Variable Performance of Evidence-Based Guidelines for Echocardiography in Patients with Hip Fractures

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Purpose

- Osteoporotic hip fractures common in medically frail patients
- Clinical practice guidelines (CPGs) exist to help determine when pre-operative trans-thoracic echocardiography (TTE) is indicated
- Unclear which guidelines perform the best in patients with hip fractures

Methods

- Retrospective chart review
- 100 patients who underwent pre-operative TTE prior to hip fracture fixation
- Data extracted: History, physical exam, listed indications for TTE, actual TTE findings
- Five accepted CPGs compared:
  - -American College of Cardiology (ACC/AHH)
  - -British Society of Echocardiography (BSE)
  - -European Society of Echocardiography (ESC/ESE)
  - -Association of Anesthesia of Great Britain and Ireland (AAGBI)
  - -Scottish Intercollegiate Guidelines Network (SIGN)

Results

- Patients met criteria for TTE 32-66% of the time, based on the CPG used
- TTE revealed new information with potential to alter peri-operative management 14% of the time
- **ACC/AHH and SIGN guidelines had the best performance**
  - -Focused on **change in clinical status**

Table 1 – Medical Comorbidities

Documented Comorbidity on Presentation	Prevalence
Hypertension	62%
Congestive Heart Failure	42%
Hyperlipidemia	29%
Diabetes Mellitus	27%
Osteoporosis	24%
History of Cancer	22%
Depression	22%
Chronic Obstructive Pulmonary Disease	21%
Cerebrovascular Accident	19%
Gastro-Esophageal Reflux Disease	17%
End Stage Renal Disease	4%
History of previous fragility fracture	4%
Hemodialysis	3%

Table 2 – Performance of CPGs

Guideline	ACC/AHH	BSE	ESC/ESE	AAGBI	SIGN
% TTEs in accordance with guidelines	66%	65%	32%	50%	66%
Sensitivity	**100%**	79%	71%	71%	**100%**
Specificity	40%	37%	74%	54%	40%
Reduction in TTE[1]	34%	35%	68%	50%	34%
Missed Pathology[2]	0%	12%	3%	4%	0%

[1]Potential percentage reduction in TTE ordering if CPGs were followed

[2]Percentage of patients with pathology detected by TTE that would have been missed if CPGs were followed

Discussion

- TTE can be useful for identifying pathology in hip fracture patients that can alter peri-operative management
- **CPGs can be used to safely identify which patients could benefit from TTE**