The Echocardiogram: A Scapegoat for Surgical Delay for Hip Fracture Patients

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Purpose: Preoperative transthoracic echocardiography (TTE) is used for evaluating geriatric hip fracture patients and may delay time to operative fixation. The aim of this study was to evaluate TTE utilization at a single institution based on specific guidelines to determine rate of appropriate indication, rate of change in intraoperative management, and association with delayed time to the operating room.

Methods: A retrospective study was performed at an urban trauma center over a 5-year period during which geriatric patients received operative treatment for hip fractures. If TTE was ordered, indications were reviewed for adherence to American College of Cardiology/American Heart Association clinical practice guidelines (ACC/AHA CPGs). Echocardiogram reports were reviewed to identify cardiac conditions that warrant intraoperative management change by anesthesiology: moderate to severe aortic or mitral valve regurgitation or stenosis, left ventricular ejection fraction <25%, or right ventricle systolic pressure >55 mm Hg. Time from admission to surgery and admission to TTE (if TTE was done) were calculated.

Results: Data from 336 patients (64.9% female; mean age, 74.9 years [range, 50-98]) were analyzed and 21.7% (73) received preoperative TTE. According to ACC/AHA CPGs, 45.2% (33) of TTE orders were appropriately indicated, while 92.4% (243) of patients who did not have TTE were properly excluded. In 20.5% (15) of all TTE orders and 42.4% (14) of appropriately indicated TTEs, a cardiac condition that could alter intraoperative management was identified. Sensitivity and specificity of the echocardiogram were 0.933 (95% confidence interval [CI] 0.807, 1.000) and 0.672 (95% CI 0.552, 0.793), respectively. Non-guideline-indicated TTE order was most associated with history of transient ischemic attack (TIA), insulin-dependent diabetes mellitus (IDDM), and myocardial infarction (MI), indicated by an odds ratio of 5.6, 2.5, and 2.8, respectively. The median time from admission to surgery with TTE was 33.5 hours versus 20.5 hours without TTE (P <0.001). Time from admission to TTE was 18.5 hours.

Conclusion: History of TIA, IDDM, and MI increased the likelihood of a TTE order. TTE was associated with increased admission to surgery time. Less than half of the echocardiograms ordered were stringently indicated per ACC/AHA criteria, and only 20.5% of those ordered diagnosed a cardiac condition that could change intraoperative management by an anesthesiologist. Adherence to ACC/AHA guidelines will decrease the number of perioperatively ordered echocardiograms, may decrease time to surgery, and is unlikely to alter intraoperative management.