Pericardiocentesis From Back Under Echographic Guidance
An Approach for Posterior Pericardial Effusions

Emanuele Catena, MD; Chiara Addamiano, MD; Elisa Bertoli, MD; Stefano Maggiolini, MD; Andrea Farina, MD; Felice Achilli, MD

A 72-year-old man with degenerative aortic stenosis, coronary artery disease, hypertension, and chronic renal insufficiency presented with progressively worsening dyspnea, tachycardia, hypotension, and diuresis contraction 7 days after undergoing successful aortic valve replacement (stentless valve, 27 mm) and coronary artery revascularization. On presentation to the intensive care unit, the patient was found to have a notably bilateral pleural effusion. The blood sample revealed normal values of both troponin and creatine kinase. ECG displayed sinus rhythm with diffuse aspecific repolarization abnormalities. A transthoracic echocardiogram demonstrated normal left ventricular ejection fraction, concentric hypertrophy of the left ventricle, no valvular dysfunction, and preserved right ventricular function. A posterior-lateral echographic view showed a large left pleural effusion, a significant posterior pericardial effusion, and a prominent pericardial layer demarcating the 2 fluid-filled sacs (Figure and Movie I in the online-only Data Supplement).

Pleuropericardiocentesis was urgently performed. The landmark for needle insertion corresponded to the area where the largest amount of fluid could be detected. The patient was placed in the semireclining position to enhance fluid collections in the inferior part of the chest. After appropriate disinfection of the operative field, local anesthesia of the skin was administered with 2% lidocaine. The procedure was performed by 2 physicians, 1 who performed the echocardiogram and 1 who performed the puncture and drainage. Once placement and direction of the needle were chosen, the needle was connected to a syringe for constant gentle aspiration, and the guide wire according to the Seldinger technique into the pericardial cavity under echocardiographic guidance and an prominent pericardial layer demarcating the 2 fluid-filled sacs (Figure and Movie I in the online-only Data Supplement).

The online-only Data Supplement is available with this article at http://circ.ahajournals.org/lookup/suppl/10.1161/CIRCULATIONAHA.111.024786/-/DC1.

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of a large left pleural effusion. In the presence of a large left pleural effusion, pulmonary atelectasis and displacement of air-filled pulmonary tissue allows ultrasound transmission from a patient’s back to the heart through a liquid interface and needle insertion “from back” to reach the pericardial space. Posterior pericardiocentesis must be performed by qualified physicians under echographic guidance. Echography offers significant advantages: it can be rapidly performed at the bedside; it shows the location and entity of the effusions, helping to select the optimal pericardiocentesis entry site; and it allows the step-by-step guidance of the needle positioning in the pericardial and pleural cavities with immediate verification of procedural success. Without echo monitoring, complications associated with blind needle punctures may be cardiac wall perforation, hemopericardium, puncture of the coronary arteries, and liver and lung bleeding. Finally, echographic guidance for the posterior approach can help assess the left ventricular posterior wall and left atrium, localize the descending aorta, and differentiate PE from pleural effusion by clearly delineating the pleurapericardial border and by defining respiratory lung excursions.\textsuperscript{2,3} If localization of the needle tip results are uncertain, opacification of the punctured cavity by an echographic contrast method allows the nature of this cavity to be instantly determined.\textsuperscript{4}

**Disclosures**

None.

**References**

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