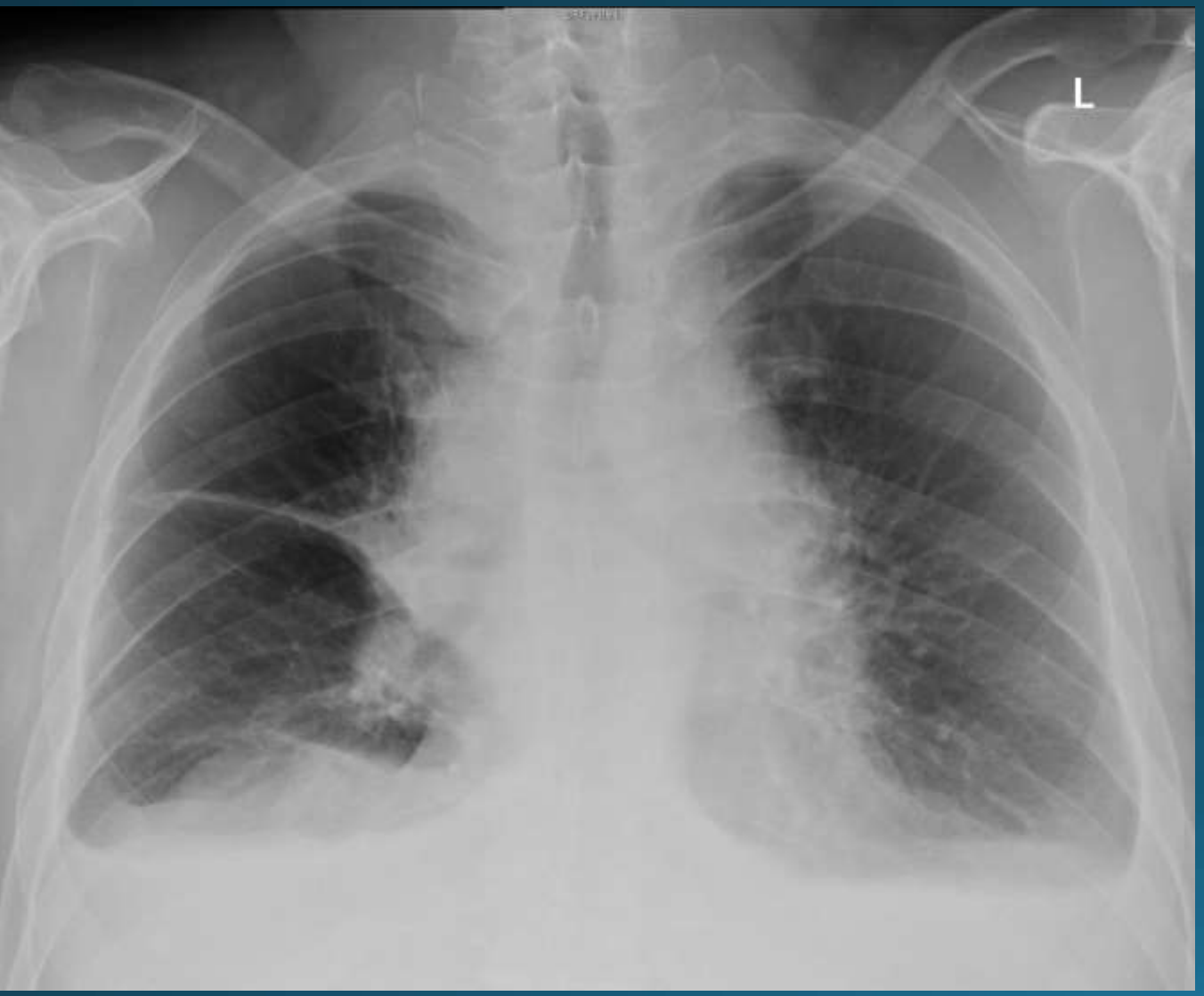
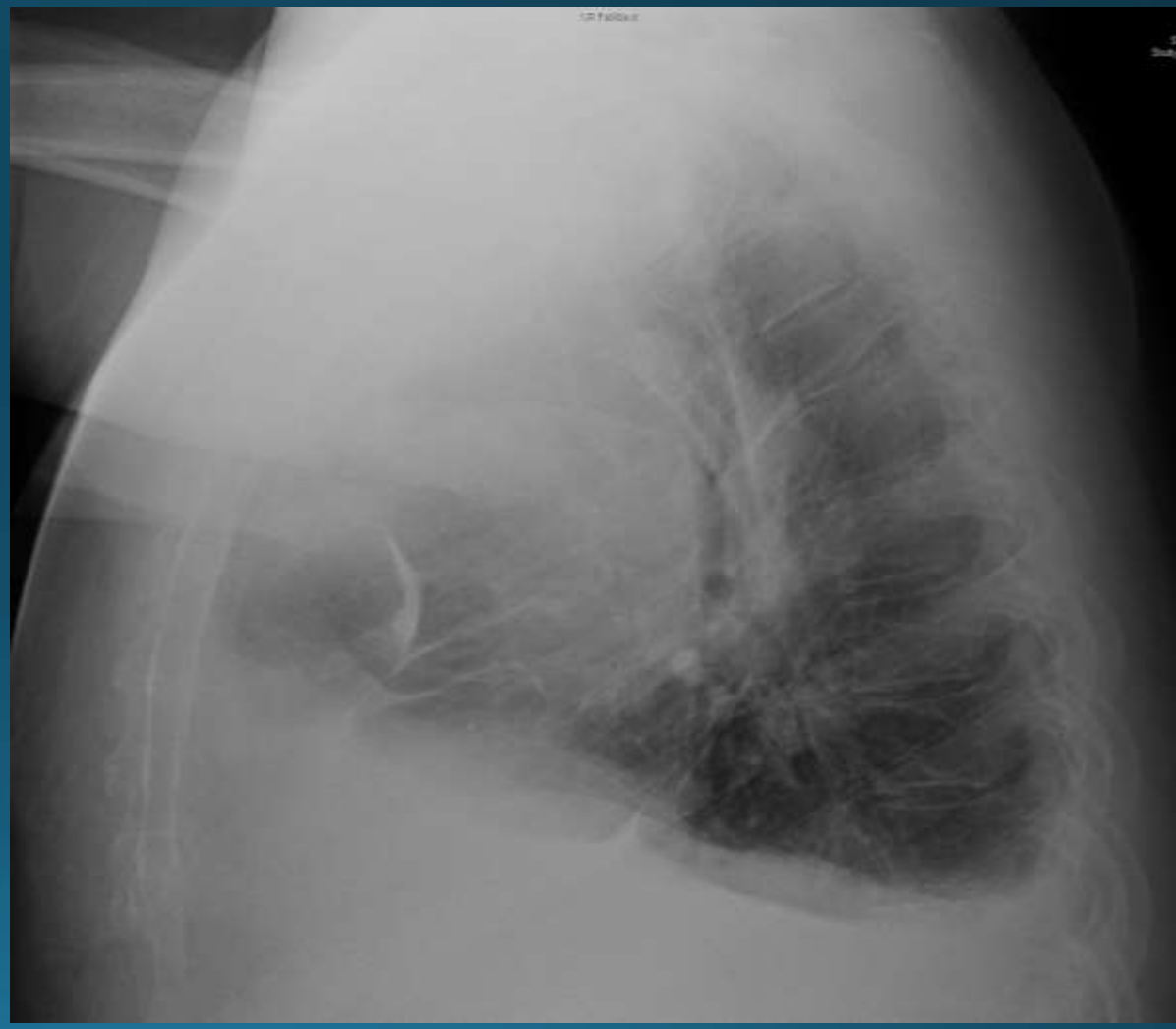
Case

- 43 yo, no PMHx
- DOE 8 weeks PTA, progressed to SOB when flat
- Neck swelling 4 wks PTA, dx w/ L IJ DVT, tx w/Lovenox
- ROS + 25 lb weight loss in 3 mos
- Admitted OSH 2 wks PTA w/ ↑neck swelling & SOB
  - Cervical & Mediastinal LN, b/l Pleural Effusion
  - s/p thoracentesis x2, bronchoscopy w/ FNA
  - Dx w/ B cell Lymphona
  - DC w/ outpt f/u

