

Basic Emergency Echocardiography

Introductory Emergency Ultrasound Course

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Basic Emergency Echocardiography

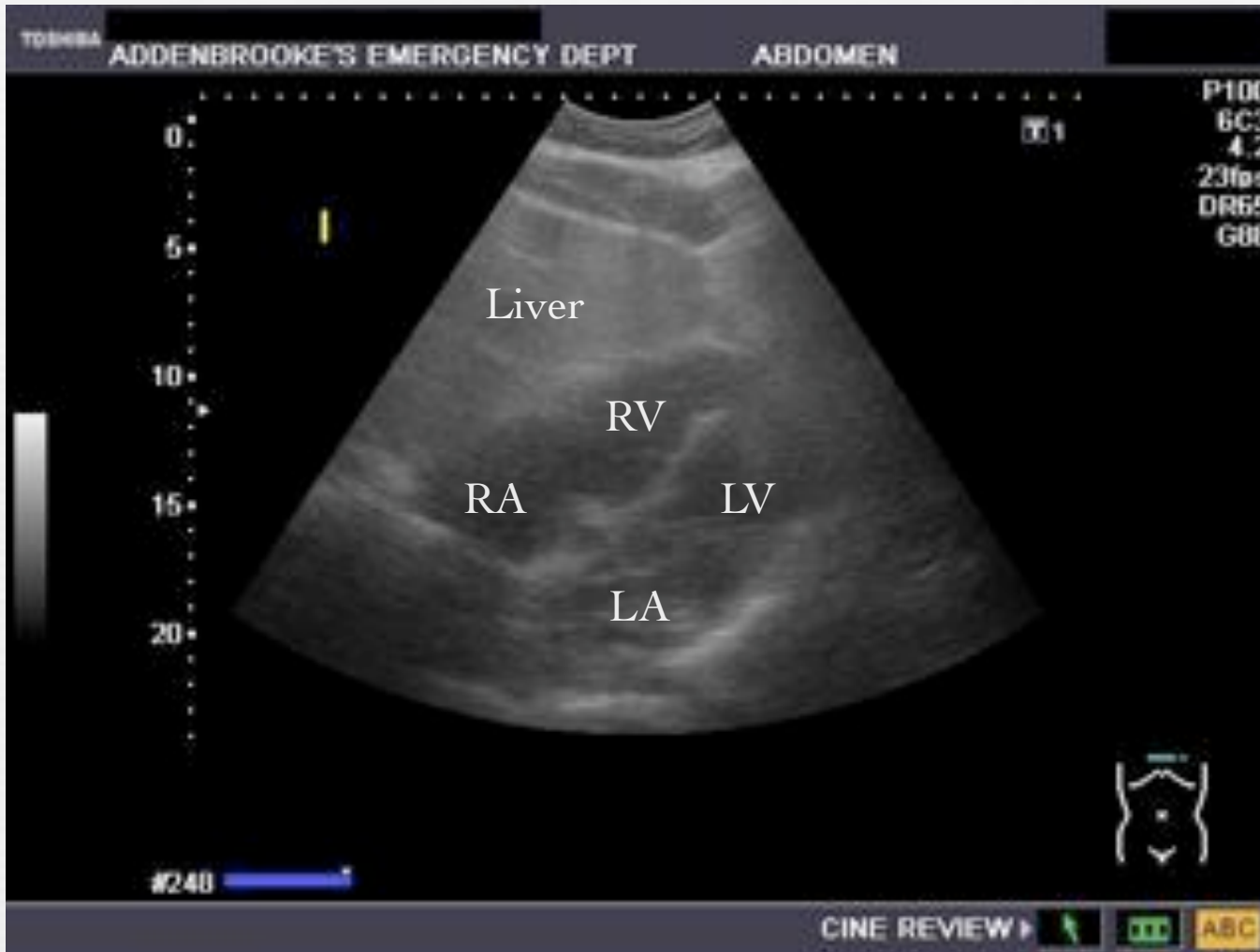
- Arrest / Peri-Arrest Scenario
- Subxiphoid Views
- PEA: Electrical Activity vs Mechanical Activity
- VF / Asytole
- Pericardial Effusion & Tamponade

View



Subxiphoid

View



Subxiphoid

Cardiac Arrest

Cardiac Arrest

- Assessment of LV activity in Cardiac Arrest
- Electrical Activity vs Mechanical Activity
- Assess for LV Activity
- Is there Ventricular Activity or Cardiac Standstill

Cardiac Arrest

Prognostic Implications:

Blaivas & Fox (Acad Emerg Med 2001)

