Coxsackie B viral infection presenting with hemorrhagic pericardial effusion and pleural effusion

Krishna Prasad Maram, Vikram Kudumula, Venkata Rama Rao Paturi
Department of Pediatrics, Andhra Hospitals, Vijayawada, Andhra Pradesh, India

ABSTRACT

We report an 11-year-old female child presenting with hemorrhagic pericardial effusion causing cardiac tamponade along with moderate left ventricular dysfunction, who screened positive for Coxsackie B infection in the setting of cough, shortness of breath, and chest pain. She needed emergency pericardiocentesis. She also had massive bilateral hemorrhagic pleural effusions requiring bilateral chest drains placement. With a presumed diagnosis of acute myopericarditis, she was treated with steroids and ibuprofen. She made a full recovery without any further recurrence of pericardial or pleural effusion.

Keywords: Coxsackie B virus, hemorrhagic pericardial effusion, hemorrhagic pleural effusion, pericardiocentesis

INTRODUCTION

Pericardial effusion refers to accumulation of fluid in the pericardium which may remain clinically silent in case of mild effusion, while a massive accumulation may impair cardiac filling and result in a life-threatening cardiac tamponade. Most of the pericardial effusions in children are serious in nature, but purulent and hemorrhagic pericardial effusions are not uncommon. We report an uncommon case of Coxsackie B virus-induced hemorrhagic pericardial effusion presenting as cardiac tamponade and bilateral hemorrhagic pleural effusions.

CASE REPORT

A 11-year-old female child, who was apparently well 6 days before admission, complained of nonproductive cough, chest pain for 3 days, followed by diffuse abdominal pain, nonbilious vomiting, and shortness of breath for 3-day duration.

Further history revealed no personal or family history of recent infection. The child denied any history of fever, rash, blisters, jaundice, and trauma. She had dysuria, but there was no history of oliguria or hematuria. There was no neurological history contributing to the diagnosis. She had neither weight loss, nor history of contact with tuberculosis. She was previously fit and well and vaccinated as per the national immunization schedule. At the time of presentation, she was hemodynamically unstable with tachycardia (heart rate: 147/min), hypotension (blood pressure: 82/54 mmHg), and had moderate respiratory distress (respiratory rate: 32/min). She was resuscitated as per the standard Pediatric Advanced Life Support guidelines. An emergency bedside two-dimensional (2D)-echocardiogram [Figure 1a and b] demonstrated a massive pericardial effusion with cardiac tamponade along with bilateral pleural effusions. Her chest X-ray demonstrated cardiomegaly and bilateral pleural effusions [Figure 2a].

She underwent an emergency pericardiocentesis under ketamine sedation, and we drained around 600 ml of

Access this article online

Quick Response Code:

Website: www.annalspc.com

DOI: 10.4103/apc.apc_21_21

How to cite this article: Maram KP, Kudumula V, Paturi VR. Coxsackie B viral infection presenting with hemorrhagic pericardial effusion and pleural effusion. Ann Pediatr Card 2022;15:87-9.

Address for correspondence: Dr. Krishna Prasad Maram, Andhra Hospitals, Vijayawada - 520002, India. E-mail: maramkp@gmail.com

Submitted: 28-Jan-2021 **Revised:** 26-Feb-2021 **Accepted:** 23-May-2021 **Published:** 14-Jun-2022

hemorrhagic fluid. She also had bilateral chest drains placed for bilateral pleural effusions [Figure 2b]. The right-sided chest drain had drained around 1000 ml hemorrhagic fluid, whereas the left-sided chest drain had 900 ml drain in 24 h. A 2D echocardiogram postpericardiocentesis demonstrated the resolution of pericardial and pleural effusions and moderately impaired left ventricular function with an ejection fraction (EF) of 35% raising the possibility of myopericarditis.

The child was managed with supportive care including oxygen therapy, intravenous (IV) antibiotics, oral Ibuprofen, and IV Milrinone. She was commenced on steroids (IV methylprednisolone 30 mg/kg for 3 days followed by tapering dose of oral prednisolone for 2 weeks) in view of suspected underlying myopericarditis. She showed clinical improvement after 48 h of admission, and both the pleural and pericardial drains were removed after 5 days of intensive care unit admission. Her chest X-ray at discharge demonstrated normal cardiac contours and the resolution of bilateral pleural effusions [Figure 2c]. Workup of pleural fluid showed a packed cell volume of 20%, neutrophils of 85% with no evidence of malignant cells, and investigations for tuberculosis or any other bacterial etiology were negative. Investigations including computerized tomography chest and collagen profile were negative for malignancy and connective tissue disorders, respectively. However, the workup for possible viral etiology revealed a positive IgM titer for Coxsackie B viral infection. She made a full recovery and was discharged after 9 days of hospitalization. At discharge, her left ventricle showed normal function with an EF of 65%, and she had no recurrence of pericardial effusion during follow-up.

