

A simple pleural effusion or not?

Victoria Wen Yeng Teoh, Mohd Adli Deraman, Alexander Loch

Department of Cardiology, University Malaya Medical Centre, Kuala Lumpur, Malaysia

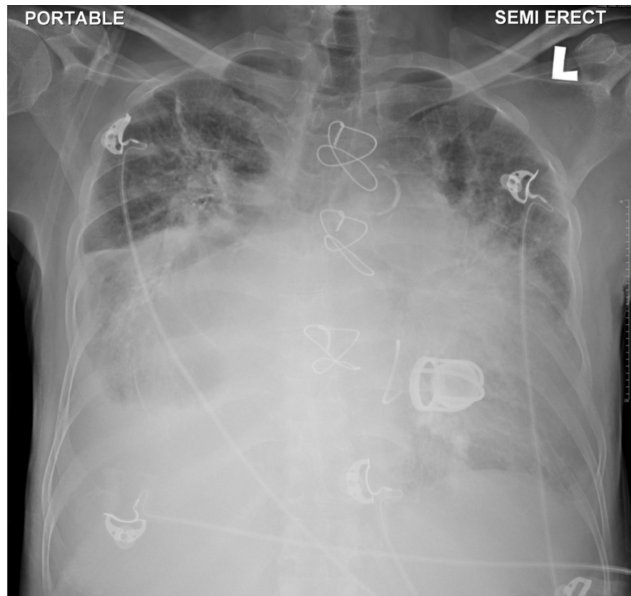


Figure 1. A 60-year-old man presented with a 2-week history of progressive dyspnea and bilateral leg edema. He had undergone a prosthetic mitral valve replacement 9 years earlier. The patient was in respiratory distress (respiratory rate 32/min, oxygen saturation 86% on air, heart rate 124/min, blood pressure 109/56 mmHg). Examination revealed bilateral lung crackles and reduced air entry with dullness to percussion and elevated jugular venous pressure. The electrocardiogram showed sinus tachycardia. A chest X-ray (CXR) (Figure 1) and bedside lung ultrasonography were performed (Figure 2A). A diagnosis of a large pleural effusion was made and urgent thoracocentesis was considered in view of the patient's respiratory distress. A repeat ultrasonographic scan with adjusted angulation to identify the most suitable entry point for the chest drain (Figure 2B) yielded new results that led to the cancellation of the thoracocentesis.

Question

Why was the plan for chest drain insertion cancelled?

- The right sided pleural effusion is too small.
- There is an aortic aneurysm.
- There is a giant left atrium.
- There is a diaphragmatic hernia.

Correspondence: Alexander Loch, Department of Cardiology, University Malaya Medical Centre, 59100 Kuala Lumpur, Malaysia. Tel.: +603.7949 4422 - Fax: +603-7956 2253. E-mail: alexander.loch@ummc.edu.my

Key words: echocardiography, clinical competence, heart valve prosthesis.

Conflict of interest: the authors declare no potential conflict of interest and they confirm accuracy.

Ethical approval: the institution does not require ethical approval for reporting individual cases provided the cases are sufficiently anonymized.

Informed consent: written informed consent was obtained from the patient for the anonymized information to be published in this article.

Availability of data and materials: all data generated or analyzed during this study are included in this published article.

Received for publication: 24 April 2023.

Accepted for publication: 29 May 2023.

This work is licensed under a Creative Commons Attribution 4.0 License (by-nc 4.0).

©Copyright: the Author(s), 2023

Licensee PAGEPress, Italy

Emergency Care Journal 2023; 19:11431

doi:10.4081/ecj.2023.11431

Publisher's note: all claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.

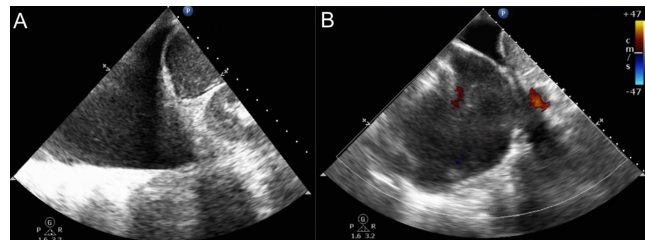


Figure 2. Bedside lung ultrasonography.

