

POCUS Conference 5/17/17

# Intracardiac Masses

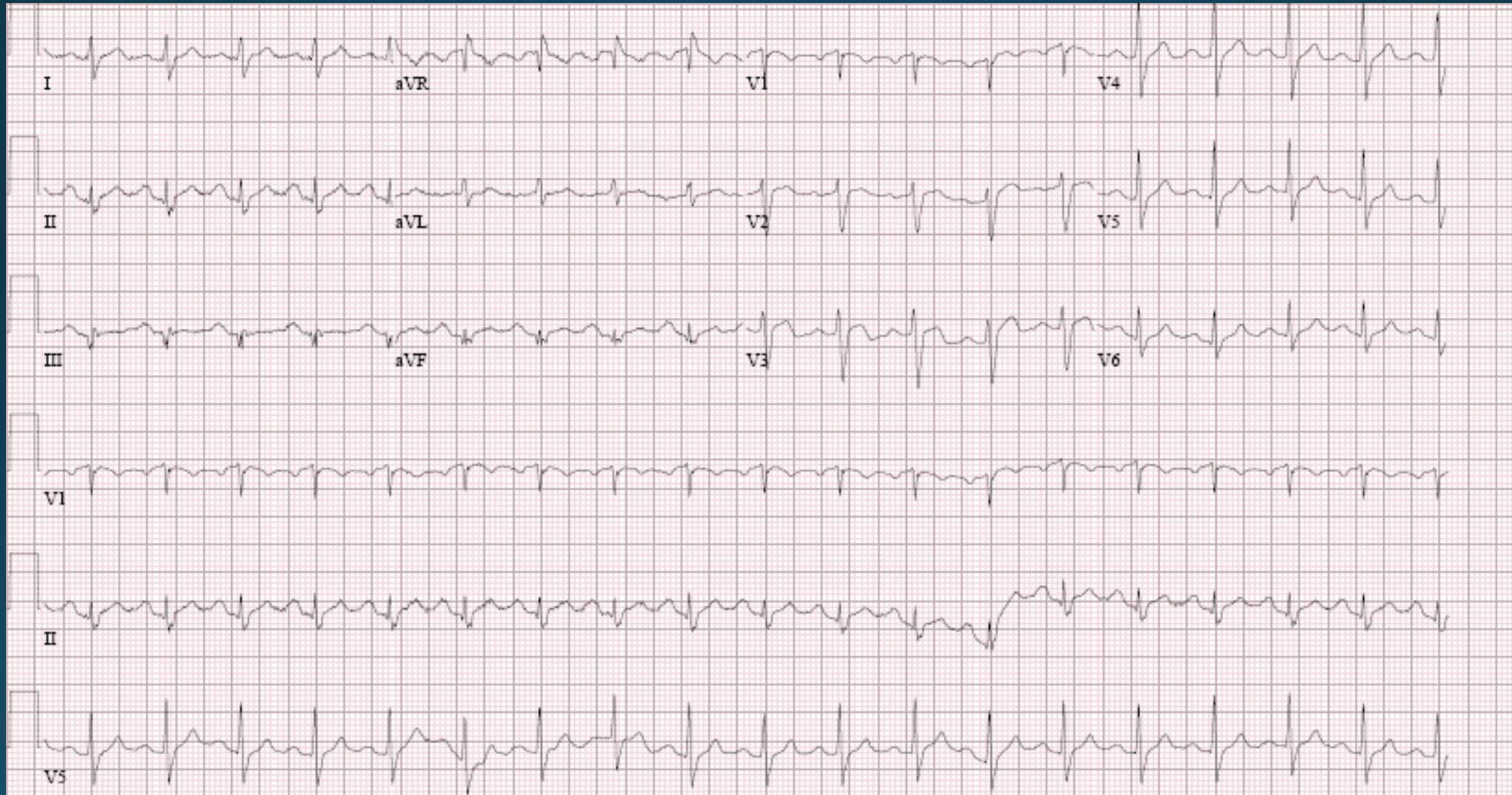
# Intracardiac masses

- Normal anatomical variants
- Primary cardiac tumors
  - Benign
  - Malignant
- Metastatic tumors
- Thrombi

