



## Case report

## Giant left atrium encountered during right-sided thoracentesis

Rashmi Advani<sup>a</sup>, Benjamin T. Galen<sup>b,\*</sup><sup>a</sup> Albert Einstein College of Medicine and Montefiore Medical Center, Department of Internal Medicine, Bronx, NY, USA<sup>b</sup> Albert Einstein College of Medicine and Montefiore Medical Center, Department of Internal Medicine, Division of Hospital Medicine, Bronx, NY, USA

## ARTICLE INFO

## Keywords:

Giant left atrium  
 Thoracentesis  
 Rheumatic heart disease  
 Ultrasound

## ABSTRACT

Giant left atrium is an uncommon pathology to encounter during bedside chest ultrasound, but is an important structure to be aware of when considering thoracentesis. This cardiac structure could easily be mistaken for loculated pleural fluid. This case also supports growing evidence that expert users can safely perform thoracentesis without completely reversing therapeutic anticoagulation.

An 85-year-old man with a history of rheumatic heart disease status-post mechanical mitral and aortic valve replacements, persistent atrial fibrillation on anticoagulation, and longstanding recurrent admissions for congestive heart failure presented with progressive fatigue and shortness of breath for 3 days. He denied any fevers, or sputum production. His heart rate was 78 bpm with a blood pressure of 141/68, and an oxygen saturation of 90% on room air. Physical exam was significant for respiratory distress, jugular venous distension, bibasilar rales, decreased breath sounds at the right lung base, and warm lower extremities without edema. INR was therapeutic at 3.2 and routine chemistries and CBC were unremarkable. Chest X-ray revealed a large right-sided pleural effusion, pulmonary vascular congestion, and cardiomegaly. The patient was admitted and treated with intravenous diuretics for acute decompensated heart failure.

On hospital day 8, the patient remained dyspneic despite negative fluid balance. The procedure team was consulted and bedside ultrasound revealed a persistent, large right-sided pleural effusion with an apparent large loculation of fluid 6 cm from the posterior chest wall (Fig. 1, A). A diagnostic and therapeutic thoracentesis was planned. Prior to the procedure, a CT scan of the chest from two years prior was reviewed (Fig. 1, B and C). The apparent loculation of fluid seen on bedside ultrasound was determined to be a “giant left atrium” (15 cm × 7.2 cm), which is likely the sequela of rheumatic heart disease [1,2].

Given the patient's high risk of stroke from mechanical aortic and mitral valves with atrial fibrillation, his therapeutic anticoagulation was not reversed prior to thoracentesis, but coumadin had been held. A

therapeutic thoracentesis was successfully performed via a posterior-lateral approach and 800 ml of clear yellow fluid was removed with improvement in patient's dyspnea. His hemodynamics and post-procedure hematocrit remained stable. His INR was 3 the morning before therapeutic thoracentesis and 1.8 the next day, which required bridging with low molecular weight heparin. Post-procedure chest X-ray showed a reduction in the right-sided pleural effusion and no pneumothorax. Fluid characteristics were consistent with a transudative pleural effusion and cytology was negative for malignant cells.

