

Abstract Form

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| Project Title: | Efficacy of Echocardiogram on Extraordinary Effusions |

Research Category (please check one):

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Abstract

Introduction: Pericardial effusions are a relatively common occurrence with numerous etiologies from congestive heart failure to malignancy to pericarditis. These effusions can range in size from trivial to large, and may cause symptoms of chest pain, shortness of breath, or the medical emergency of cardiac tamponade. Echocardiogram is the most used modality of assessment when it comes to pericardial effusions, having high sensitivity and specificity, but are there times when this modality fails to capture the significance of the effusion? Our case illustrates that in the setting of large pericardial effusion, echocardiograms can fail to quantify the effusions size or if sufficient resolution has occurred.

Case: 55-year-old female with PMHx of HFpEF, type 2 diabetes and ESRD presented with substernal chest pain while having dialysis performed. In the ED patient was found to have an HR of 78, BP 170/80, and was saturating in the high 90s on 2 L nasal cannula. Physical exam revealed bilateral crackles in the lung bases, pericardial rub and distended jugular vein. Initial labs revealed a hemoglobin of 9.5, creatinine 3.14, BUN of 30 and troponin elevated to 0.033. CXR revealed a markedly enlarged heart and bilateral pulmonary opacities. Echocardiogram was performed which revealed IVC dilation, and large pericardial effusion with early right atrial collapse. Cardiology and cardiothoracic surgery were consulted for possible pericardiocentesis versus subxiphoid pericardial window. Given that the patient was hemodynamically stable, a decision was made to medically manage with multiple rounds of dialysis. Over the next 4 days the patient received 3 rounds of dialysis, with a total of 8L removed. Patient had remained hemodynamically stable, their chest pain had resolved and, a repeat echocardiogram showed improvement of pericardial effusion. Consideration was given to discharge the patient home, however the patient was still requiring 2L NC, which was believed to be due to small pleural effusions. Attempts were made to perform POCUS studies in the hopes of performing thoracentesis, but operators were unable to differentiate pericardial space from pleural space to safely perform thoracentesis. CT scan of the chest was performed which showed significant pericardial effusion, with near complete resolution of pleural effusion. Given that the patient was symptomatic, requiring 2L NC and desatting with ambulation, the decision was made to surgically treat the effusion. Given the posterior nature of the pericardial effusion, and technical difficulty to visualize and perform an apical pericardiocentesis, subxiphoid pericardial window was performed. 1.85L was drained with initial window and pericardial chest tube drained a subsequent 1.8L in 24 hours after procedure. Patient’s oxygenation quickly improved, and they were able to breathe comfortably on room air. Patient remained hospitalized for over 3 weeks after the chest tube was placed before the drainage became minimal enough to remove.

Discussion: Though echocardiogram is certainly a useful tool when it comes to assessment of the pericardial space and in the hemodynamically unstable patient POCUS is unquestionably preferred to CT scan, our case illustrates the limitations of this imaging modality. Given the sheer size of this effusion, echocardiogram was unable to accurately quantify the size of the pericardial effusion, or accurately estimate the significance of resolution. Furthermore, from a treatment standpoint the size and posterior nature of this effusion made it unsafe for ultrasound guided pericardiocentesis or thoracentesis. This may indicate that CT scan, though less dynamic and slower to obtain than echocardiogram, may be a superior imaging choice in the setting of a hemodynamically stable patient with unusually large pericardial effusions with atypical distribution.