Case

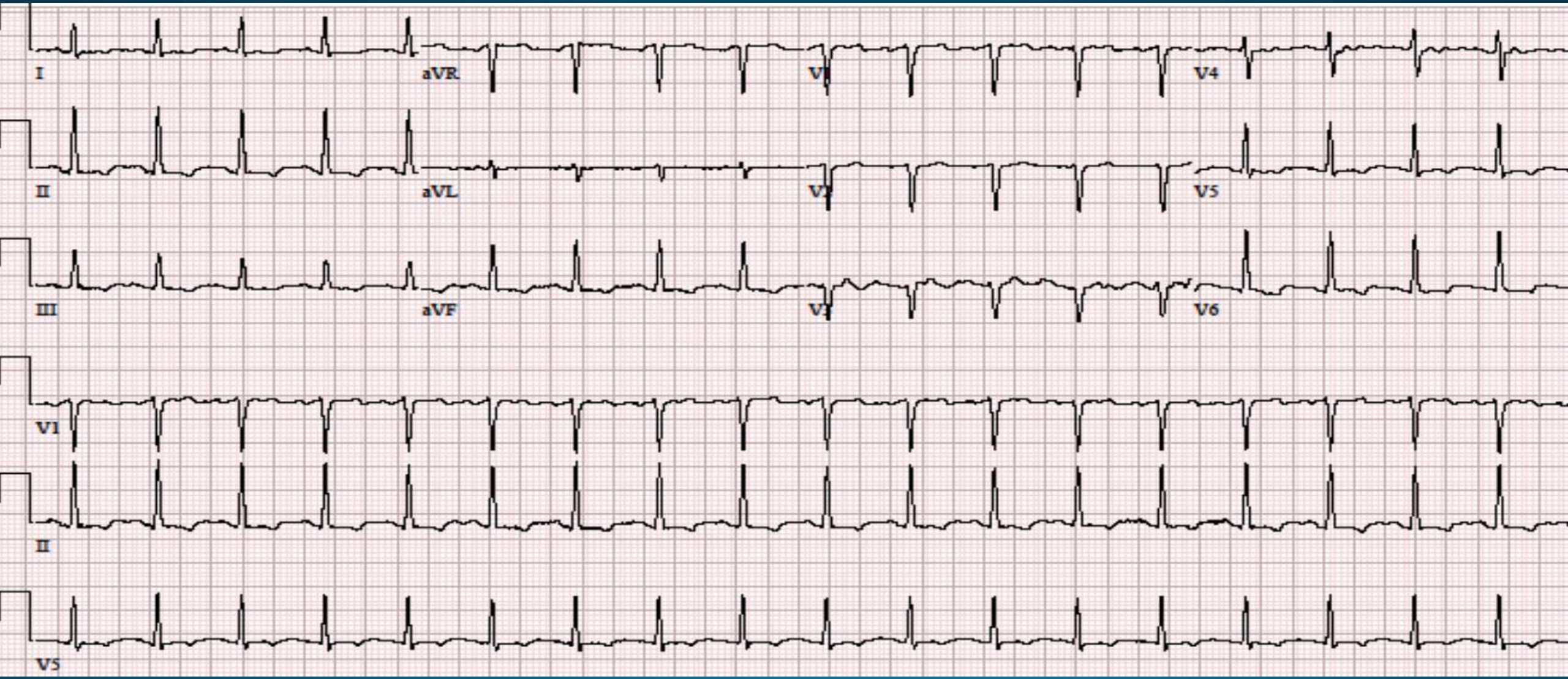
- Presented to NYP w/ increased SOB, new b/l arm swelling
- HR 92, BP 140/90, R 18, 95% RA
- Exam: b/l arm swelling, + cervical LN
- No fever, normal WBC


L




LOGIQ
E9
2
4
LEFT IJV MID


LOGIQ
E9
LEFT IJV LOWER


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5

Clinical Questions

- Why does this patient have increase SOB?
- Why does the patient have BILATERAL arm swelling?

Exam in ER

- Standing upright, NAD, RR 12-16, 96% RA
- Supine: RR 24, 90% RA, severe SOB
- Bulky cervical LN
- B/L arm edema
- Face not plethoric

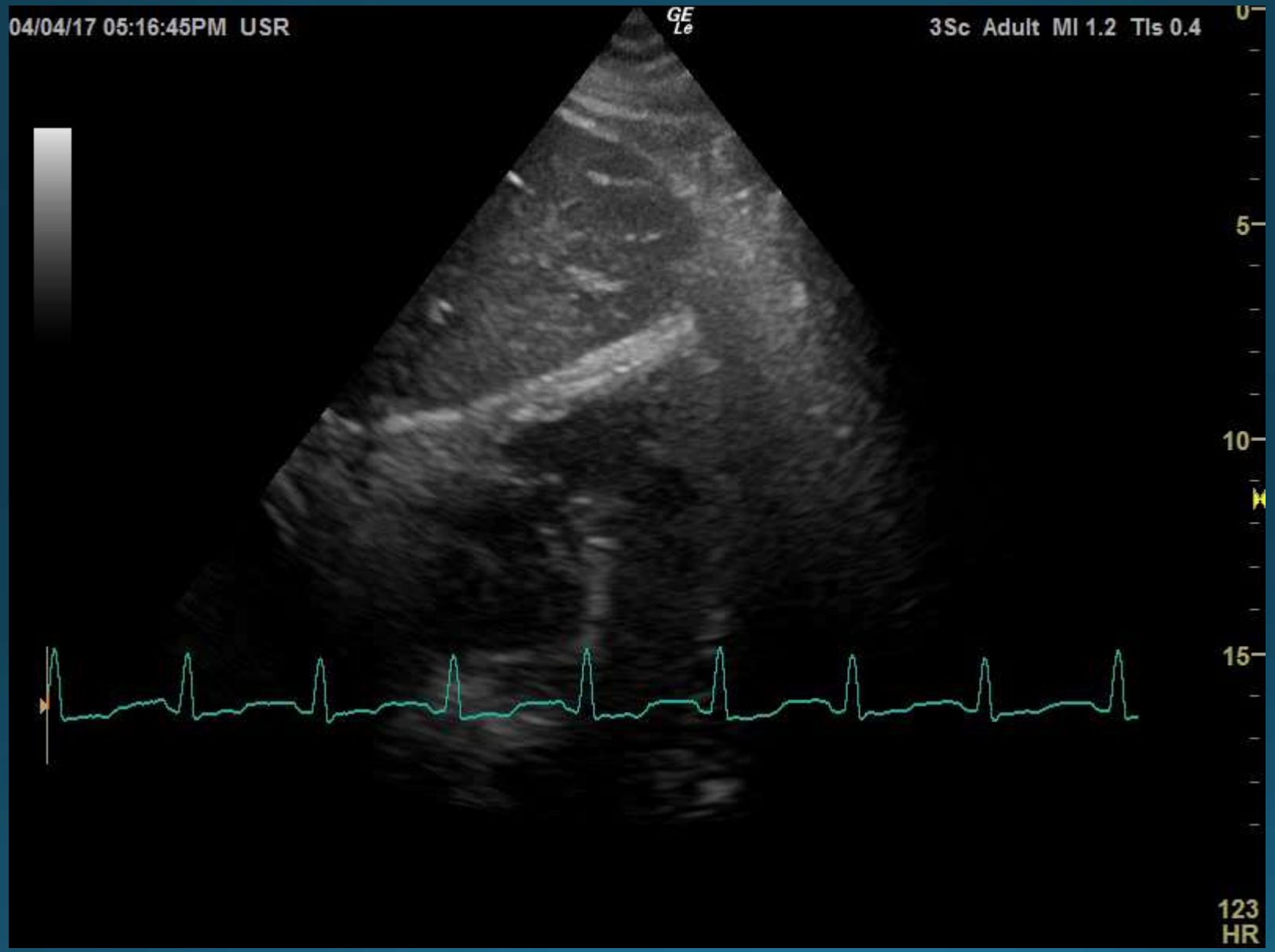
DDX of Orthopnea

- Large pleural effusion
- Pericardial Tamponade
- New onset CHF
- Pulmonary embolus (on Enoxaparin)
- Mass compressing the airway, the heart or great veins (decreasing blood return)

