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## Ultrasound in Emergency Medicine

### HEMORRHAGIC PERICARDIAL CYST DIAGNOSIS ACCELERATED BY EMERGENCY PHYSICIAN ECHOCARDIOGRAPHY: A CASE REPORT

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**Abstract—Background:** The differential diagnosis for chest pain in the emergency department is broad and includes both benign and life-threatening conditions—with pericardial cyst as a rare example. Emergency physician-performed point-of-care focused cardiac ultrasound (FOCUS) is increasingly recognized as a useful modality in the evaluation of patients with chest pain. **Case Report:** We report a case of hemorrhagic pericardial cyst in a young woman presenting with chest pain in which findings on FOCUS contradicted findings on chest x-ray study and thus, accelerated diagnosis and definitive treatment. We also comment on epidemiology, pathophysiology, clinical presentation, diagnosis, and management of this uncommon, potentially fatal cause of chest pain. **Why Should an Emergency Physician Be Aware of This?:** This case report aims to bring an uncommon case to the attention of emergency providers and emphasize the importance of facility with FOCUS. Although definitive diagnosis and management were not accomplished at the bedside in this case, an abnormal finding on FOCUS prompted further investigation and timely treatment. © 2016 Elsevier Inc. All rights reserved.

**Keywords—**chest pain; pericardial; pericardial cyst; cardiomegaly; point-of-care; ultrasound; echocardiography;

phy; echocardiogram; cardiac; focused cardiac ultrasonography; emergency department; mediastinal mass; emergency radiography; emergency radiology

#### INTRODUCTION

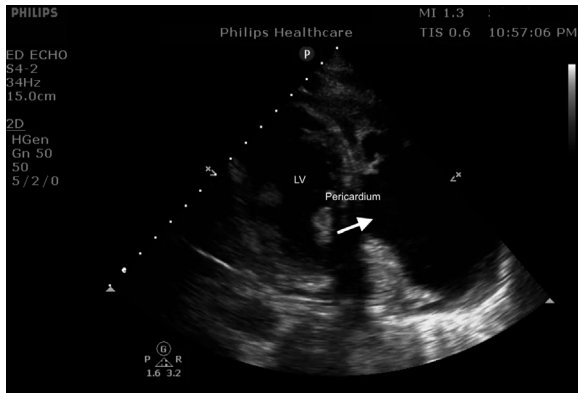
Chest pain is among the most common presenting complaints in the emergency department (ED). The role of point-of-care ultrasound in emergency medicine is increasingly appreciated—particularly in the evaluation of patients with chest pain—given its utility in rapidly evaluating for life-threatening etiologies (e.g., thoracic aortic aneurysm and dissection, cardiac tamponade, heart failure, right heart strain from massive pulmonary embolus). Here, we describe the case of a patient suffering from an uncommon cause of chest pain whose diagnosis and management was expedited by emergency physician-performed point-of-care focused cardiac ultrasound (FOCUS).

#### CASE REPORT

A 32-year-old woman, 5 months postpartum, presented to the ED with chest pain. The pain had started 1 day prior, was localized to the left, and radiated to the back. It was markedly pleuritic. She denied exercise intolerance and

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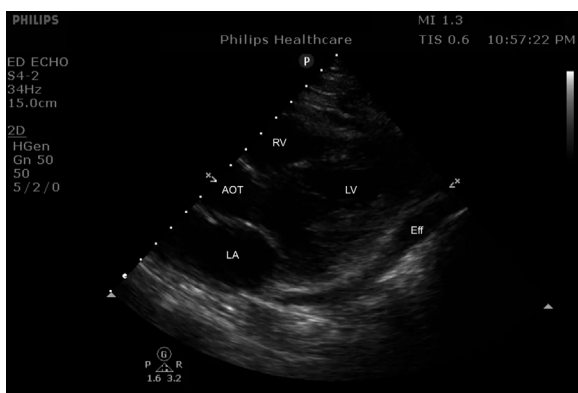
**Figure 1.** Echocardiogram parasternal short view showing large, well-circumscribed, anechoic structure was observed adjacent to the left pericardium (white arrow).

lower extremity edema or pain. She had had symptoms of an upper respiratory infection approximately a month prior, which had resolved spontaneously 2 weeks prior to presentation. She was adamant that “it just really feels like something is wrong.” She had no significant medical history, took no medications, and denied tobacco or illicit substance use.

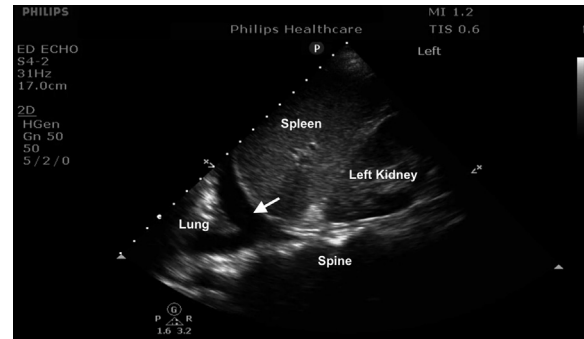
Triage vital signs showed a pulse of 123 beats/min, temperature 36.5°C, respiratory rate 20 breaths/min, a blood pressure of 125/88 mm Hg, and pulse oximetry of 100% on room air. She appeared in no acute distress. Physical examination revealed regular tachycardia and reproduction of symptoms with palpation of the left anterior and posterior chest walls. An electrocardiogram demonstrated sinus tachycardia.

The patient was judged to be at low risk for pulmonary embolism and D-dimer was negative. The remainder of laboratory evaluation revealed a mild leukocytosis of  $16.9 \times 10^3/\mu\text{L}$  and was otherwise unremarkable.

FOCUS and limited thoracic ultrasound was performed by the emergency physician during the initial



**Figure 2.** Echocardiogram parasternal long view showing a trace pericardial effusion.



**Figure 3.** Left upper quadrant/left lung base ultrasound showing small pleural effusion (white arrow).

examination. No gross systolic dysfunction was appreciated, and the right ventricle was not dilated. However, a large, well-circumscribed, anechoic structure was observed adjacent to the left pericardium (Figure 1, Video 1 available online). A trace pericardial effusion was found (Figure 2, Video 2 available online), as well as a small left-sided pleural effusion (Figure 3, Video 3 available online).

The patient was admitted to the hospital for further evaluation of the thoracic fluid collection. The admitting team, however, pointed out that the chest X-ray (Figure 4) had been interpreted as showing cardiomegaly and “left retrocardiac infiltrate ... with small left pleural effusion.” Given her well appearance and recent upper respiratory infection symptoms, they felt this likely represented pneumonia, and outpatient treatment with antibiotics was recommended. After review of the FOCUS with



**Figure 4.** Chest x-ray study interpreted as cardiomegaly and “left retrocardiac infiltrate ... with small left pleural effusion.”

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