# Case: Mr. M

- 50M h/o DVT/PE 2011, no longer on AC, presenting with shortness of breath
- HR 110, BP 110/70, SpO<sub>2</sub> low-90s on 2-4L
- Troponin 1.29 → 1.27
- BNP 431

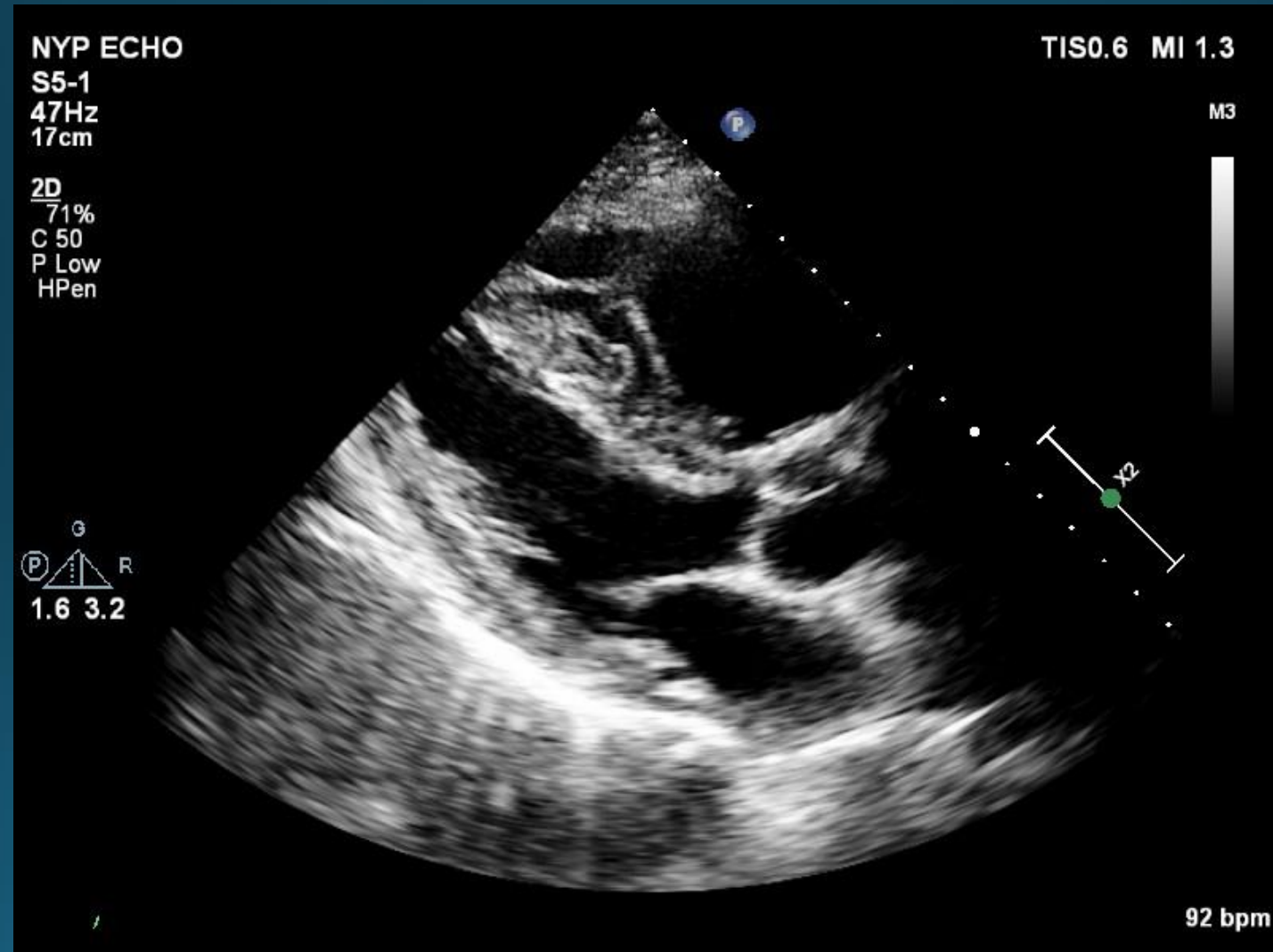
# Case: Mr. M



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- CT PE performed in ED
- Multiple segmental and subsegmental PEs
- Flattening of the interventricular septum, dilated RA and RV