Bedside US was performed


04/04/17 05:07:19PM USR
GE
Le
3Sc Adult MI 1.2 TIs 0.4
0
5
10
15


04/04/17 05:14:07PM USR
GE
3Sc Adult MI 1.2 TIs 0.4
10
20
122
HR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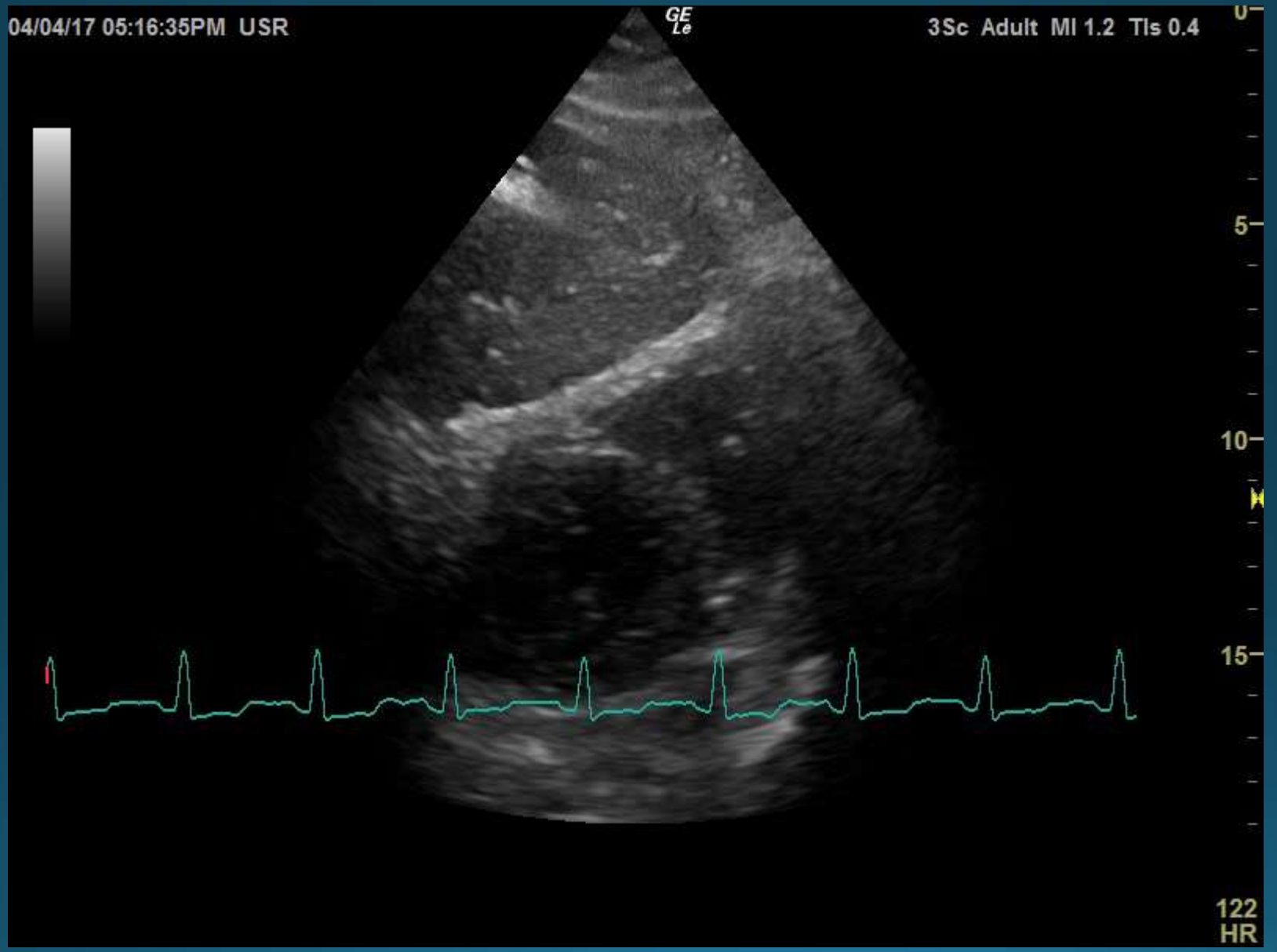
GE
Le
3Sc Adult MI 1.2 TIs 0.4
0
5
10
15
123
HR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GE
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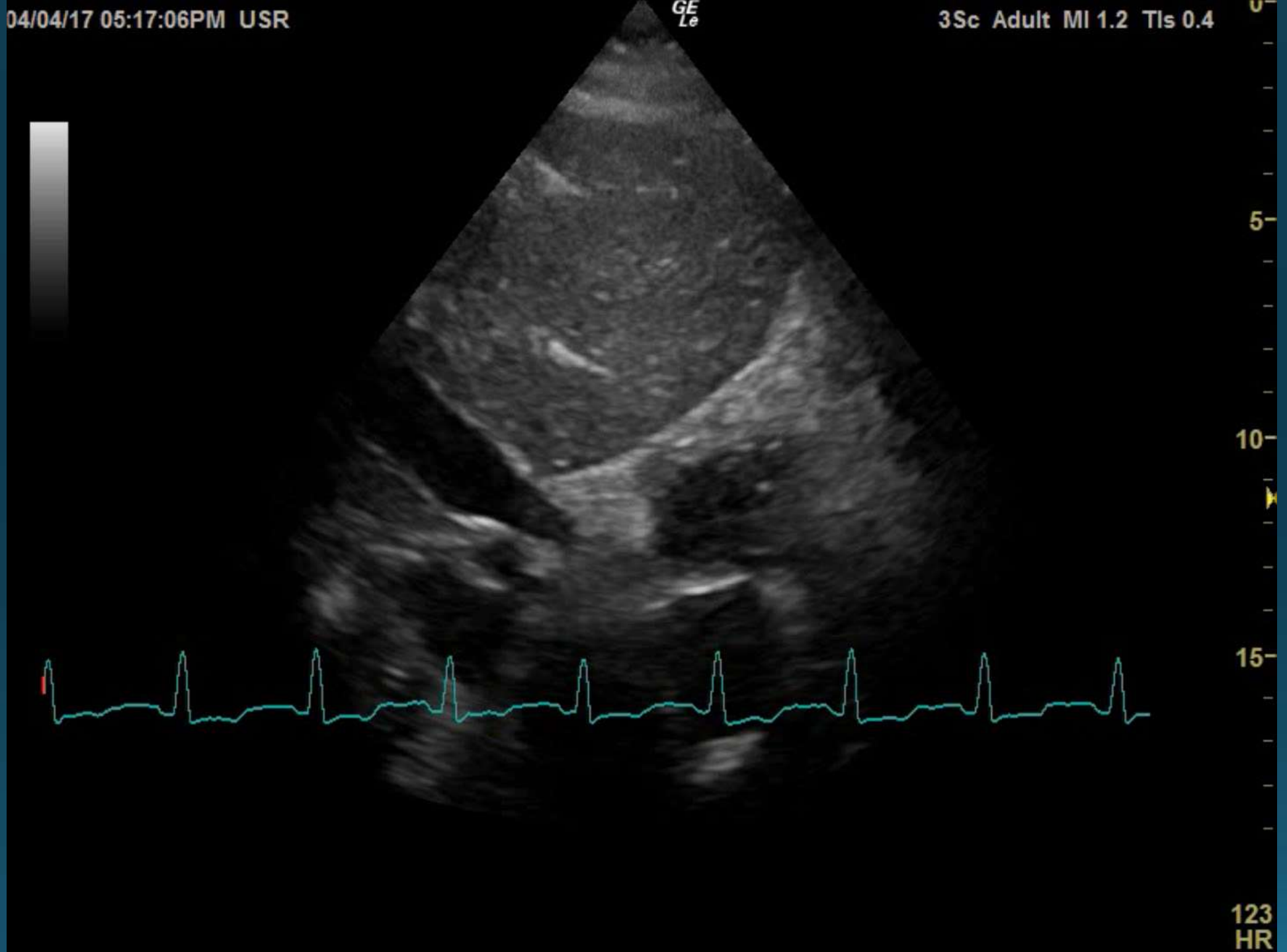
0
5
10
15
122
HR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GE
