols M, Shah J, McGuire DK, Keeley EC. Purulent pericarditis: report of 2 cases and review of the literature. Medicine (Baltimore) 2009;88(1):52–65.
10. Klacsmann PG, Bulkley BH, Hutchins GM. The changed spectrum of purulent pericarditis: an 86 year autopsy experience in 200 patients. Am J Med 1977;63(5):666–73.
11. Maisch B, Ristic AD. Practical aspects of the management of pericardial disease. Heart 2003;89(9):1096–103.