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IMAGES in PAEDIATRIC CARDIOLOGY

Hutter D[1], Kreiter B[2], Riedel T[2], Wagner B[2], Kadner A[1], Pfammatter JP[1].Free left ventricular wall rupter in a newborn. Images Paediatr Cardiol 2015;17(4):1-3.
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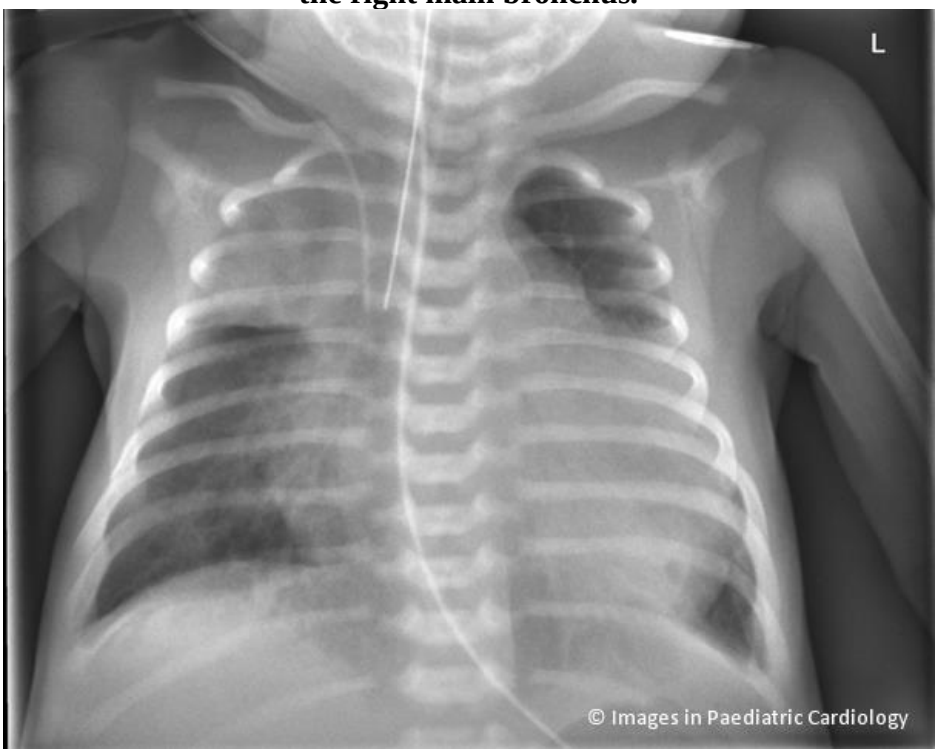
Free left ventricular wall rupture is very rare but mostly fatal complication of acute myocardial infarction in the elderly.[1,2]. Without the presence of congenital heart disease, preceding cardiac surgery or an isolated ventricular diverticulum, spontaneous rupture of the free left ventricular wall in neonates has not been described to date.[3,4] We present a newborn baby who was brought to the Pediatric Intensive Care Unit (PICU) of the University Children's Hospital in Bern, Switzerland in hemodynamic shock. Clinical assessment revealed bi-ocular cataract and a severe form of hypertrophic obstructive cardiomyopathy, both highly suspicious findings for an underlying mitochondrial myopathy.[5,6] The newborn underwent extensive metabolic and genetic screening and was discharged from the PICU to the regular ward.

Three days after discharge to the ward an acute deterioration with cardiorespiratory failure required immediate intubation and ventilation. Subsequent to successful resuscitation the patient's condition quickly stabilized. The event was interpreted as severe metabolic crisis. Two days later, the chest X-ray revealed a significantly enlarged heart silhouette with mild pulmonary edema (Fig. 1).

Figure 1: Chest x-ray with a significantly enlarged heart silhouette, mild bilateral pulmonary oedema formation and right upper lobe atelectasis with an endotracheal tube placed within the right main bronchus.



Echocardiography was performed to rule out progressive heart failure. A circular pericardial tamponade was found, originating from a slit-like rupture of left ventricle at the apex (Fig. 2-4).

Figure 2: Circular pericardial tamponade with apical slit within the left ventricle. Aneurysm like deformed pericardium in face of intermittent systolic left ventricular pressure conditions.