Le
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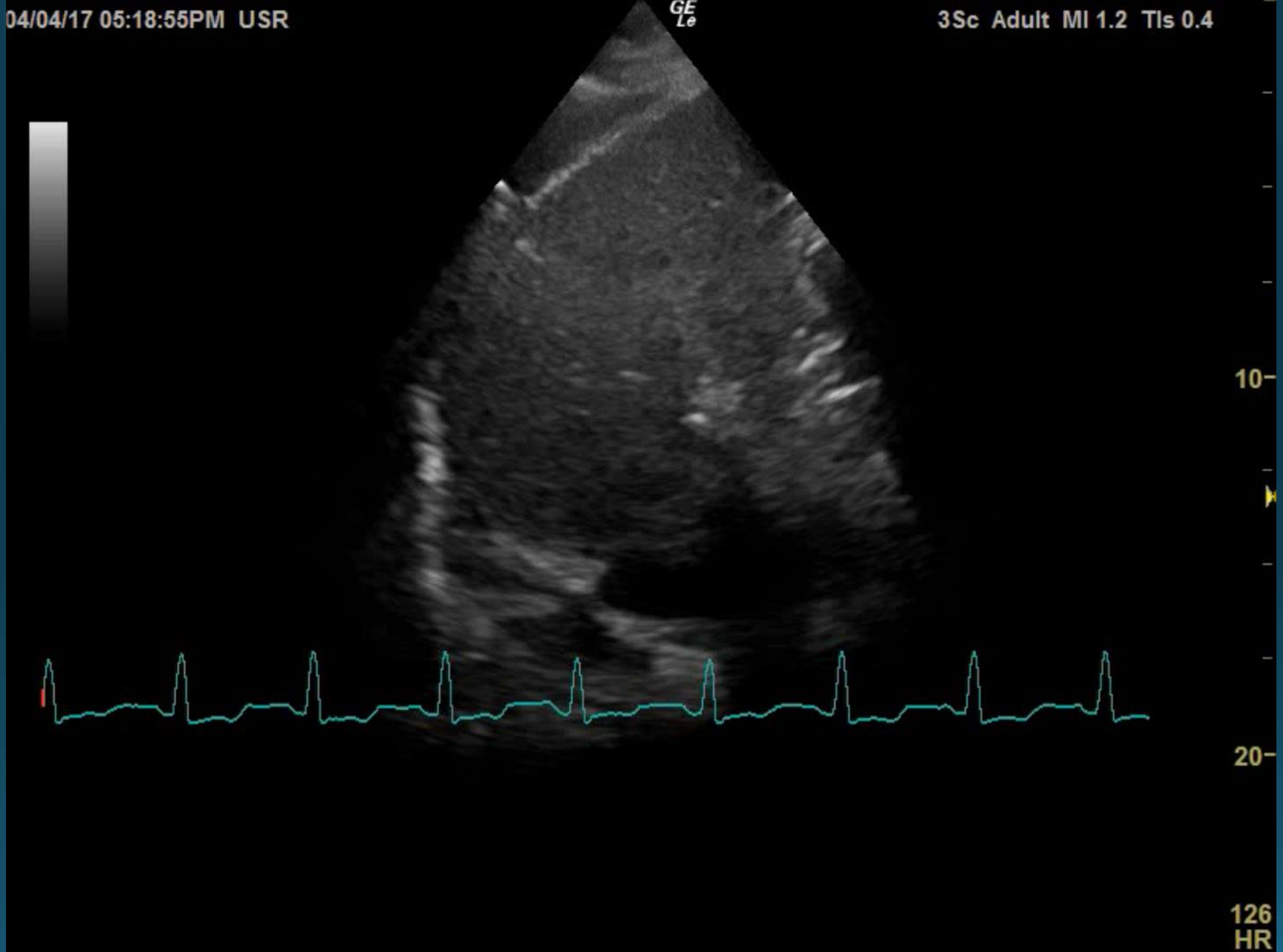
0
5
10
15
123
HR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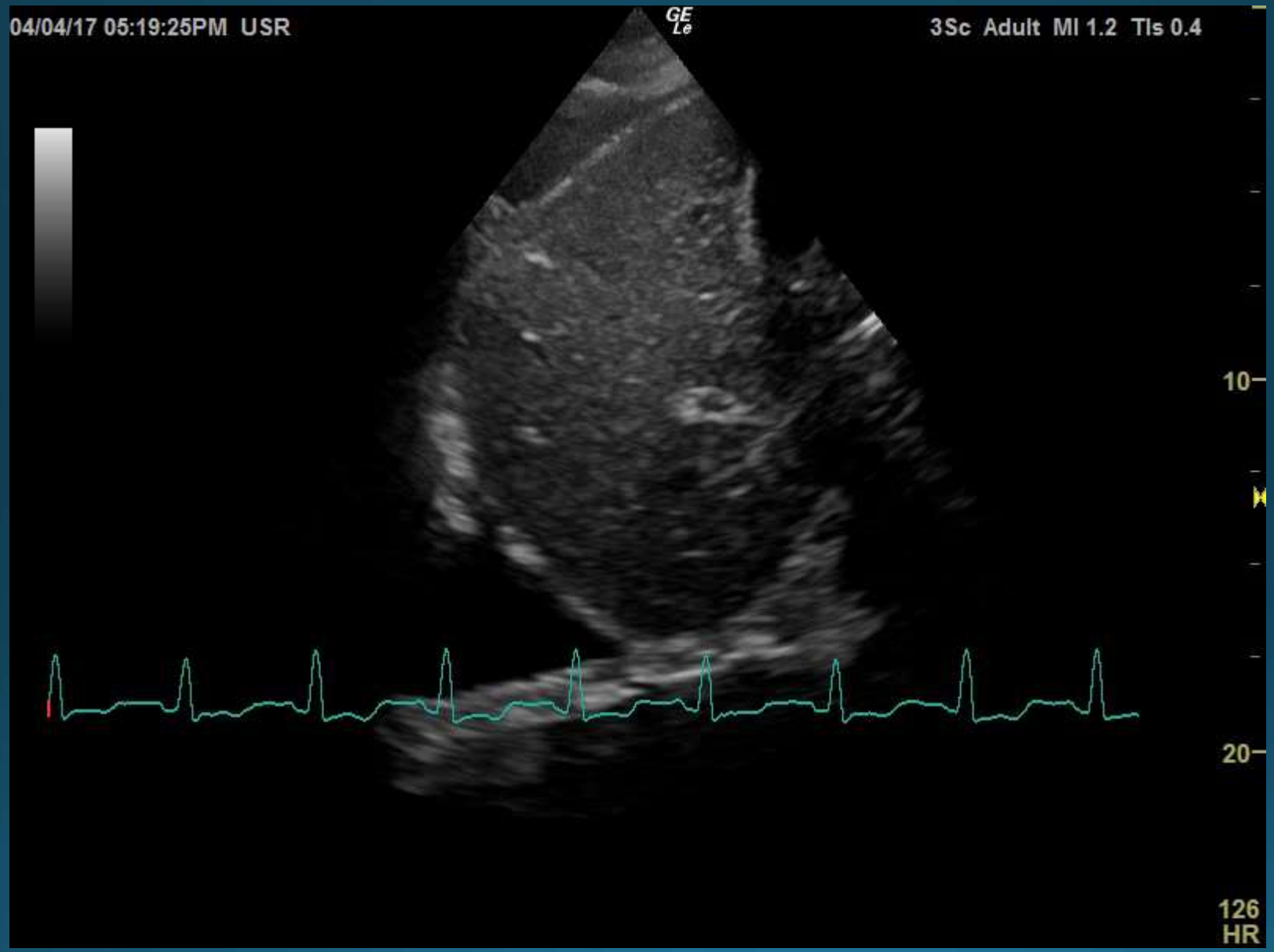
GE
Le
3Sc Adult MI 1.2 TIs 0.4
10
20
126
HR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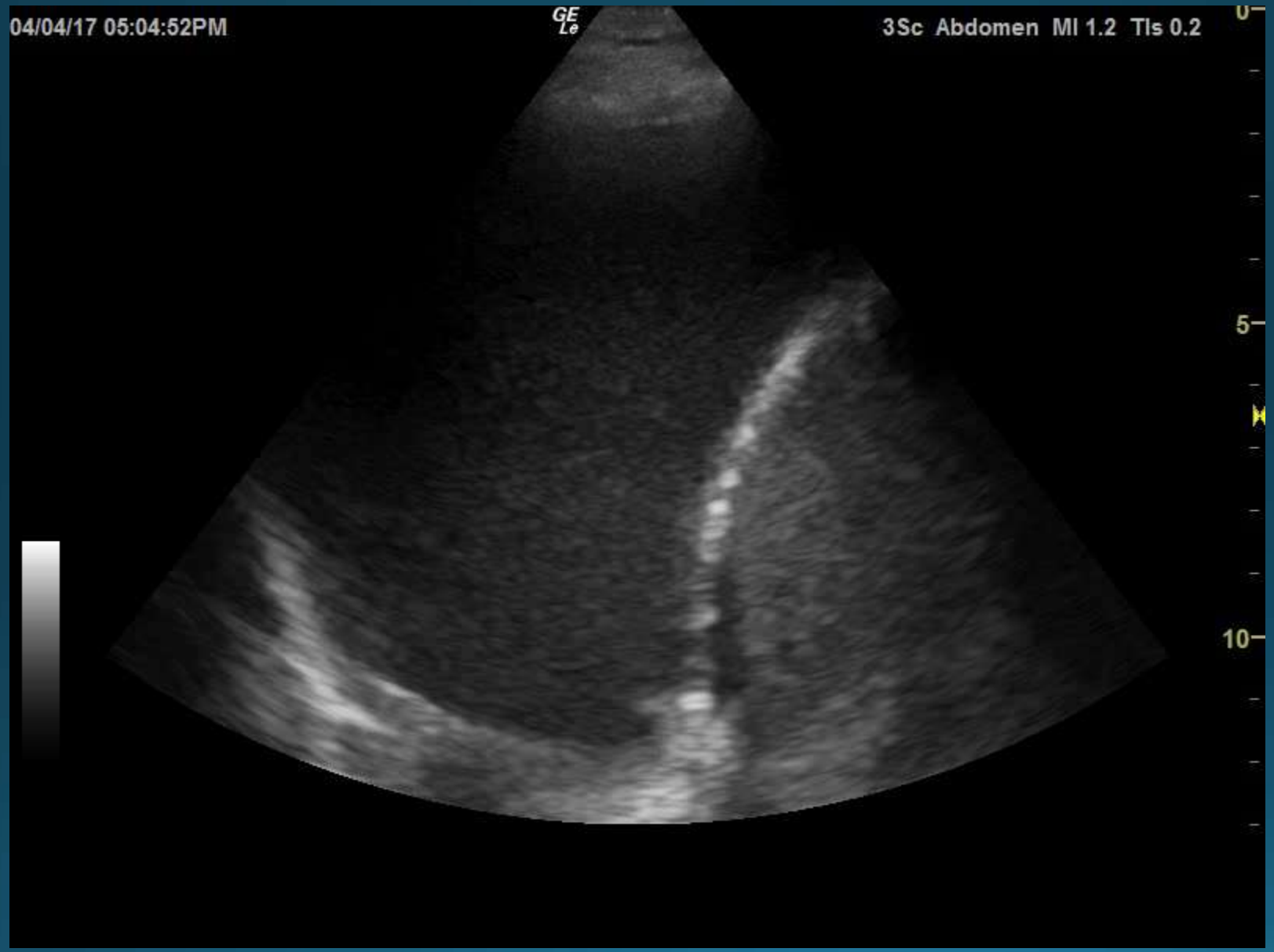
GE
Le
3Sc Adult MI 1.2 TIs 0.4
10
20
126
HR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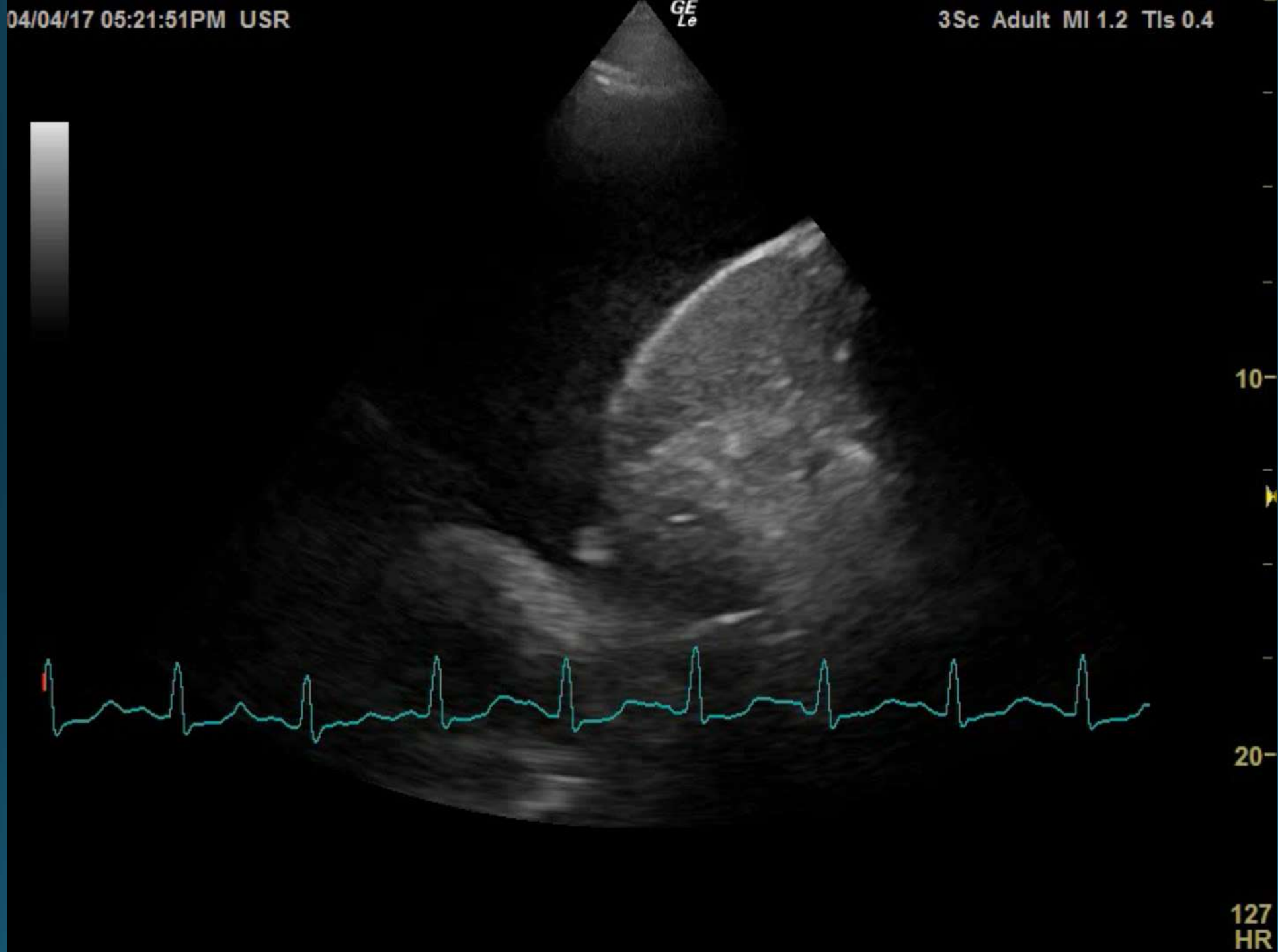
GE
3Sc Abdomen MI 1.2 TIs 0.2
0
5
10


