



A RARE CASE REPORT ON PERICARDIAL EFFUSION IN EXTREME PRETERM INFANT

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ABSTRACT

Introduction- Pericardial effusion is a relatively rare medical condition in neonates that can be fatal if cardiac tamponade occurs, which can restrict heart contractility and decrease cardiac output. The incidence of pericardial effusion is 0.07- 2% but mortality rate is as high as 75%. **Case Report-** 29 weeks, male child (700 gm) born to a primi mother by LSCS, required IPPV in delivery room for poor respiratory drive & shifted to NICU for further management. Baby was treated for RDS with mechanical ventilation & extubated to NIV (CPAP) in 1st week of life. On 15th day of life, the baby suddenly deteriorated on NIV with features of shock so had to be re-ventilated. Chest X-ray was s/o cardiomegaly & 2D echo was s/o massive pericardial effusion with impending cardiac tamponade. USG guided Pericardiocentesis was immediately performed, and 12-14 ml of yellowish fluid was aspirated & sent for routine microscopy and culture. IV antibiotics changed according to culture sensitivity report. As clinical condition improved, ventilatory parameters were weaned off in next 72 hours & baby could be successfully extubated to NIV. The patient was subsequently discharged home with intact neurological status on 60th DOL. **Discussion-** The clinical presentation of PCE varies according to the speed of pericardial fluid accumulation. Diagnosis is established through transthoracic echocardiogram. Although idiopathic neonatal pleural effusion remains a rare cause, the awareness of this entity is vital for timely diagnosis and management which can be life saving.

KEYWORDS : Cardiac tamponade, cardiomegaly, Pericardiocentesis

INTRODUCTION

The pericardium is a membrane composed of two layers, parietal and visceral, separated by fluid. In neonates, pericardial fluid volume is usually less than 5 milliliters. A pericardial effusion (PCE) is the abnormal accumulation of fluid between the parietal and visceral layers. Pericardial effusion (PCE) is a relatively rare medical condition in neonates that can be fatal if cardiac tamponade (CT) occurs, which results in a restriction of heart contractility and decreased cardiac output.[1] The incidence of pericardial effusion is 0.07- 2% but mortality rate is as high as 75%.

The main causes of PCE were iatrogenic (due to Central venous catheters, and postoperative of major cardiac surgery) and infection.[2,3] When a specific cause for PCE is found, treatment of the underlying condition leads to resolution of the effusion. In moderate to large effusions with signs of hemodynamic instability, pericardiocentesis is recommended. The role of non-steroid anti-inflammatory, corticosteroid or diuretic therapy is still unclear in neonates.[4,5,6]

Herein, we report a case of rapidly accumulated PCE and impending Cardiac Tamponade in a extreme preterm infant with a UVC in situ, who had been hospitalized for respiratory distress syndrome (RDS).

Case Study

29 weeks old, small for gestational age, 700 grams male preterm baby delivered via LSCS to a primi mother. The delivery was attended by Neonatologist. Baby did not cry immediately after birth hence bag and mask given for 30 seconds, respiratory drive did not improve hence baby intubated and shifted to NICU on bag and tube ventilation for further management. On admission, baby kept on mechanical ventilator SIMV+PSV mode with settings PIP 15/PEEP 5/i-time 0.45seconds/Frequency 45/Fio2 45%. Baby was hemodynamically and vitally stable. Routine blood investigations and chest X-ray done. Chest X-ray suggestive of hyaline membrane disease hence surfactant one dose given. Umbilical central lines (UAC, UVC) were secured. IV fluid, IV antibiotics and parental nutrition started through umbilical central line. On 2nd day of life trophic feeds started. 2Decho

screening done suggestive of HsPDA hence one course of inj.Febrinil completed. As respiratory distress decreased and ventilatory parameters were gradually tapered and when reached to minimal settings, baby extubated and taken on NCPAP support.

On 15th day of life, baby suddenly deteriorated in the form of desaturations, tachycardia, and hypotension. On examination, the neonate appeared cyanosed, with saturations of 80% and delayed capillary refill time. On auscultation, the heart sounds were feeble. The baby was therefore immediately intubated and was put on mechanical ventilation with pressure control mode and 100% oxygen. In view of this sudden deterioration, a chest Xray marked cardiomegaly [Figure 1]. In view of the above findings, a two-dimensional echocardiogram was performed, which showed a massive PCE [Figure 2]. There was a diastolic collapse of the free wall of the right atrium, indicating impending cardiac tamponade. USG guided Pericardiocentesis was immediately performed, and 12-14 ml of yellowish fluid was aspirated through a subxiphoid percutaneous approach and sent for routine microscopy and culture sensitivity. Subsequently, the skin color of the neonate improved rapidly, his vital signs gradually returned to normal, and his oxygen requirement decreased. Suspecting sepsis blood culture sent and IV antibiotics were upgraded. Pericardial fluid routine microscopy report was listed as Table 1 and culture sensitivity report was sterile. Blood culture suggestive of Enterobacter aerogens, IV antibiotic changed according to sensitivity report. As clinical condition improved, ventilatory parameters were weaned off in next 72 hours & baby could be successfully extubated to NIV. The patient was subsequently discharged home with intact neurological status on 60th DOL.

Table 1 : Pericardial Fluid Routine Microscopy Report

Color	Straw color
white cell count	40
polymorphs	60%
Lymphocyte	40%
Protein	0.40
Glucose	188



Figure 1. Chest X-ray After Sudden Cardiopulmonary Instability Showed Cardiomegaly



Figure 2. Echocardiography Showing Evidence Of Pericardial Effusion

DISCUSSION

Pericardial effusion is characterized by the accumulation of excess fluid within the pericardial sac surrounding the heart which lead to capacity of cardiac chambers for filling and functioning properly will be impaired.

The main etiologies of PCE described in neonates are iatrogenic (postoperative, central venous catheter [CVC]-related), infection, congenital anomalies, tumors (pericardial or cardiac tumors), thyroid dysfunction and autoimmune diseases or idiopathic. [2,3]

Diagnosis is established through transthoracic echocardiogram. The size of the effusion is based on a simple semiquantitative echocardiographic assessment and is defined as the maximum perpendicular distance between the two layers at end-diastole, usually measured in subxiphoid incidence. Pleural effusion in the newborn frequently presents with respiratory distress and asphyxia ranging from mild to severe. Early and active resuscitation with intubation and mechanical ventilation are needed to establish chest wall expansion.

In our present case, Baby needed resuscitation at birth and was ventilated. Umbilical lines are inserted at proper position. Baby had respiratory distress hence baby kept on mechanical ventilation. Respiratory distress remains one of the leading emergencies in neonates. Blood culture was suggestive of enterococcus aerogens. Pericardial fluid microscopy report suggestive of transudative fluid, Hence there was an idiopathic pericardial effusion.

Although idiopathic neonatal pericardial effusion remains a rare cause, the awareness of this entity is vital for timely diagnosis and management which can be life saving.

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