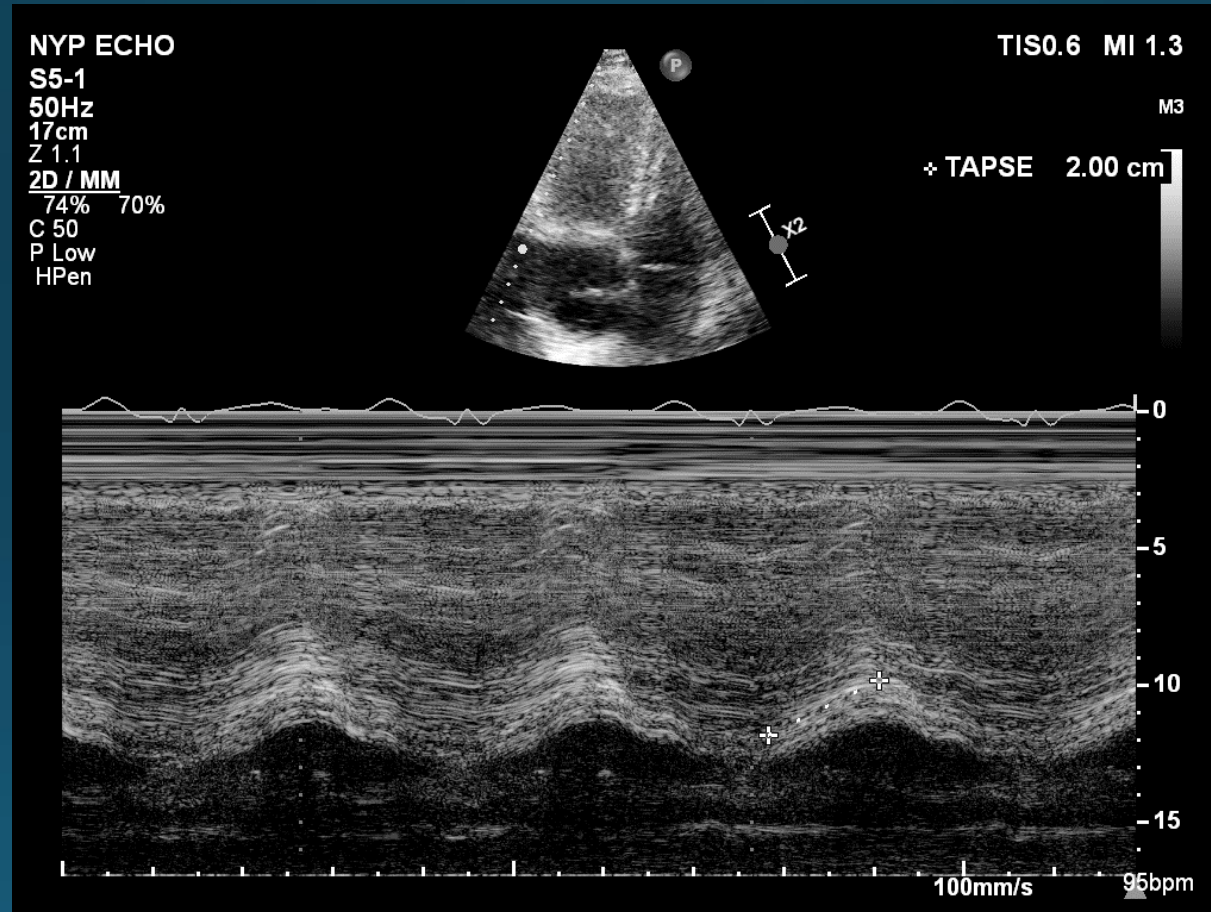
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