- ❧ 169 patients presenting to ED with on-going cardiopulmonary resuscitation
- ❧ 136 patients had cardiac standstill on in initial echocardiographic assessment
- ❧ None of the patients with cardiac standstill on initial echocardiographic study survived to leave the ED regardless of electrical activity

Cardiac Arrest

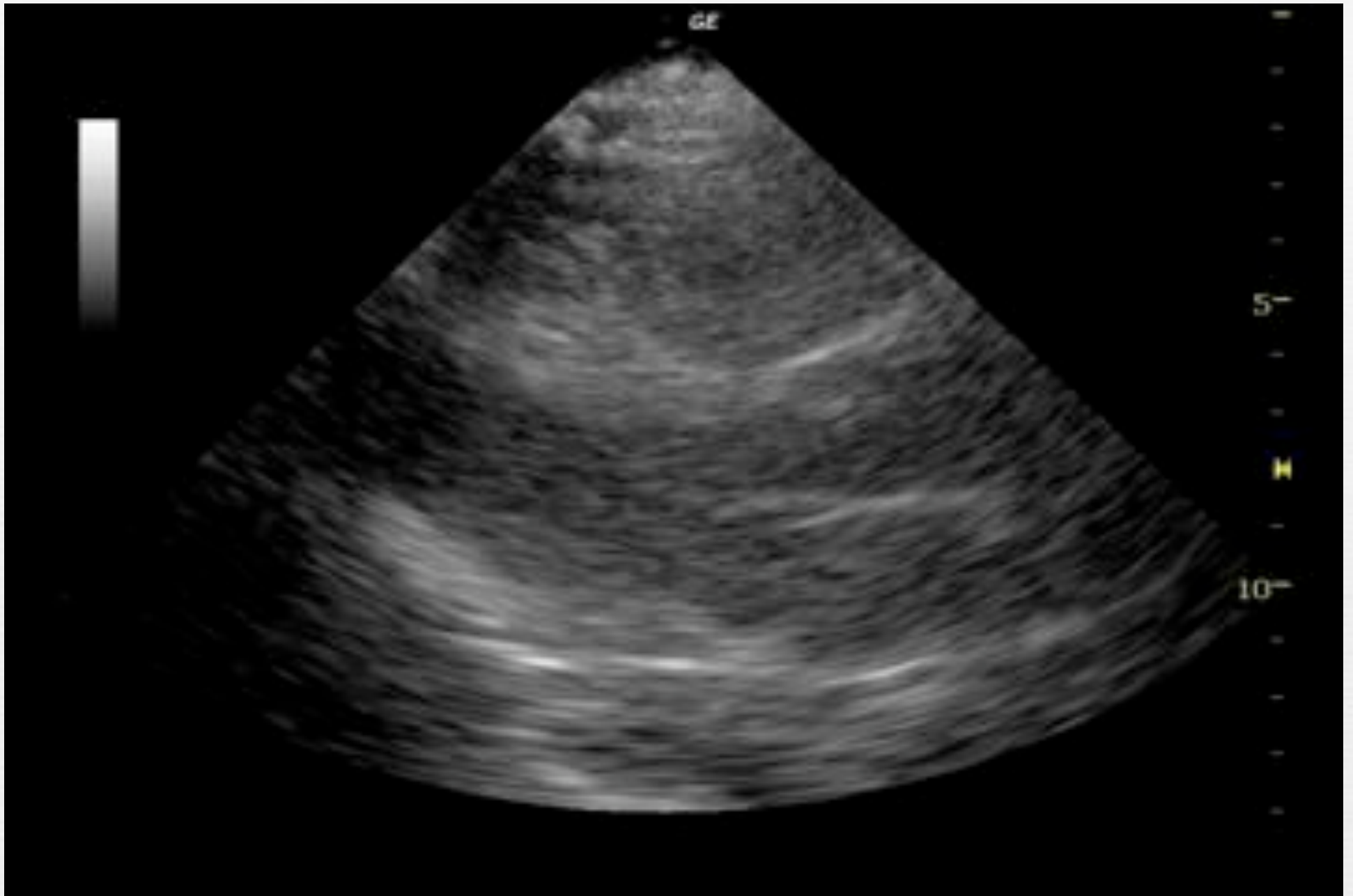
Prognostic Implications:

Salen et al (Acad Emerg Med 2001)

- ❧ 102 cardiac arrest patients
- ❧ 41 patients with identifiable electrical activity of which 11 (27%) survived to discharge (8 PEA, 2 VT, 1VF)
- ❧ 61 patients with cardiac standstill on initial presentation, none of whom survived to discharge

