Congenital large aneurysmal left atrium: a rare cause of 100% cardiothoracic ratio

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Accepted 5 April 2022

DESCRIPTION

The majority of congenital or acquired cardiac diseases are routinely diagnosed by echocardiogram; however, a chest X-ray is frequently used as the initial imaging investigation. The correct interpretation of these radiographs allows for the most suitable work-up and care.[1 2] Cardiothoracic ratio (CTR) was measured as 'the ratio of the maximal transverse diameter of the cardiac silhouette to the distance between the internal rib margins at the level of the right hemidiaphragm'.[2 3]

A middle-aged male patient presented with complaints of worsening breathlessness for the last 6 months (New York Heart Association class IV). His chest X-ray (figure 1) showed gross cardiomegaly, with a CTR of 1, frequently known as the 'wall-to-wall' heart. Though 100% CTR is uncommon, Ebstein's anomaly, massive pericardial effusion, multivalvular heart diseases, dilated cardiomyopathy, biatrial enlargement in restrictive cardiomyopathy and cardiac tumours are among the differentials for massive cardiomegaly on this chest X-ray.

His transthoracic echocardiography showed situs solitus dextrocardia, atrioventricular/ventriculoarterial concordance, with a large aneurysmal left atrium (LA), severe mitral regurgitation and severe pulmonary hypertension. The massively dilated LA forced the dextroposed heart to the right side of the chest and filled the whole left thoracic cavity, resulting in a CTR of 1 in the chest X-ray. He was diagnosed to have atrial fibrillation, dextrocardia with congenital left atrial aneurysm with congestive heart failure. The patient was initially stabilised medically with anticoagulation, diuretics, beta blocker and vasodilator, followed by surgical resection of the aneurysmal LA. He underwent successful left atrial aneurysm resection with mitral valve replacement with a 23 mm St. Jude mechanical valve. Postprocedure was uneventful. He is presently stable and on regular follow-up on aspirin, diuretics and warfarin. His follow-up chest X-ray is shown in figure 2.

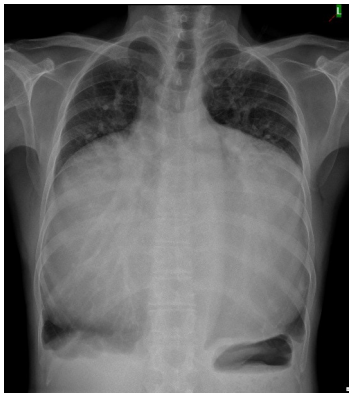

Figure 1 Chest X-ray posteroanterior view showing massive cardiomegaly with a cardiothoracic ratio of 1.

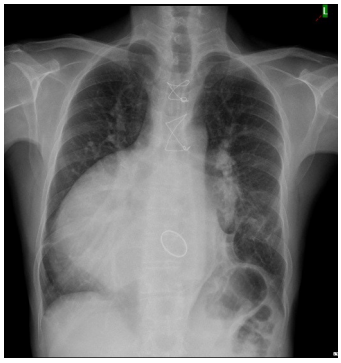

Figure 2 Chest X-ray, posteroanterior view showing a reduction in the cardiothoracic ratio after surgical resection of the aneurysmal left atrium and itral valve replacement.

Congenital left atrial aneurysm with dextrocardia is a very rare condition and can be worsened by atrial arrhythmias and embolic events, resulting in significant morbidity and mortality. In most cases,

Learning points

- Though 100% cardiothoracic ratio (CTR) is rare, other differentials of massive cardiomegaly on chest X-ray may include Ebstein's abnormality, gross pericardial effusion, multivalvular heart diseases, dilated cardiomyopathy, biatrial enlargement in restrictive cardiomyopathy and cardiac tumours.
- Congenital left atrial aneurysm with dextrocardia is an extremely rare anomaly that may lead to atrial arrhythmias and systemic embolism and should be thought of as a rare cause of a 100% CTR.
- Chest radiography is a low-cost, frequently used imaging method for determining cardiac size and shape, as well as extracardiac structures. However, echocardiography is commonly used for confirmation of diagnosis.
- The cornerstone of treatment is surgical resection.

To cite: Sagar MH, Lalani K, Rao MS, *et al*. *BMJ Case Rep* 2022;**15**:e250314. doi:10.1136/bcr-2022-250314

the aneurysm affects the LA appendage rather than the entire left atrial body.[4 5] Patient life depends on timely diagnosis and treatment. Non-invasive imaging procedures such as echocardiography, CT scan and cardiac MRI are used to make the diagnosis. These individuals should then be treated with the appropriate medical and surgical procedures.[1]

Contributors MHS and KL wrote the manuscript. PR and MSR verified the manuscript and modified it. The patient was under care of PR.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Consent obtained directly from patient(s).

Provenance and peer review Not commissioned; externally peer reviewed.

Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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