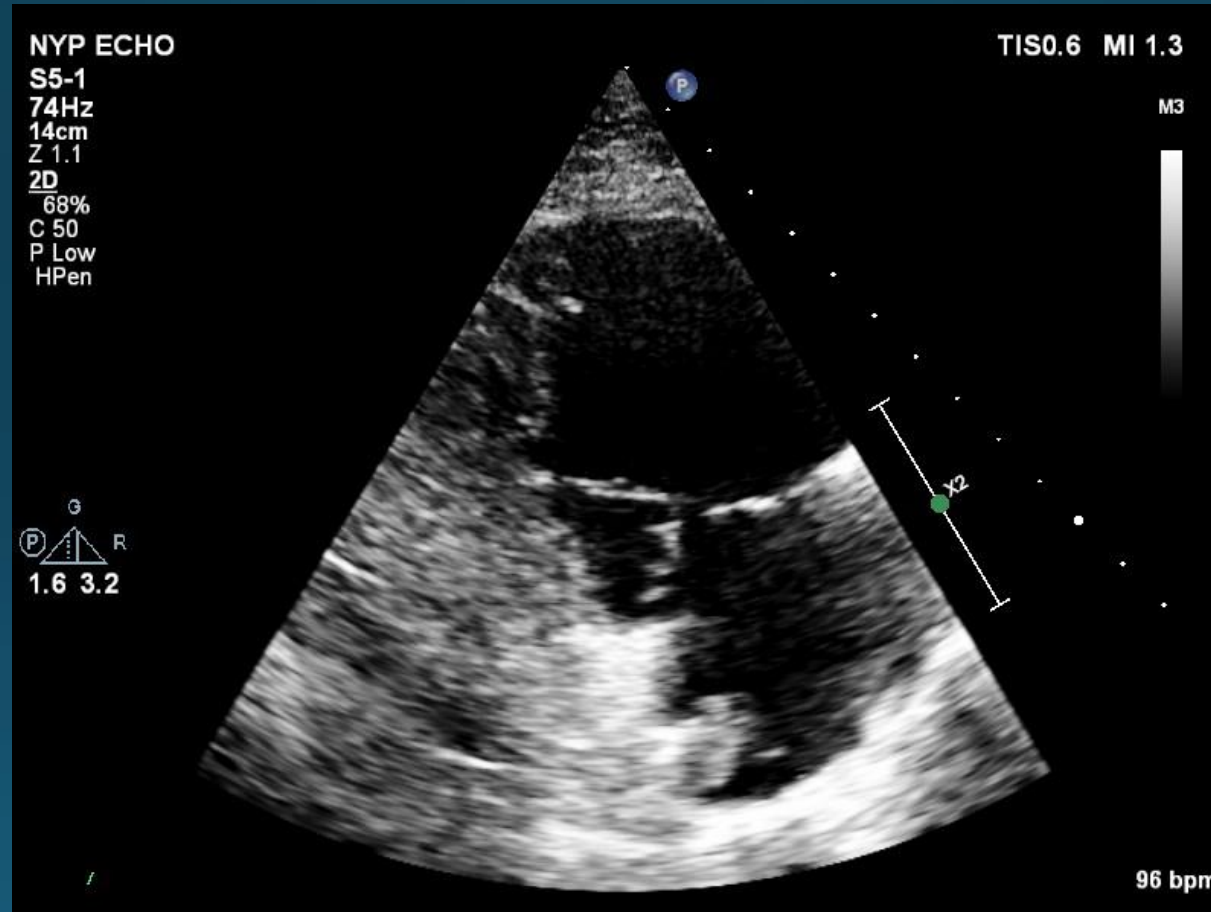