Cardiac Arrest

- Cardiac Standstill on initial presenting echocardiographic assessment has important prognostic implications
- Survival to discharge is not associated with cardiac standstill in this setting
- Evidence of cardiac standstill should be an important factor in the decision to terminate resuscitative measures



Cardiac Standstill

Cardiac Arrest

- VF vs Asystole
- Echocardiography can be used to identify fibrillating ventricle

Pericardial Effusion & Tamponade

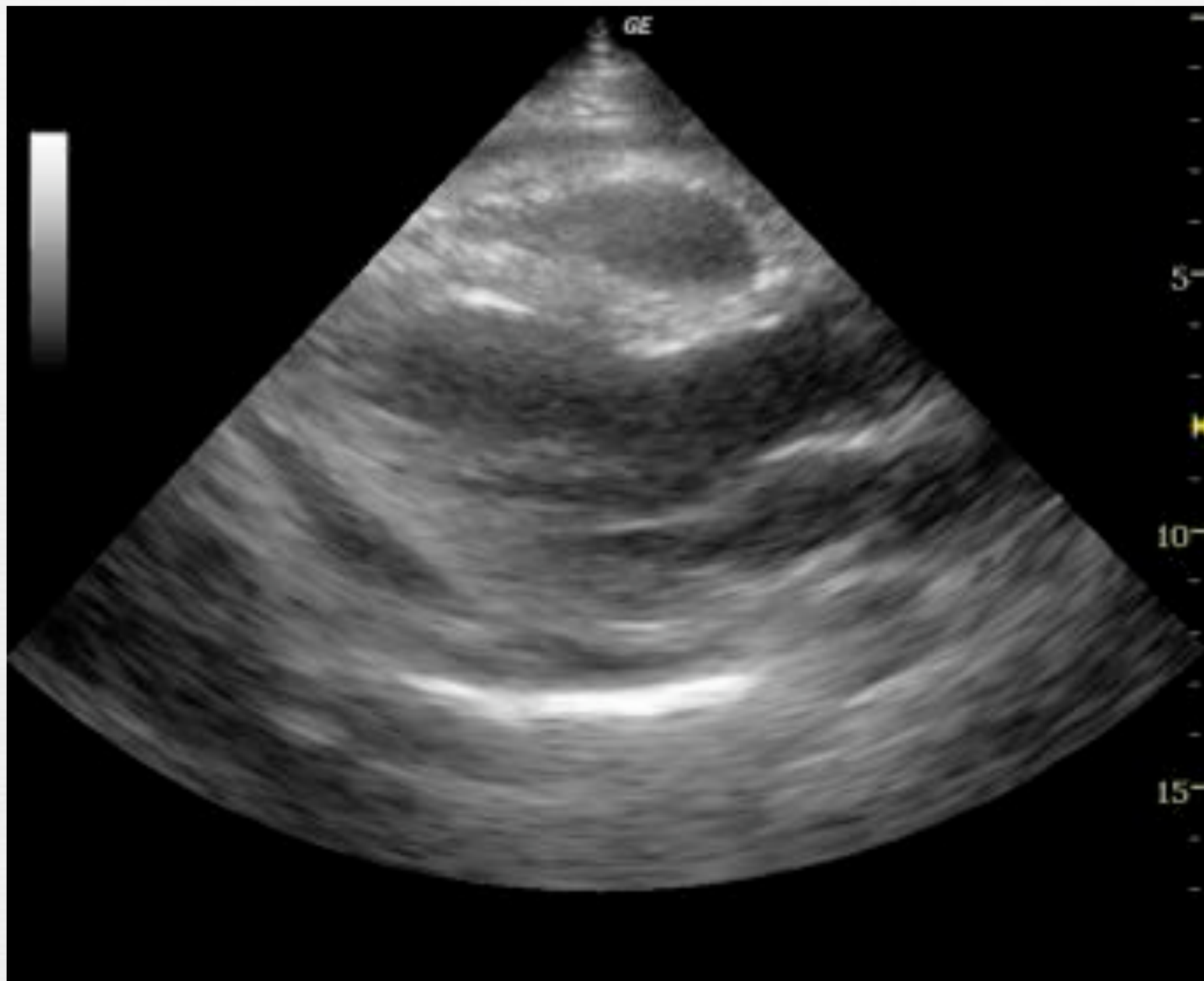
Pericardial Effusion & Tamponade

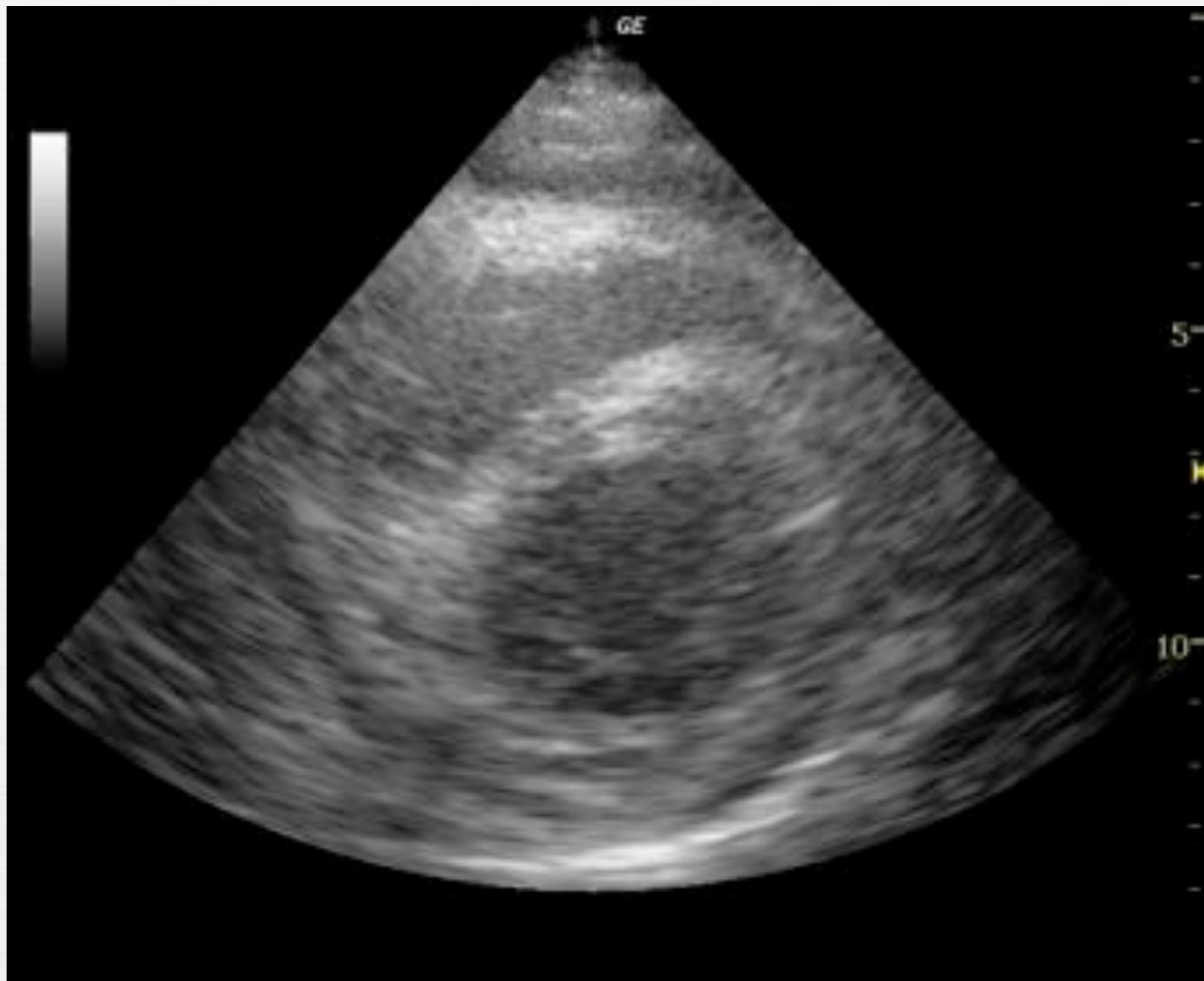
- ❧ Pericardial or Pleural?
- ❧ Size & Distribution
- ❧ **Remember:** The risk of tamponade is more a function of the rate of accumulation than total volume
- ❧ Is there evidence of tamponade?
 - Diastolic RV Collapse
- ❧ **Remember:** Cardiac tamponade is a clinical diagnosis

