Echo for the Assessment of Acute Chest Pain?

Hisham Dokainish, M.D., FRCPC, FACC, FASE
Associate Professor of Medicine, McMaster University
Director of Medical Diagnostic Units & Echocardiography,
Director of Heart Failure Services,
Hamilton Health Sciences
Hamilton, Ontario, Canada

Disclosure

• No disclosures
Objectives

• Discuss the uses of echocardiography in the diagnosis and management of patients with acute chest pain

Echo in Acute Chest Pain

• Among non-invasive imaging techniques, echo is most important modality in acute setting: rapidly and widely available
• LV systolic function is important prognostic variable in patients with CAD and can be assessed by echo
• Transient segmental hypokinesia or akinesia may be detected during ischemia
• Differential diagnoses such as aortic dissection, pulmonary embolism, cardiomyopathy, or pericardial effusion may be identified

Case 1

- 74 year old woman
- History of hypertension
- Presents with chest pain and dyspnea
- ECG shows poor R wave progression
- Troponin T =0.12 ng/ml (ULN=0.03 ng/ml)
- Echocardiogram ordered
What would you do next?

1. Urgent angiography
2. Admit to CCU, angiography within 24 hrs
3. Give thrombolytics
4. Start aspirin, load with clopidogrel, start bisoprolol and enalapril and IV heparin

Case 2

- 53 year old woman
- Undergoing chemotherapy for breast cancer
- Presents to hospital with chest pain and dyspnea
- Troponin T =0.01 ng/ml
- Echocardiogram ordered
What would you do next?

1. Admit to hospital, monitor, repeat echo in 2 days
2. Admit to hospital, arrange urgent pericardiocentesis
3. Discharge home, bring in for repeat echo in 1 week
Case 3

- 69 year old man
- History of hypertension
- Presents with acute, severe CP
- BP = 180/100 mmHg
- Troponin T = 0.06 ng/ml
- ECG: diffuse ST depression
- Echo ordered—poor images
- TEE performed
What would you do next?

1. Admit to CCU, start IV nitroprusside
2. Admit to CCU, place intra-aortic balloon pump
3. Urgent CV surgery consultation
Case 4

- 76 year old woman
- Presents with acute chest pain and dyspnea
- ECG shows diffuse, non-specific T wave inversions
- Troponin T = 0.15 ng/ml
- Urgent echo ordered
What is the diagnosis?

1. LAD infarction
2. Tako-tsubo cardiomyopathy
3. LAD infarction with SAM
4. Tako-tsubo cardiomyopathy with SAM

What would you do next?

1. Urgent coronary angiography
2. Admit to CCU, start ASA, clopidogrel, enoxaparin, bisoprolol
3. Give thrombolytics
4. Refer for alcohol septal ablation
Case 4

- Patient underwent coronary angiography
- Showed normal coronary arteries
- She recovered
- Echo repeated 1 month later
Case 5

- 65 year old man
- Presents with chest pain and dyspnea
- ECG unremarkable
- Troponin T = 0.05 ng/ml
- Echo ordered
Case 5

- CTA ordered
- Showed large saddle pulmonary embolus

What would you do next?

1. Admit to CCU, start IV heparin
2. Consult CV surgery for pulmonary embolectomy
3. Consult interventional radiology for pulmonary angiogram with clot retrieval
4. Give IV thrombolytics.
Case 6

- 72 year old man
- Prior CABG 4 years ago
- Presents with acute chest pain
- ECG shows Q waves from V1-V4 with 1 cm ST segment elevation
- Troponin T = 0.10 ng/ml
- Echocardiogram performed
What would you do next?

1. Admit to CCU, start IV heparin
2. Refer for urgent angiography
3. Order cardiac MRI
4. Urgent CV surgery consultation
Case 7

- 49 year old executive
- History of hypertension
- Presents with severe lower chest pain
- ECG is unremarkable
- Troponin T = 0.01 ng/ml
- Echo is ordered
What diagnostic intervention was performed?

- Bubble contrast study
- (Acute ginger ale ingestion)

Review: Echo is important in the diagnosis and management of acute chest pain for:

1. Acute infarction/ischemia
2. Pericarditis/effusion
3. Aortic dissection
4. Tako-tsubo cardiomyopathy
5. Pulmonary embolus
6. LV pseudoaneurysm
7. (Hiatus hernia)
Thank you

The David Braley Cardiac, Vascular, & Stroke Research Institute
McMaster University/Hamilton Health Sciences
Hamilton, Ontario, Canada