

IMAGES

in PAEDIATRIC CARDIOLOGY

Chang S¹, Maharaj S¹. Brief Images: Massive pericardial effusion. *Images Paediatr Cardiol* 2014;16(3):1-3.

¹Eric Williams Medical Sciences Complex, University of the West Indies, Trinidad and Tobago.

MeSH

Pericardial effusion. Pediatric, connective tissue disease.

Abstract

Significant pericardial effusions are an uncommon but very important disorder in childhood. In our patient, cross-sectional imaging demonstrated a massive pericardial effusion. The underlying etiology here was connective tissue disease causing recurrent pericardial effusion. An associated left-sided pleural effusion was noted. Clinicians must be aware of this disorder in the pediatric age group, performing a thorough evaluation in all children with large pericardial effusions, and managing appropriately.

Case

Pericardial effusions in the pediatric patient are rare but extremely important. They can result from a vast number of disorders. In this age group, underlying etiologies include acute pericarditis from infection (viral, bacterial or tuberculous), renal disease with uremia, malignancy, chest trauma, autoimmune syndromes and hypothyroidism. Pericardial effusions also complicate recovery following surgical intervention for congenital heart disease.

The leading causes of pericardial effusion have changed over time and vary greatly depending on geography and the population in question. In two recent series in developing countries, tuberculosis remained the leading cause of large pericardial effusions in children.^{1,2} In contrast, tuberculous pericardial effusions did not feature at all in a series from a developed country, where the leading causes identified were neoplasia and collagen vascular disease.³ Compared to adults, there is a greater probability of the underlying etiology being found in children with large pericardial effusions. An extensive workup for possible causes must be undertaken before a pericardial effusion can be classed as idiopathic. While idiopathic recurrent pericardial effusion is recognised, it cannot be overemphasised that more serious underlying disorders must be carefully excluded.

Presentations of significant pericardial effusions are also variable and reflect a hemodynamic spectrum. Patients may present from remarkably “stable” at one extreme, to acute life-threatening distress at the other. Factors which determine this include the rate at which the effusion accumulates, the volume of an effusion and pericardial abnormalities such as scarring or adhesions. Usually containing only a thin layer of fluid, the fibrous pericardium of a seemingly asymptomatic child can be harbouring a massive effusion of more than a litre.

When pericardial effusion is suspected, echocardiography usually confirms the diagnosis and allows assessment for signs of hemodynamic instability. Cross-sectional imaging with computed tomography (CT) or magnetic resonance imaging (MRI) is helpful in some cases, especially when localisation and accurate quantification is necessary (as in a loculated effusion) or assessment for pericardial pathology (pericardial thickening, constrictive pericarditis) required.

These CT images were obtained in a child from a developing country, previously diagnosed with connective tissue disease. The patient's disease course was complicated by multiple episodes of serositis leading to recurrent pericardial effusion. The massive circumferential effusion is clearly seen, measuring 48 mm maximally. The images also reveal a predominant left-sided pleural effusion and axillary lymphadenopathy. This finding of coexisting pericardial and pleural effusions is not uncommon. In pericarditis of an inflammatory nature, the majority of associated pleural effusions are predominantly left-sided.⁴ Therefore, the combination of cardiomegaly and a left-sided pleural effusion should arouse suspicion of a pericardial effusion.

Figure 1: Coronal CT imaging showing a massive circumferential pericardial effusion.



Figure 2: Transverse CT imaging showing pericardial effusion with the largest separation between the pericardial layers measuring 48mm, and a coexisting left-sided pleural effusion.



References

1. Bagri NK, Yadav DK, Agarwal S, Aier T, Gupta V. Pericardial effusion in children: experience from tertiary care center in northern India. *Indian Pediatr.* 2014;51:211-213.
2. Guven H, Bakiler AR, Ulger Z, Iseri B, Kozan M, Dorak C. Evaluation of children with a large pericardial effusion and cardiac tamponade. *Acta Cardiol.* 2007;62:129-133.
3. Kühn B, Peters J, Marx GR, Breitbart RE. Etiology, management, and outcome of pediatric pericardial effusions. *Pediatr Cardiol.* 2008; 29:90-4.
4. Weiss JM, Spodick DH. Association of left pleural effusion with pericardial disease. *N Engl J Med* 1983; 308:696-697.

Contact Information

© Images in
Paediatric Cardiology
(1999-2014)

Satish Maharaj, Eric Williams
Medical Sciences Complex, Mt
Hope, Trinidad and Tobago
satishsmaharaj@gmail.com