04/04/17 05:21:51PM USR
3Sc Adult MI 1.2 TIs 0.4
10
20
127
HR

CT from OSH obtained

Official TTE HD2

NewYork-Presbyterian
The University Hospital of Columbia and Cornell

Version 2
New York Weill Cornell Center
Division of Cardiology - Echocardiography Lab
525 East 68th Street, Box 222
New York, NY 10021
Scheduling Phone #: 212.746.4650
Report Phone #: 212.746.4651

Adult Male Echocardiogram Report

Interpretation Summary

Technically difficult study.

Normal left ventricular size and function.

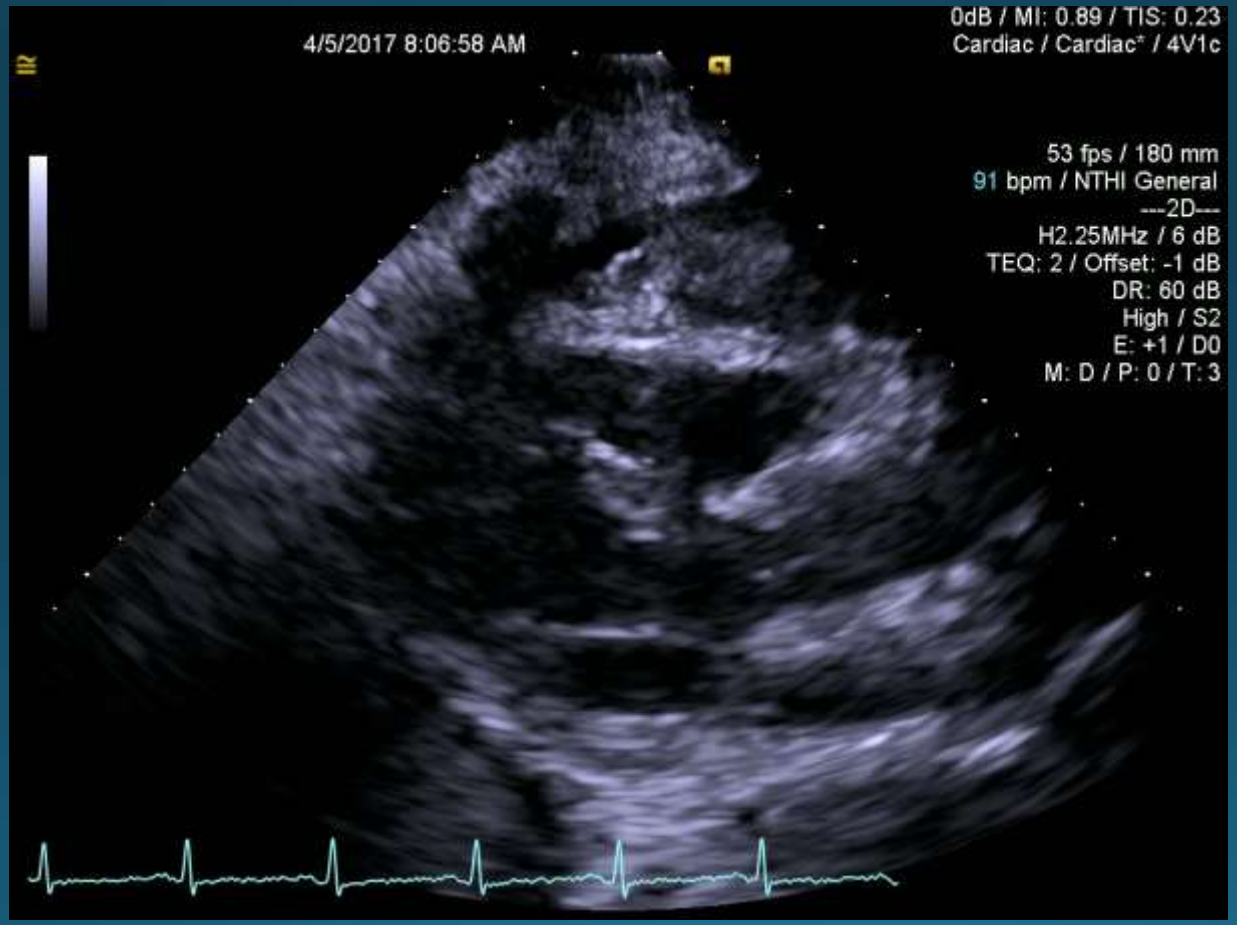
Normal right ventricular size and function.

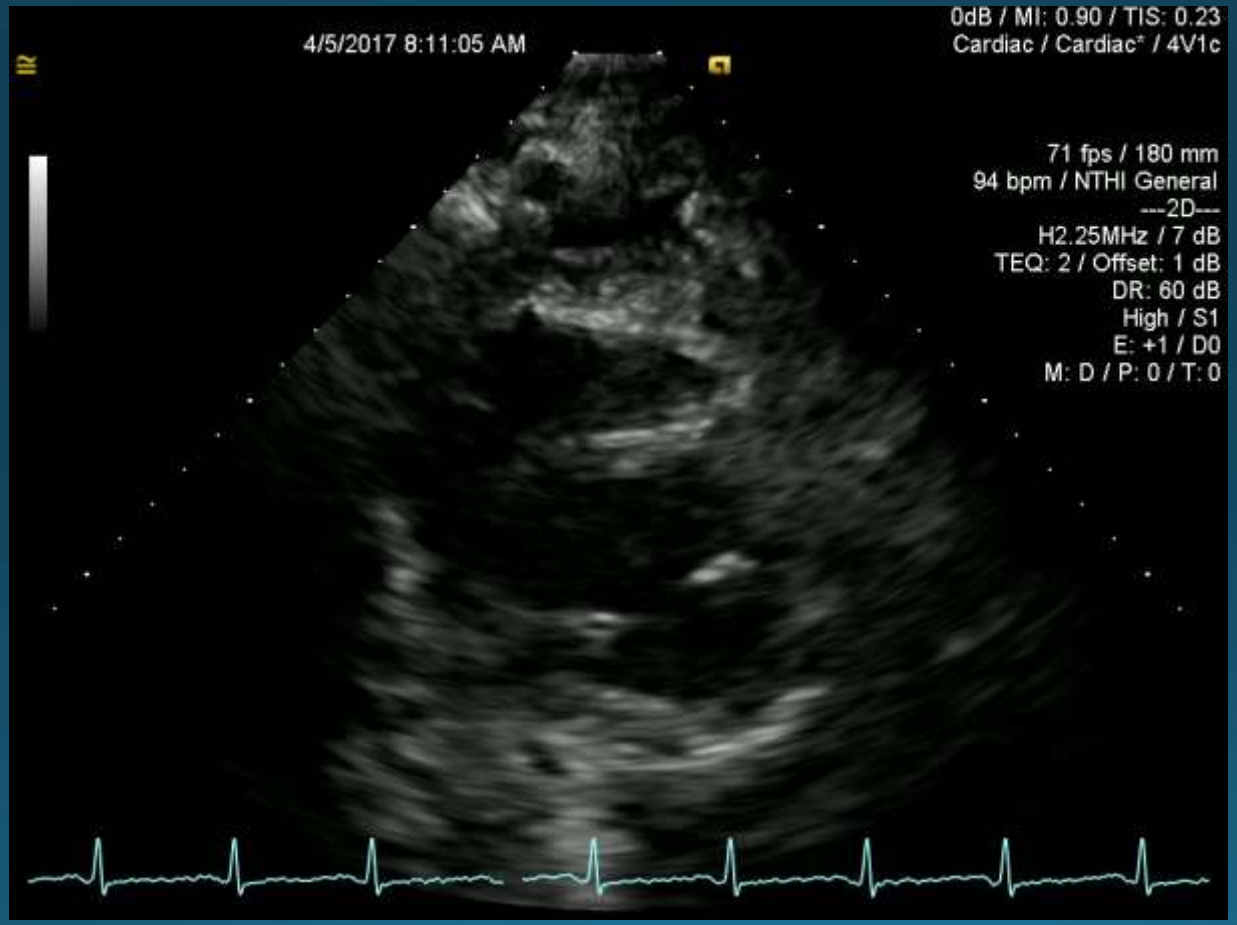
Normal valvular function by Doppler.