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# Intracardiac masses

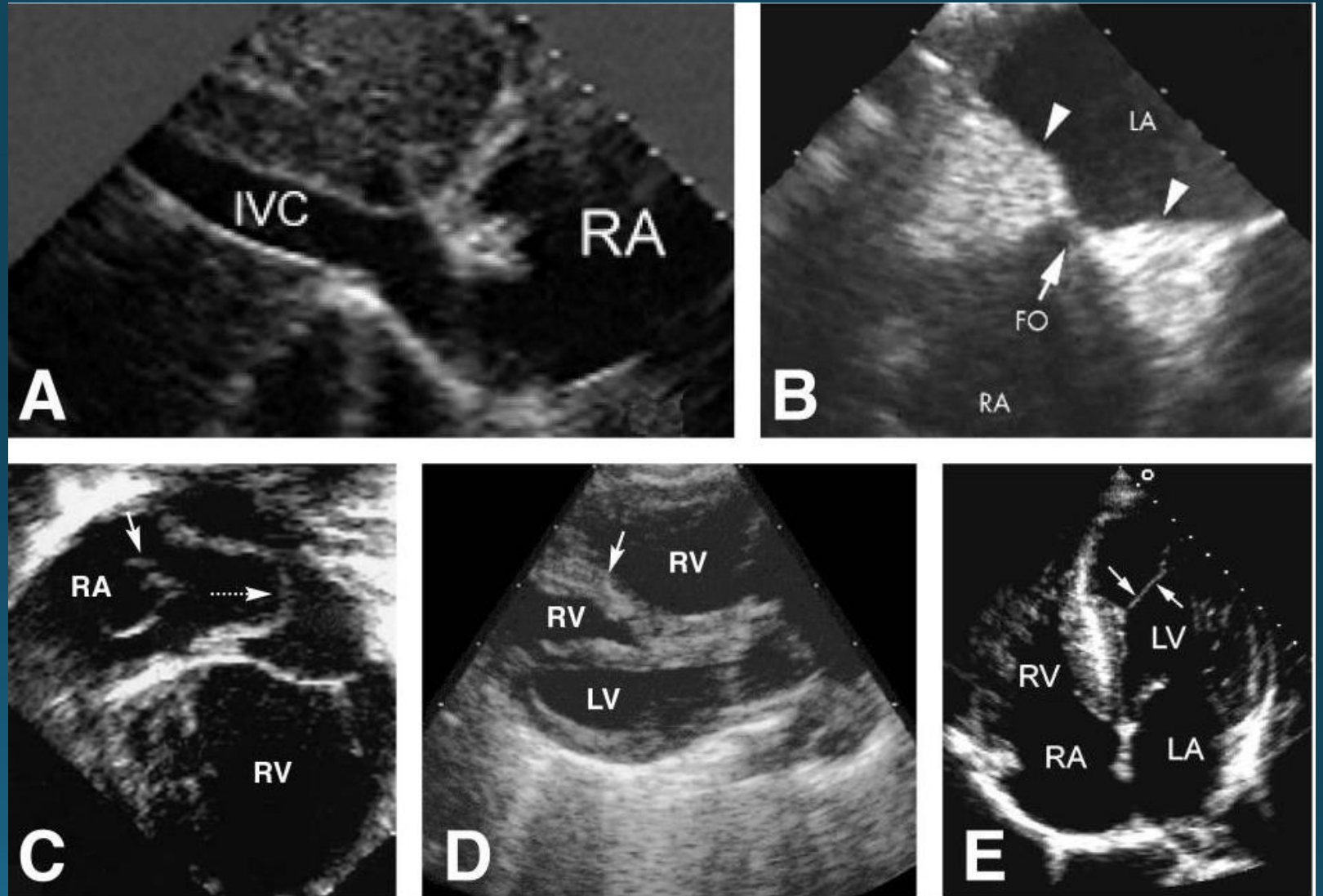
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# Normal anatomical variants

Right Atrium	Right Ventricle	Left Atrium	Left Ventricle
Chiari network	Moderator band	Fossa ovalis	False chords
Eustachian valve	Trabeculations	Calcified mitral annulus	Papillary muscles
Crista terminalis		Coronary sinus	Trabeculations
Lipomatous hypertrophy of the interatrial septum		Lipomatous hypertrophy of the interatrial septum	
Pectinate muscles		Pectinate muscles	
		Transverse sinus	