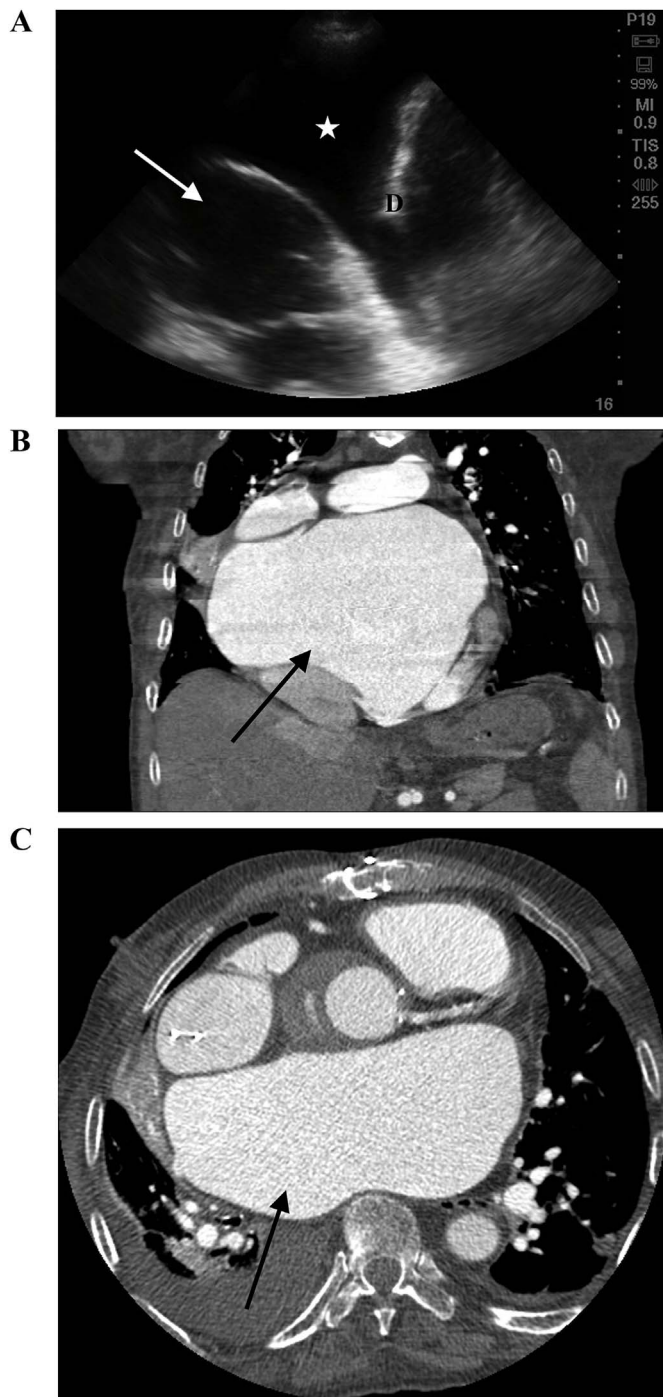
The availability of ultrasound at the bedside has enabled clinicians to make rapid assessments and treatment decisions at the point-of-care [3]. Ultrasound assistance in thoracentesis has even been shown to reduce pneumothorax rates [4]. However, this case illustrates the importance of reviewing relevant prior diagnostic imaging before a bedside procedure, even when point-of-care ultrasound is used; attempting to drain the apparent fluid loculation (the giant left atrium) could have had devastating consequences. Furthermore, this case supports the growing evidence that performing a bedside thoracentesis is safe at an INR > 1.5 [5,6].

## Conflict of interest

The authors have no conflicts of interest to disclose or any financial disclosures to report.

The use of these anonymous images in keeping with our institution's policy on ethics of case reporting.

\* Corresponding author. Department of Medicine (Hospital Medicine), Albert Einstein College of Medicine, 1825 Eastchester Road, Bronx, NY 10461, USA.  
 E-mail address: [bgalen@montefiore.org](mailto:bgalen@montefiore.org) (B.T. Galen).



**Fig. 1.** “Giant left atrium” in an 85 year old man with a history of rheumatic heart disease. A, point-of-care ultrasound image of large right pleural effusion (star), giant left atrium (white arrow), and diaphragm (“D”). B, coronal image of prior CT chest with contrast showing giant left atrium at black arrow. C, transverse image of prior CT chest with contrast showing giant left atrium at black arrow.

**References**

- [1] R. Tung, R. DeSanctis, Giant left atrium, *N. Engl. J. Med.* 351 (14) (2004 Sep 30) 1437.
- [2] E. Apostolakis, J.H. Shuhaiber, The surgical management of giant left atrium, *Eur. J. Cardiothorac. Surg.* 33 (2) (2008 Feb) 182–190 Epub 2007 Dec 21.
- [3] A. Bhagra, D.M. Tierney, H. Sekiguchi, N.J. Soni, Point-of-Care ultrasonography for primary care physicians and general internists, *Mayo Clin. Proc.* 91 (12) (2016 Dec) 1811–1827.
- [4] M.E. Wilcox, C.A. Chong, M.B. Stanbrook, A.C. Tricco, C. Wong, S.E. Straus, Does this patient have an exudative pleural effusion? The Rational Clinical Examination systematic review, *JAMA* 311 (23) (2014 Jun 18) 2422–2431.
- [5] J.T. Puchalski, A.C. Argento, T.E. Murphy, K.L. Araujo, M.A. Pisani, The safety of thoracentesis in patients with uncorrected bleeding risk, *Ann. Am. Thorac. Soc.* 10 (4) (2013 Aug) 336–341.
- [6] J. Puchalski, Thoracentesis and the risks for bleeding: a new era, *Curr. Opin. Pulm. Med.* 20 (4) (2014 Jul) 377–384.