Pleural effusions.

Pulmonary artery systolic pressure cannot be determined from the present study.

Normal left ventricular diastolic relaxation.


4/5/2017 8:06:58 AM
0dB / MI: 0.89 / TIS: 0.23
Cardiac / Cardiac* / 4V1c
53 fps / 180 mm
91 bpm / NTHI General
---2D---
H2.25MHz / 6 dB
TEQ: 2 / Offset: -1 dB
DR: 60 dB
High / S2
E: +1 / D0
M: D / P: 0 / T: 3


4/5/2017 8:11:05 AM
0dB / MI: 0.90 / TIS: 0.23
Cardiac / Cardiac* / 4V1c
71 fps / 180 mm
94 bpm / NTHI General
---2D---
H2.25MHz / 7 dB
TEQ: 2 / Offset: 1 dB
DR: 60 dB
High / S1
E: +1 / D0
M: D / P: 0 / T: 0

Clinical question

Role of TTE in Dx of mediastinal masses

EXTRA-CARDIAC FINDINGS ON TRANSTHORACIC ECHO EXAMS

Extracardiac Findings on Routine Echocardiographic Examinations

Mohamad Alkhouli, MD, Paul Sandhu, MD, Susan E. Wiegers, MD, Pravin Patil, MD, John Panidis, MD, and Amit Pursnani, MD, *Philadelphia, Pennsylvania; Boston, Massachusetts*

J Am Soc Echocardiogr 2014;27:540-6.

- Temple database: TTE & TEE reports, 2008-2011
- Searched literature for definitions of Extra Cardiac Findings (ECF)
- Surveyed faculty for phrases to report ECF
- Searched all the echo reports with key phrases
- A subset of the echo images was reviewed independently by 2 cardiologists, noting findings and ECF
- Chart review for all patients with ECF were done

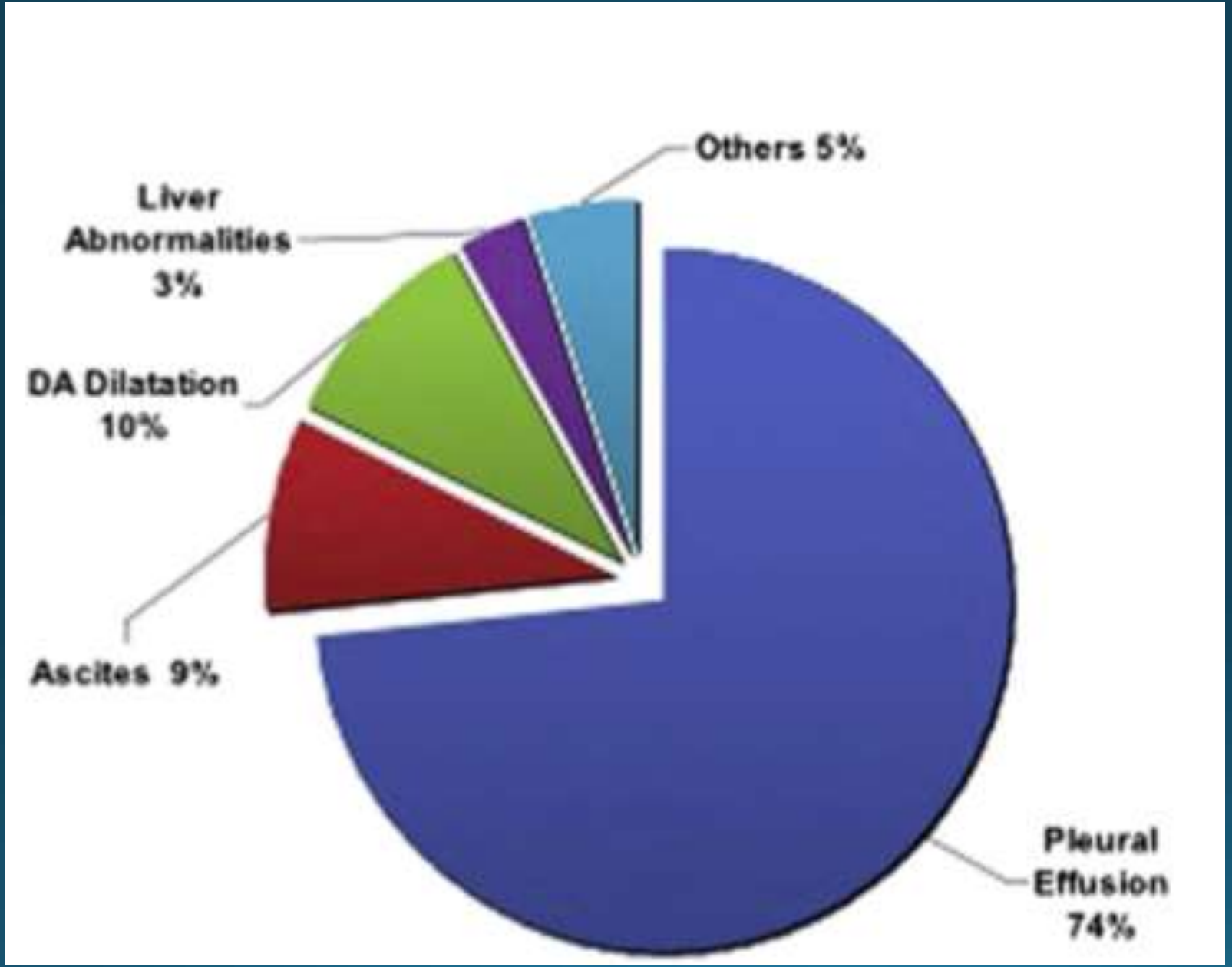

Others 5%
Liver Abnormalities 3%
DA Dilatation 10%
Ascites 9%
Pleural Effusion 74%

Table 1 Incidence of ECFs on TTE and TEE

ECF	TTE (*n* = 39,269)	TEE (*n* = 1,798)
Pleural effusion	1,032 (2.6%)	45 (2.5%)
Lung or mediastinal mass	4 (<0.1%)	1 (<0.1%)
Ascites	129 (0.3%)	3 (0.2%)
Liver abnormalities	41 (0.1%)	0 (0%)
Hernia	13 (<0.1%)	1 (<0.1%)
DA dilatation	141 (0.4%)	0 (0%)
DA thrombus or ulcer	3 (<0.1%)	34 (2%)
DA severe atheroma	4 (<0.1%)	107 (6%)
Mild to moderate DA atheroma	19 (<0.1%)	206 (11.5%)
IVC thrombosis	10 (<0.1%)	2 (0.1%)
Pulmonary embolism	2 (0.1%)	0 (0%)

CONCLUSION

- Prevalence of ECF - 4.4% - lower than reported on CT (10-60%) and MRI (up to 43%)
- Most ECFs were benign (86%)
- Excellent agreement between readers in ruling out ECFs when they were absent
- Significant variability in identifying ECFs when they were present. Such differences suggest a strong need for standardized training in the detection of ECFs on echocardiography and uniform reporting procedures for these findings.

NON-CARDIAC FINDINGS ON ECHOCARDIOGRAPHY

Khosa, J Am Soc Echocardiogram 2012;25:553-7

Prevalence of Non-Cardiac Pathology on Clinical Transthoracic Echocardiography

- TTE database December 2008, both inpatient & outpatient
- Retrospective review of 1008 TTEs; Subcostal view
- TTE interpreted by a board certified echo cardiologist
- Random subset of 300 studies chosen for review of NCFs
- Trained radiologists reviewed subcostal clips for NCF without knowledge of TTE reports

Table 2 Classification of NCFs (n = 77)

Category	Inpatient (n = 47 [61%])	Outpatient (n = 30 [39%])
Benign (n = 20 [26%])	Hepatic cyst (7)	Hepatic cyst (8) Hemangioma (3) Uncomplicated cholelithiasis (1) Renal collecting system fullness (1)
Indeterminate (n = 52 [67%])	Ascites (16) Pleural effusion (14) Cholecystitis (4) Choledocolithiasis (1) Indeterminate hepatic cyst (3)	Ascites (5) Pleural effusion (5) Cholecystitis (1) Dilated gallbladder with polyp (1) Indeterminate hepatic cyst (1) Calcified adrenal gland (1)
Worrisome (n = 5 [7%])	IVC filling defect (1) Liver metastasis (1)	IVC stenosis (1) Liver involvement by sarcoid (1) Portal vein thrombus (1)