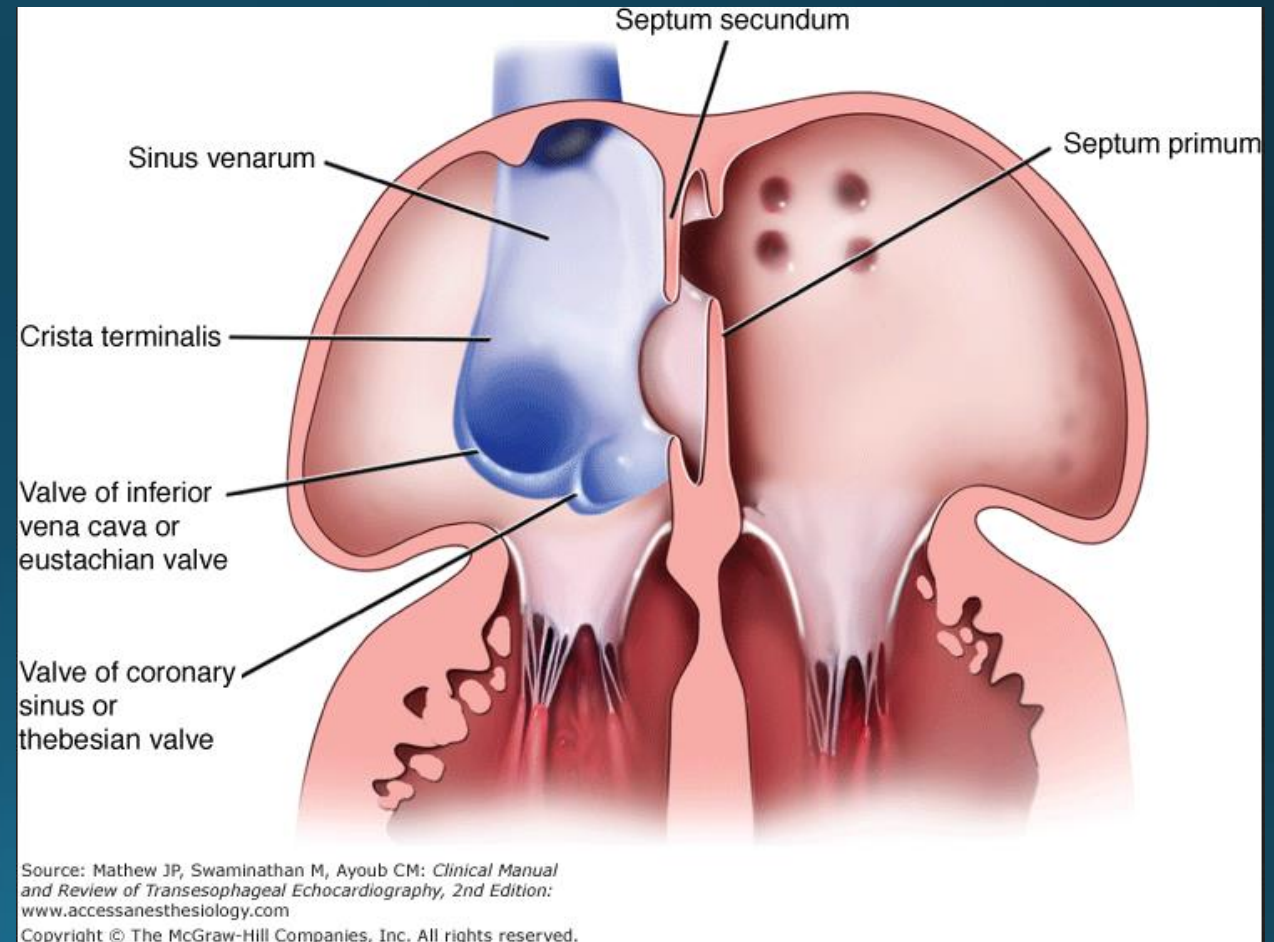
# Normal anatomical variants

- A) Eustachian valve
- B) Lipomatous hypertrophy of interatrial septum
- C) Solid arrow: Chiari network; Dotted arrow: aneurysmal atrial septum
- D) Moderator band
- E) LV false tendon



# Eustachian valve

- In utero directs oxygen-rich blood from RA to LA
- May atrophy, persist as a small ridge, as a mobile structure, or as an intraatrial band