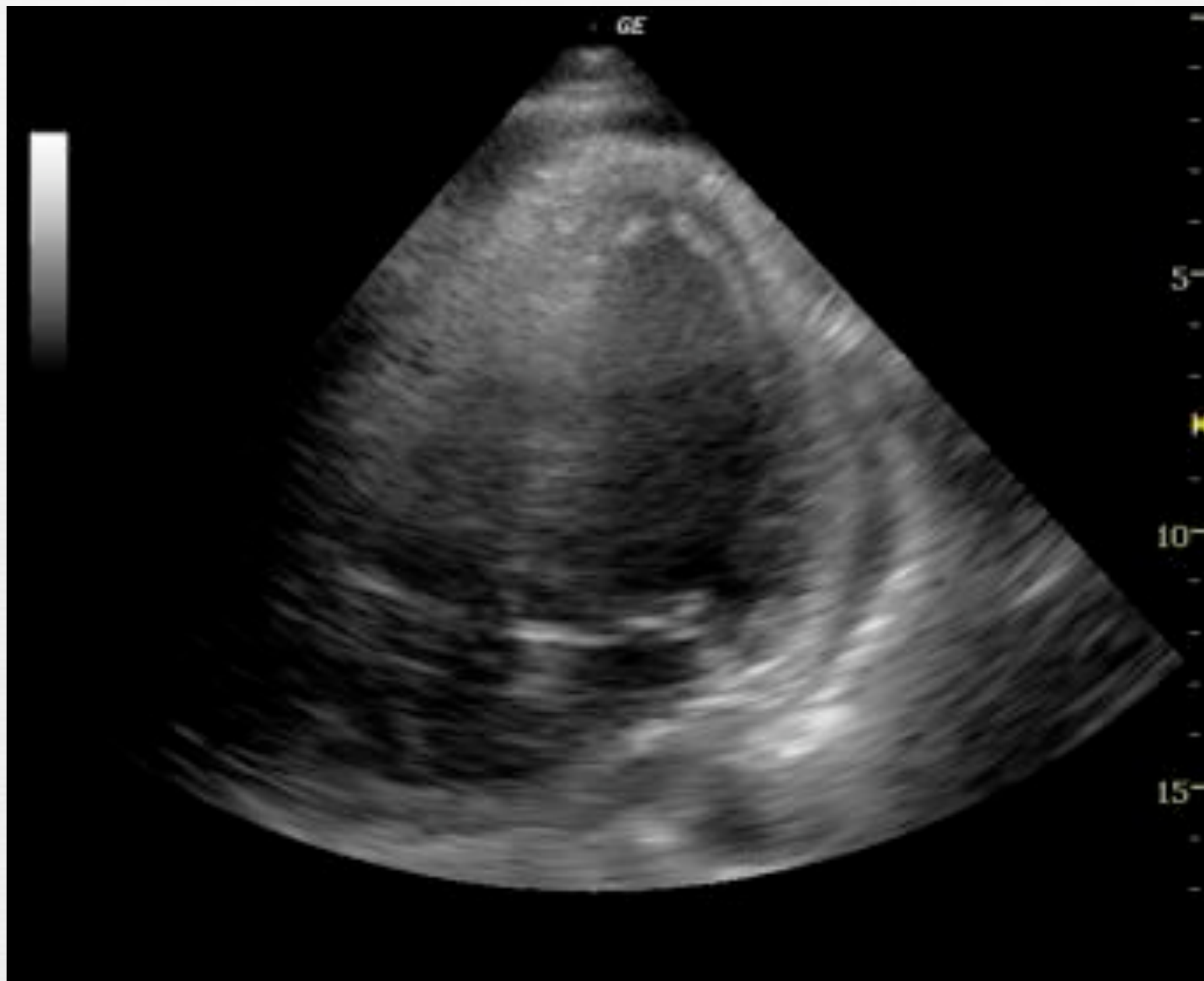
Pericardial Effusion & Tamponade

Can emergency physicians detect pericardial effusions?

- ❖ Mandvia et al (Ann Emerg Med 2001)
- ❖ 515 patients at 'high risk' for pericardial effusion were enrolled, 103 of whom had pericardial effusions
- ❖ EPs detected pericardial effusions with an overall sensitivity of 96%, specificity of 98%, and accuracy of 97%







Pericardial Effusion & Tamponade

Can emergency physicians assess for tamponade?

- ❧ Echocardiographic diagnosis of tamponade is more difficult and controversial
- ❧ Most frequently used echocardiographic finding to support a diagnosis of tamponade is collapse of the right heart chambers during mid-to-late diastole
- ❧ However a number of studies have questioned both the sensitivity and specificity of this echocardiographic sign

Levine MJ et al: J Am Coll Cardiol 1991

Merce J et al: Am Heart J 1999

Pericardial Effusion & Tamponade

SUMMARY

- ❖ **Pericardial Tamponade is a clinical diagnosis in a patient with a known Pericardial Effusion**

Questions?