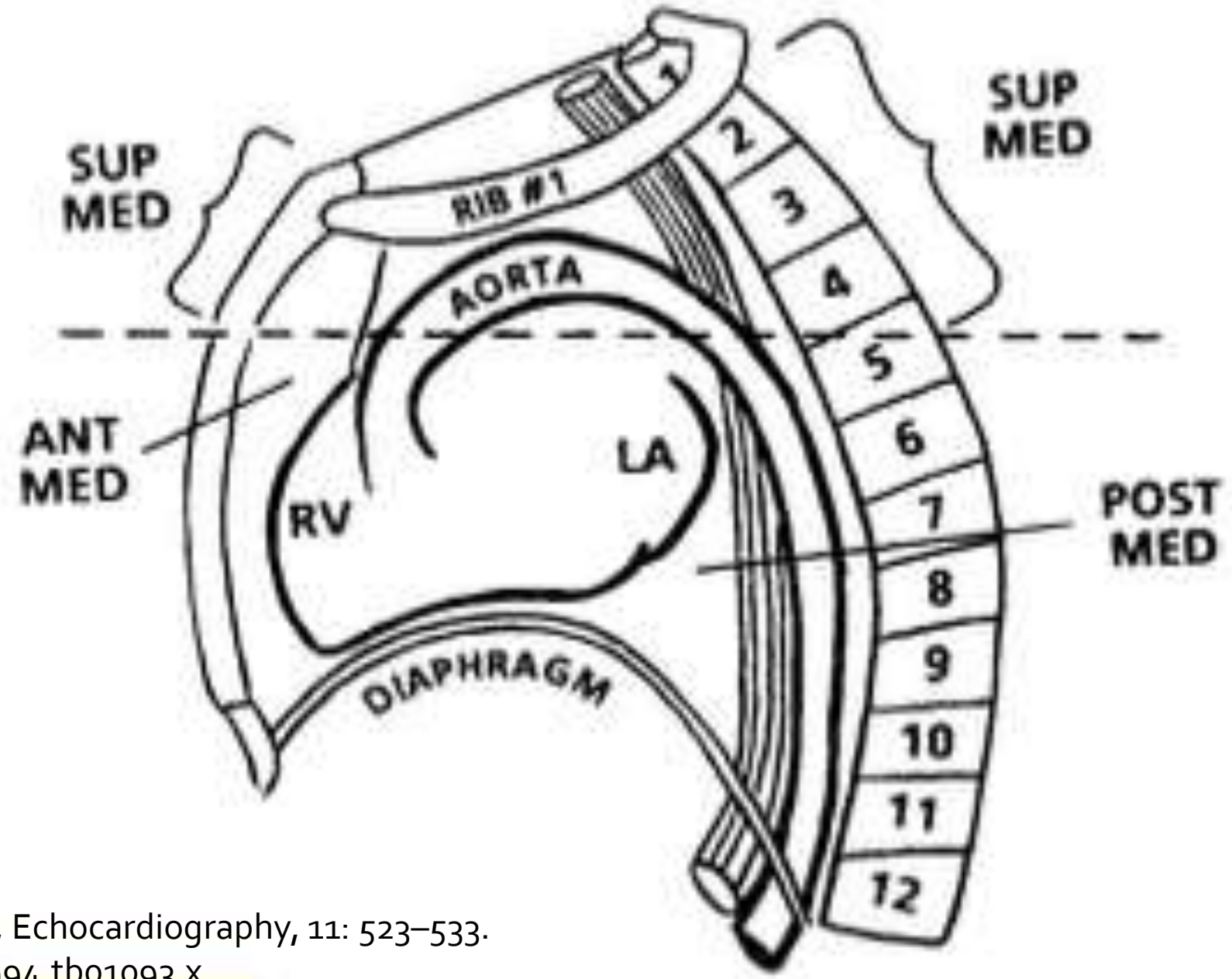
- NCFs identified in 7.5% of patients
- 93% were low and intermediate risk findings
- potentially management-altering NCFs was only 3.8%, of which the majority were previously known.
- 22% of ECFs were included in original echo reports

Chest. 1988 Jan;93(1):144-8.

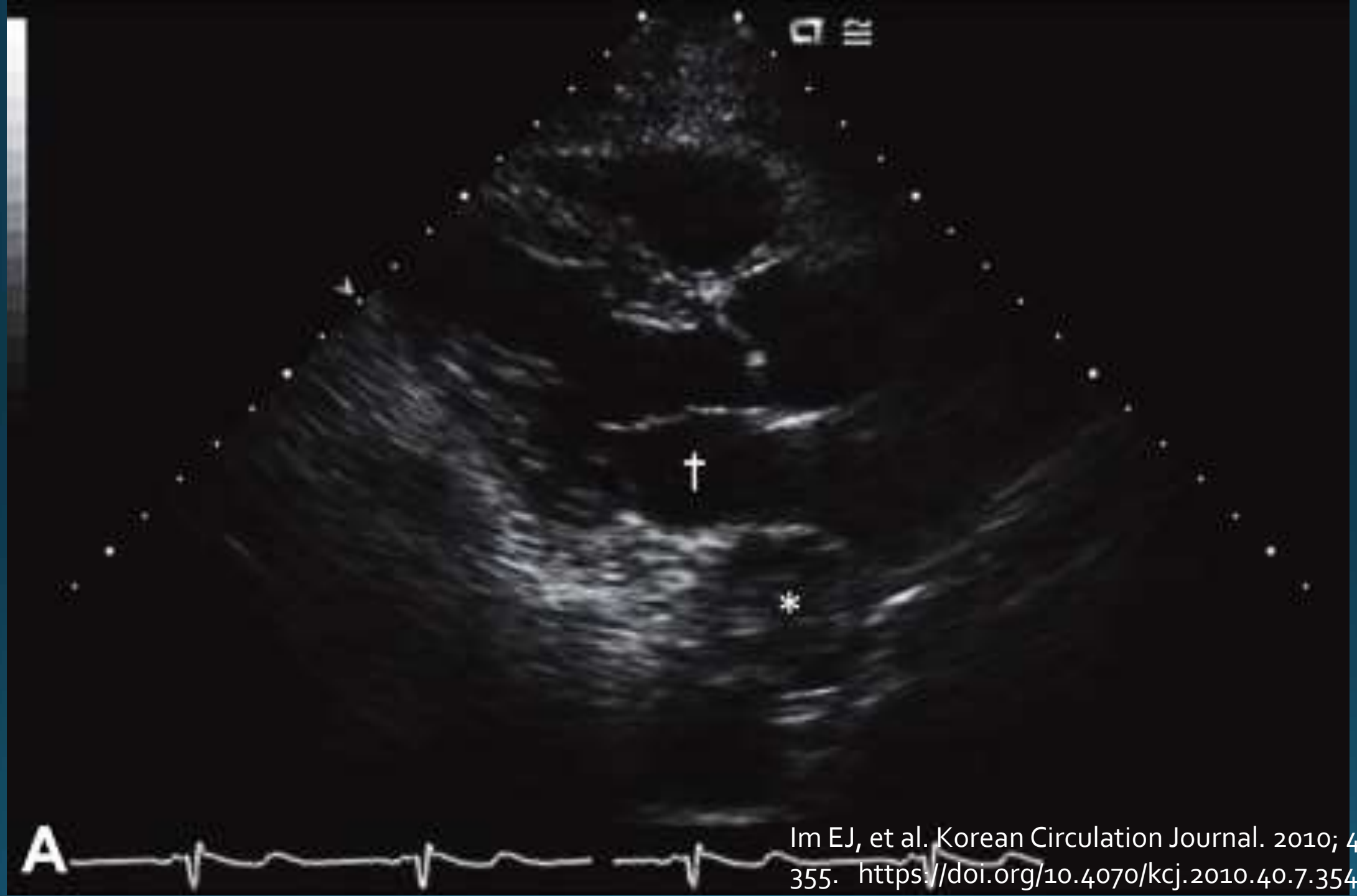
Echocardiographic recognition of mediastinal masses.

Mancuso L[1], Pitrolo F, Bondì F, Iacona MA, Magrin S, Marchi S, Mizio G.

- Compared TTE and CXR with CT (Gold Standard)
- 50 patients: 33 with mediastinal mass on CT
- TTE
  - Sens=91%; Spec=94%
  - LR(+)=15, LR(-)=0.1
- CXR
  - Sens=61%; Spec=94%
  - LR(+)=10, LR(-)=1.7
- Cardiac compression not addressed.



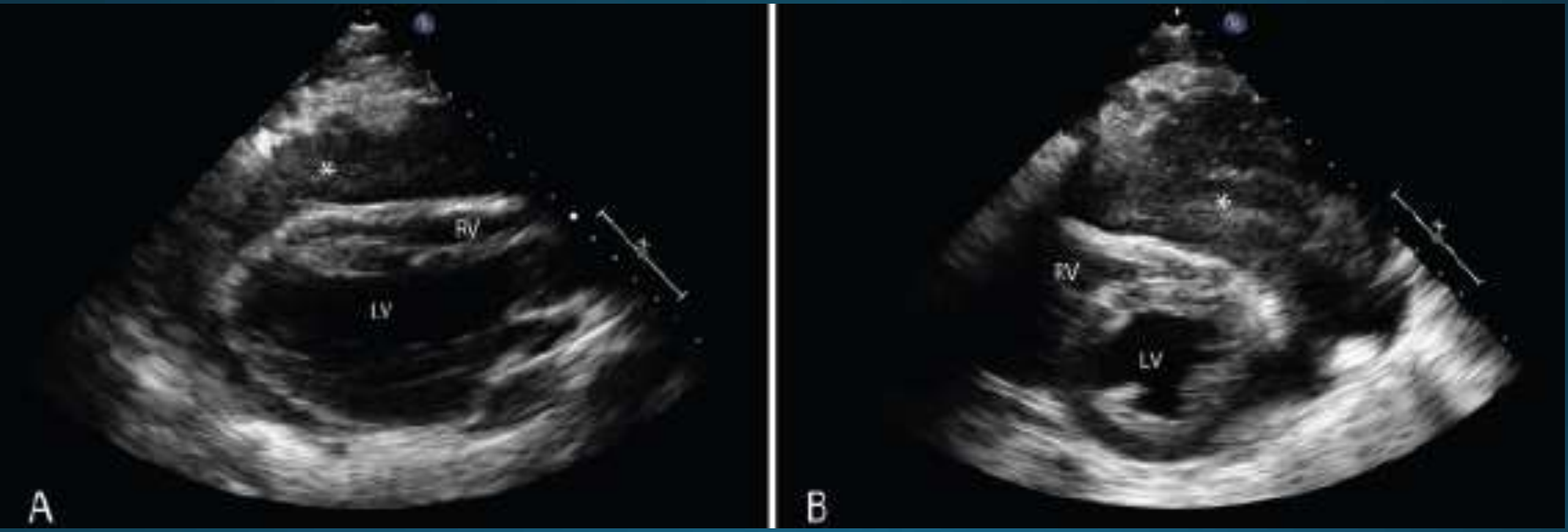
D'CRUZ, I.A., et al. (1994), Echocardiography, 11: 523–533. doi:10.1111/j.1540-8175.1994.tb01093.x