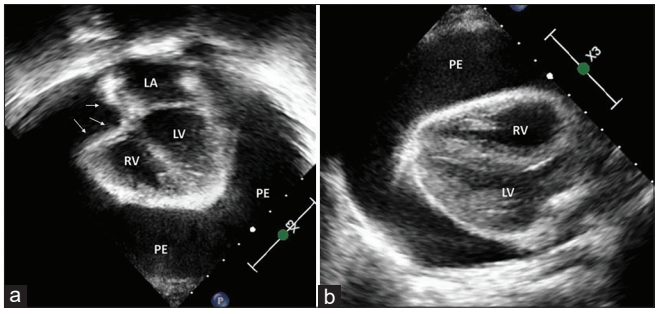

Figure 1: (a) Four-chamber view and (b) parasternal long axis view of echocardiogram showing massive pericardial effusion around the heart causing complete compression of RA (arrows). LA: Left atrium, LV: Left ventricle, RV: Right ventricle

DISCUSSION

Common causes of hemorrhagic pericardial effusion in children include tuberculosis and other bacteria such as *Staphylococcus aureus*,[1] malignancy, trauma, drugs, and collagen vascular diseases.[2] There has been a report of hemorrhagic pericardial effusion due to *Chlamydophila pneumoniae* in an 8-year-old child.[3] Viruses are less commonly implicated in the etiology of hemorrhagic pericardial effusions in children.

Coxsackievirus A and coxsackievirus B belong to enterovirus family which are common pathogens in pediatric infectious disease.[4] They are associated with a range of disease spectrum in children from nonspecific febrile illness, hand–foot–mouth disease, herpangina, enteritis to life-threatening encephalitis, hepatitis, pericarditis, and myocarditis.[5] Although hemorrhagic pericardial effusion due to coxsackievirus is reported in adult literature,[6,7] similar case reports are seldom seen in the pediatric age group. Our case report highlights the importance of including coxsackievirus in the differential diagnosis of hemorrhagic pericardial and hemorrhagic pleural effusions in children. The management of myopericarditis is mainly supportive including nonsteroidal anti-inflammatory drugs and steroids in cases who fail to respond to anti-inflammatory therapy.[8] Colchicine is used as a second-line therapy in some centers though there is not enough evidence to support or refuse its use in pediatric pericarditis.[9] Cardiac tamponade is a life-threatening complication that needs strong clinical suspicion and timely pericardiocentesis for positive outcomes.

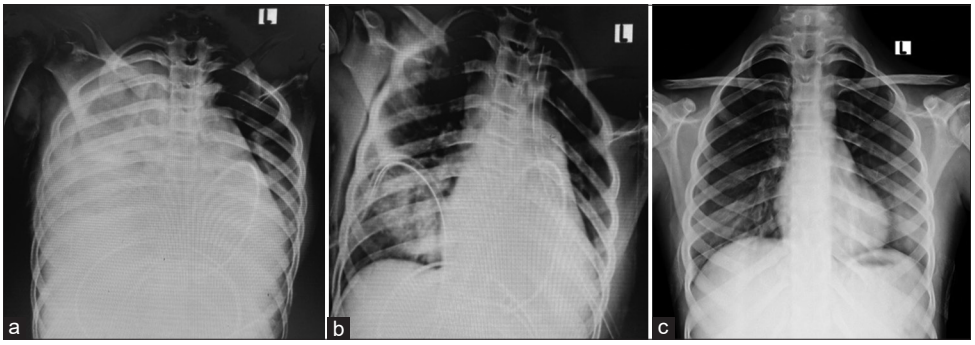

Figure 2: (a) Chest X-ray after pericardiocentesis showing cardiomegaly and bilateral pleural effusions. (b) Chest X-ray after bilateral chest drain placement. (c) Chest X-ray at discharge showing normal cardiac contours and normal lung fields

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Saxena A, Singh N, Ramakrishnan S, Kothari S. Bacterial pericarditis presenting as hemorrhagic pericardial effusion in a 6-year-old girl. Ann Pediatr Cardiol 2008;1:68-9.
2. Kothari SS, Sharma S, Bhatt K, Ray R, Bakhshi S, Chowdhury U. Recurrent hemorrhagic pericardial effusion in a child due to diffuse lymphangiohemangiomatosis: A case report. J Med Case Rep 2010;4:62.
3. Tenenbaum T, Heusch A, Henrich B, MacKenzie CR, Schmidt KG, Schroten H. Acute hemorrhagic pericarditis in a child with pneumonia due to Chlamydophila pneumoniae. J Clin Microbiol 2005;43:520-2.
4. Lee CJ, Huang YC, Yang S, Tsao KC, Chen CJ, Hsieh YC, *et al.* Clinical features of coxsackievirus A4, B3 and B4 infections in children. PLoS One 2014;9:e87391.
5. Hosier DM, Newton WA Jr. Serious Coxsackie infection in infants and children; myocarditis, meningoencephalitis, and hepatitis. AMA J Dis Child 1958;96:251-67.
6. Zanini G, Antonioli E, Vizzardi E, Raddino R, Cas LD. Hemorrhagic pericarditis with cardiac tamponade due to coxsackie virus infection. The Am J of Case Reports 2009;9:60-3.
7. Kandah F, Dhruva P, Ruiz J, Martinez A, Kogler W. Coxsackievirus B infection presenting as a hemorrhagic pericardial effusion causing tamponade. J Geriatr Cardiol 2020;17:642-4.
8. Abdel-Haq N, Moussa Z, Farhat MH, Chandrasekar L, Asmar BI. Infectious and noninfectious acute pericarditis in children: An 11-year experience. Int J Pediatr 2018;Article ID 5450697, 12 pages, 2018.
9. Alabed S, Pérez-Gaxiola G, Burls A. Colchicine for children with pericarditis: Systematic review of clinical studies. Arch Dis Child 2016;101:953-6.