Echocardiographic Assessment using Subxiphoid-only view compared to Focused Transthoracic Echocardiography: A pilot study

Primary Author: Benjamin Metcalfe DO
Albany Medical Center

Co-Authors: J. Ross Renew, MD; Jose L. Diaz-Gomez, MD; Nibras Bughrara, MD;

Introduction:
Point-of-care echocardiography is an expanding screening and diagnostic practice that non-traditional users such as anesthesiologists and intensivists are embracing as perioperative medicine providers. Skilled use of this technology allows efficient assessment of common conditions affecting critically ill patients. However, for clinicians with limited echocardiography experience, performing an effective Focused Transthoracic Echocardiographic Exam (FoTE) is daunting. In these cases, or when time is limited, an Echocardiographic Assessment using Subxiphoid-only view (EASy) can be used. We performed a pilot study to compare findings between the FoTE and EASy exams.

Methods:
All residents at our institution undergo a 4-day course in FoTE during their CA-2 year. In addition, they perform 20 complete FoTE studies under direct supervision of an attending anesthesiologist experienced in FoTE, and perform 10 more such studies under indirect supervision.

As part of this study, CA-2 residents who completed the course performed point-of-care echocardiographic exams on 12 consecutive patients. On each patient they performed an EASy exam first, including a written report with findings. Immediately following this the full FoTE exam was performed, including a written report with findings. Two patients were excluded from analysis because the subxiphoid view was unusable. The EASy and FoTE exam findings of these 10 patients were then compared to each other.

Results:
Of the 10 patients with interpretable subxiphoid view images, the FoTE exam with multiple views revealed new clinical information not previously seen in the single view EASy exam in one patient (Table 1). This patient had significant mitral stenosis that was not appreciated during the EASy exam; however, the assessment of biventricular function and volume status, and absence of pericardial effusion was congruent between the two exam findings.

Table 1: Comparing Clinical Findings Elicited from the FoTE and EASy Exams

Discussion:
For the clinician with minimal echocardiography experience, focusing on and mastering a single, subxiphoid view is an excellent entry point into the realm of echocardiography. In this small pilot study, the EASy exam using a single view was able to uncover useful clinical information in all but 2
patients. Furthermore, imaging through additional views in the remaining 10 patients only added new clinical information in one patient. In addition to imaging the heart, this view can look for major pathology in the inferior vena cava, abdominal aorta, abdominal cavity (ascites) and even right pleural space (pleural effusion). In situations with questionable NPO status, this window can be used to image the antrum of the stomach to assess gastric contents. However, not all patients have adequate views available through the subxiphoid window. Variations in body habitus or the presence of surgical dressing may preclude the performance of the EASy exam and warrant the use of alternative viewing windows. The promising results from this pilot will be expanded into a large scale, multi-center trial investigating the potential management implications of a single view scanning from the subxiphoid window (the EASy exam) in comparison to the multiple windows obtained during conventional FoTE.