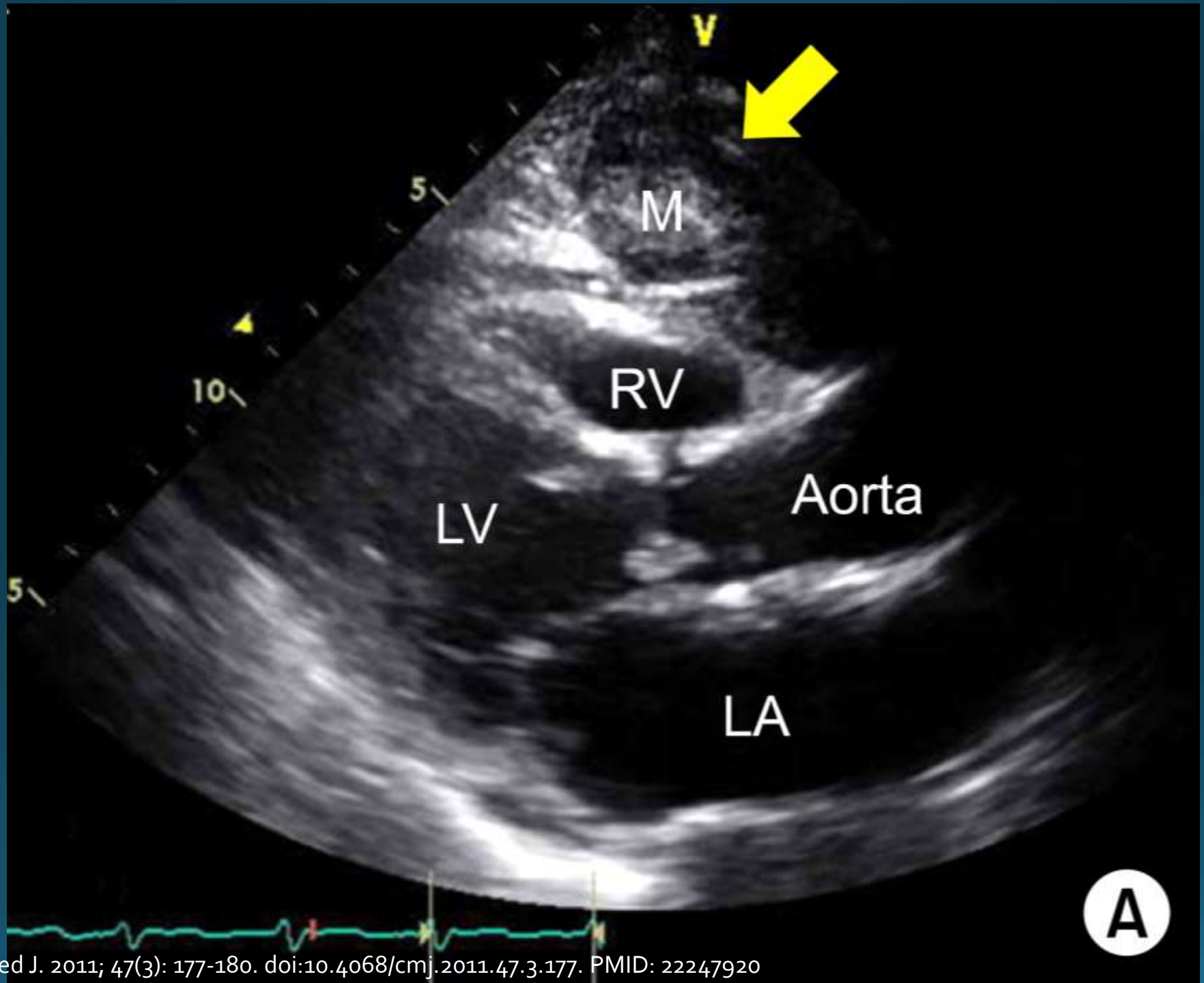
Im EJ, et al. Korean Circulation Journal. 2010; 40(7): 354-355. https://doi.org/10.4070/kcj.2010.40.7.354

Im EJ, et al. Korean Circulation Journal. 2010; 40(7): 354-355. https://doi.org/10.4070/kcj.2010.40.7.354

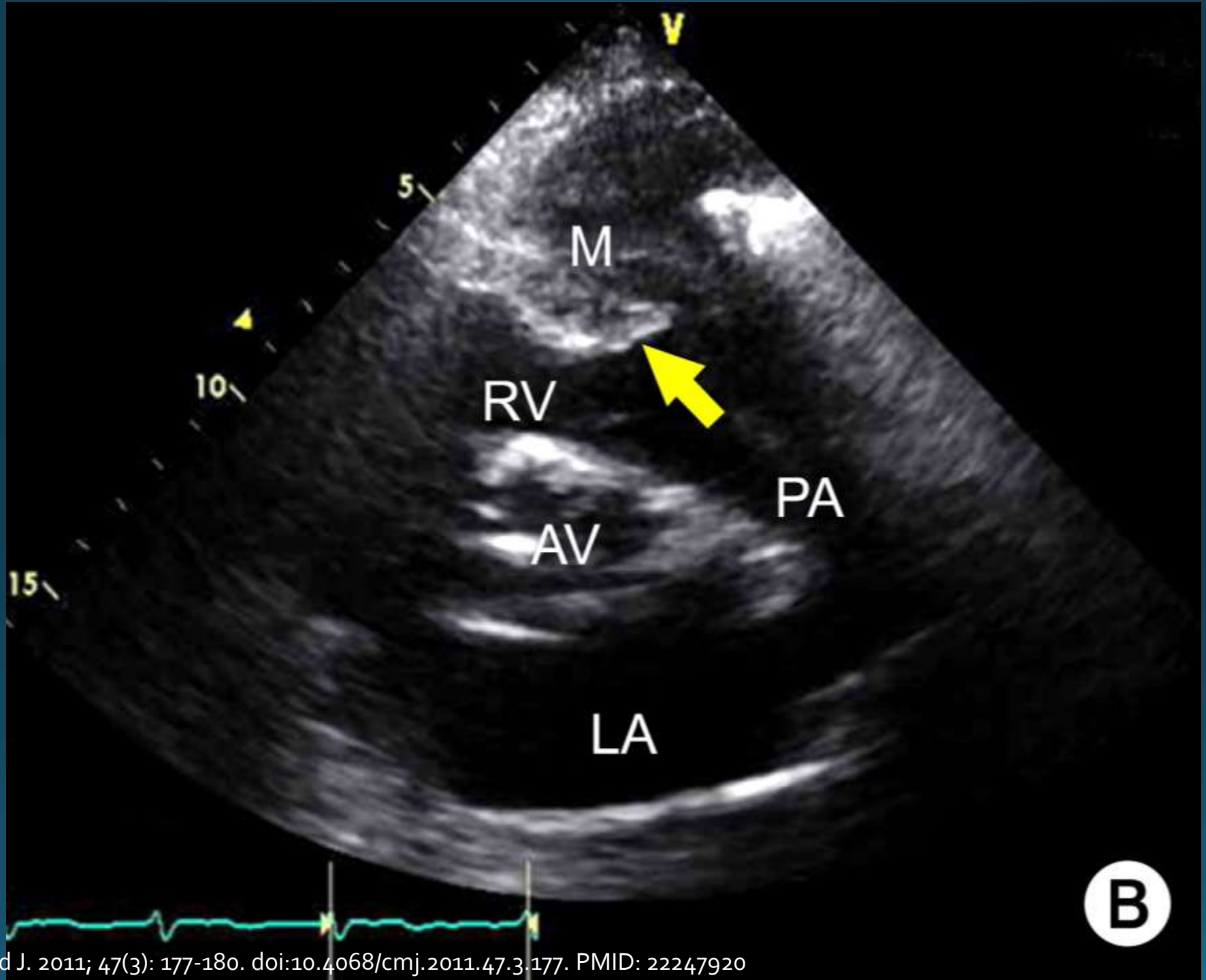
Alkhouli M et al. Journal of the American Society of Echocardiography 2014 27(5) 540 -546



Harris G.S., et al. J Clinical Case Studies 2016 1(3) http://dx.doi.org/10.16966/2471-4925.121. Accessed 5/16/17



Lee DI, et al. Chonnam Med J. 2011; 47(3): 177-180. doi:10.4068/cmj.2011.47.3.177. PMID: 22247920



Lee DI, et al. Chonnam Med J. 2011; 47(3): 177-180. doi:10.4068/cmj.2011.47.3.177. PMID: 22247920