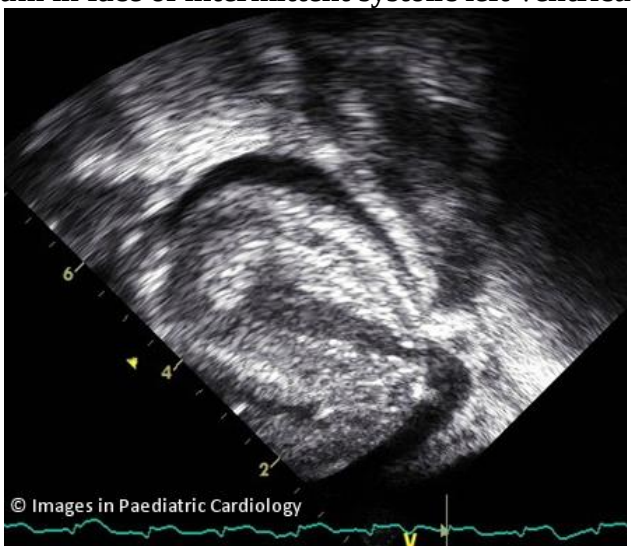


Figure 3: Slightly different view of the slit like ruptured apex of the left ventricle.

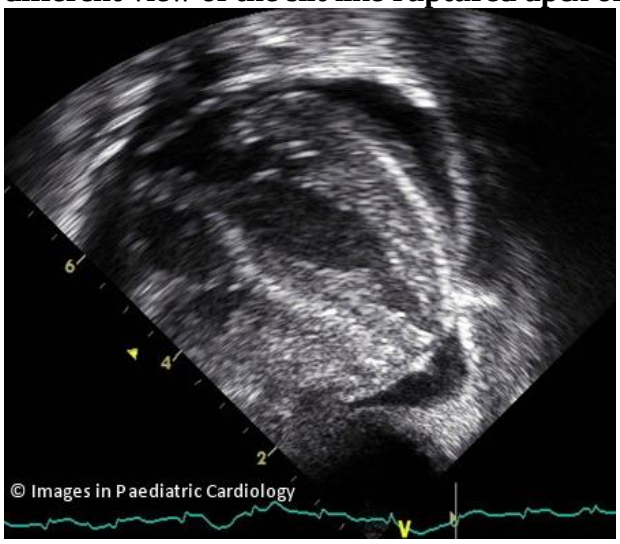
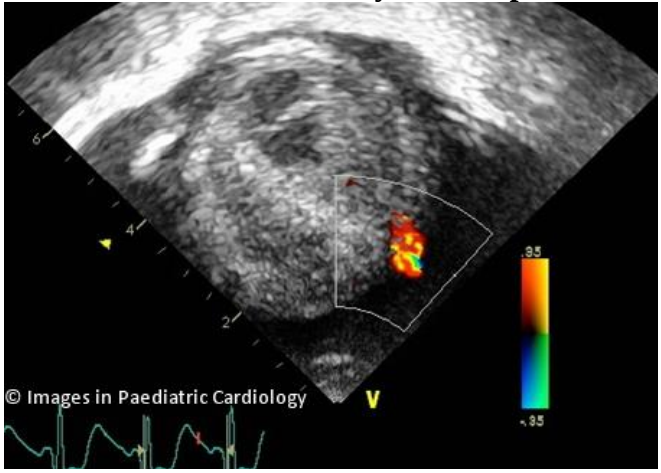


Figure 4: Colour Doppler signal along the myocardial defect demonstrating the connection between the intraventricular cavity and the pericardial space.



We speculate that the rupture of the left ventricle occurred due to myocardial ischemia at the time when the baby acutely deteriorated on the ward. Positive pressure ventilation in presence of a stiff, hypertrophied left ventricle was most likely able to reduce the hemodynamic impact of the pericardial effusion by initially maintaining a pressure balance between pericardial space and heart cavities.

Due to the poor prognosis of the underlying metabolic disorder, cardiac surgery was not offered to the patient. The baby survived another fourteen days without further escalation of medical therapy. The increasing hemodynamic impact of pericardial effusion together with the worsening diastolic dysfunction in the face of a massive hypertrophic metabolic cardiomyopathy eventually led to fatal cardiorespiratory failure.

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