Answer: C

The CXR suggested the presence of large pleural effusion. The image quality is poor with regard to semi-erect positioning. Sternal wires and a ball-in-cage mitral prosthesis are present. Lung ultrasound (Figure 2A) was initially suggestive of a right-sided pleural effusion. Only repeated ultrasound scanning prior to the planned thoracentesis revealed a well-delineated structure within the thoracic cavity with color Doppler flow signals (Figure 2B and 3A). The features were indicative of a vascular structure, actually a giant left atrium.

A giant left atrium is defined as one that touches the right lateral side of the chest wall on a CXR.^{1,2} It is a rare condition with a reported incidence of 0.3%. It is commonly associated with rheumatic mitral valve disease,¹ mitral valve prolapse,³ hypertrophic cardiomyopathy⁴ and cardiac amyloidosis.⁵ It can mimic mediastinal tumors and pleural effusions.⁶ It has been described in both adult and pediatric populations.⁷ Thrombus formation within and embolism are significant complications.⁸ Left atrial volume reduction surgery can be performed particularly in the context of compressive symptoms.⁹ The condition is often accompanied by atrial fibrillation.¹⁰ Prior to thoracentesis, it is always necessary to observe with color Doppler the blood flow within suspicious vascular structures in multiple imaging planes to identify an aneurysm or an enlarged cardiac chamber.

A Computed Tomography Pulmonary Angiography (CTPA; Figure 3B) and formal echocardiography (Figure 3 C-D) confirmed an extremely enlarged left atrium with an anteroposterior diameter of 10.5 cm in the parasternal long axis view and a diameter of 15.4 cm from the atrioventricular plane to the roof of the atrium. The estimated left atrial volume was 890 mL. The left ventricular ejection fraction was 52%.

The learning point is that ultrasonographic appearance of a fluid collection within the chest could represent a vascular structure. Multi-plane color doppler imaging is essential to avoid catastrophic iatrogenic injury.

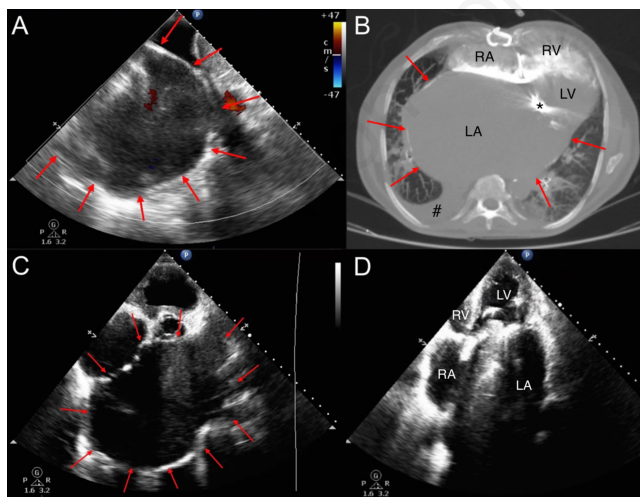


Figure 3. Giant left atrium. (A) lung ultrasound with color Doppler. (B) CTPA. * - prosthetic mitral valve; # - pleural effusion. (C-D) echocardiography.

Online supplementary materials

Video 1. Supplementary digital contents.

References

1. El Maghraby A, Hajar R. Giant left atrium: a review. *Heart Views* 2012;13:46-52.
2. Tung R, DeSanctis R. Images in clinical medicine. Giant left atrium. *N Engl J Med* 2004;351:1437.
3. Loch A, Sadiq MA, Wan Ahmad WA. Giant left atrium in a patient with prosthetic mitral valve. *Eur Heart J* 2013;34:981.
4. Yuksel UC, Kursaklioglu H, Celik T. Apical hypertrophic cardiomyopathy with giant left atrium. *Arq Bras Cardiol* 2007;88:e47.
5. Cheng Z, Fang Q, Liu Y. Cardiac amyloidosis with giant atria. *Heart*. 2010;96:1820.
6. Rimon D, Cohen L, Rosenfeld J. Thrombosed giant left atrium mimicking a mediastinal tumor. *Chest* 1977;71:406-8.
7. Li D, Bai Z, An Q, Lin K. Giant left atrium in a 9-year-old child. *Int J Cardiol* 2015;197:167-9.
8. Schwartzman PR, White RD. Giant left atrium. *Circulation*. 2001;104:E28-9.
9. Apostolakis E, Shuhaiber JH. The surgical management of giant left atrium. *Eur J Cardiothorac Surg* 2008;33:182-9014.
10. Owen I, Fenton WJ. A case of extreme dilatation of the left auricle of the heart. *Transactions of the Clinical Society of London*. 1901;34:183-91.