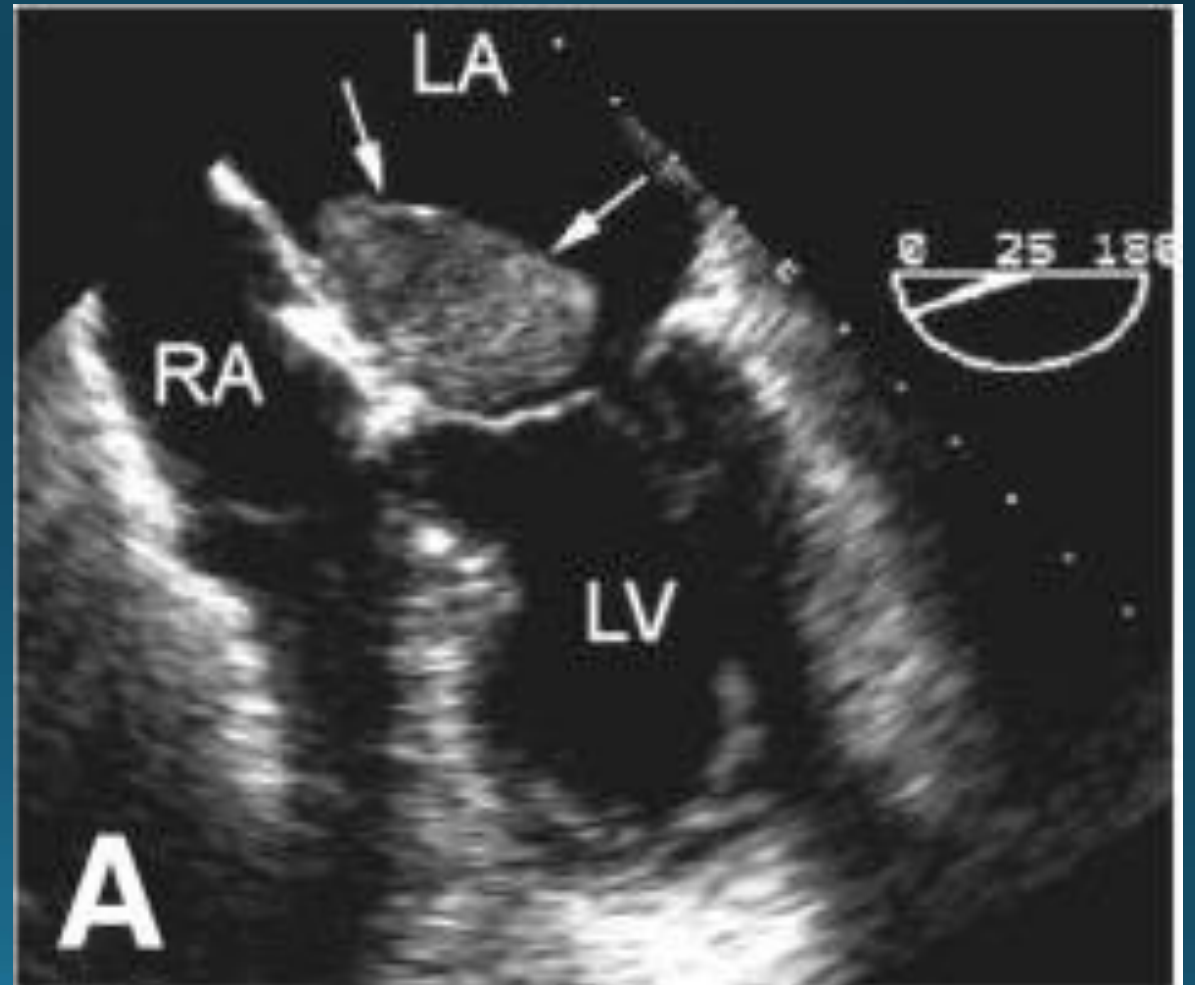
# Primary cardiac tumors

- Incidence: 0.001 – 0.03%
- 75% benign

Benign	Malignant
Myxoma (30%)	Angiosarcoma (8%)
Lipoma (10%)	Rhabdomyosarcoma (5%)
Papillary fibroelastoma (8%)	Fibrosarcoma (3%)
Rhabdomyoma (6%)	Mesothelioma (3%)
Fibroma (3%)	Lymphoma (2%)
Hemangioma (2%)	Leiomyosarcoma (1%)

# Benign cardiac tumors: Myxoma

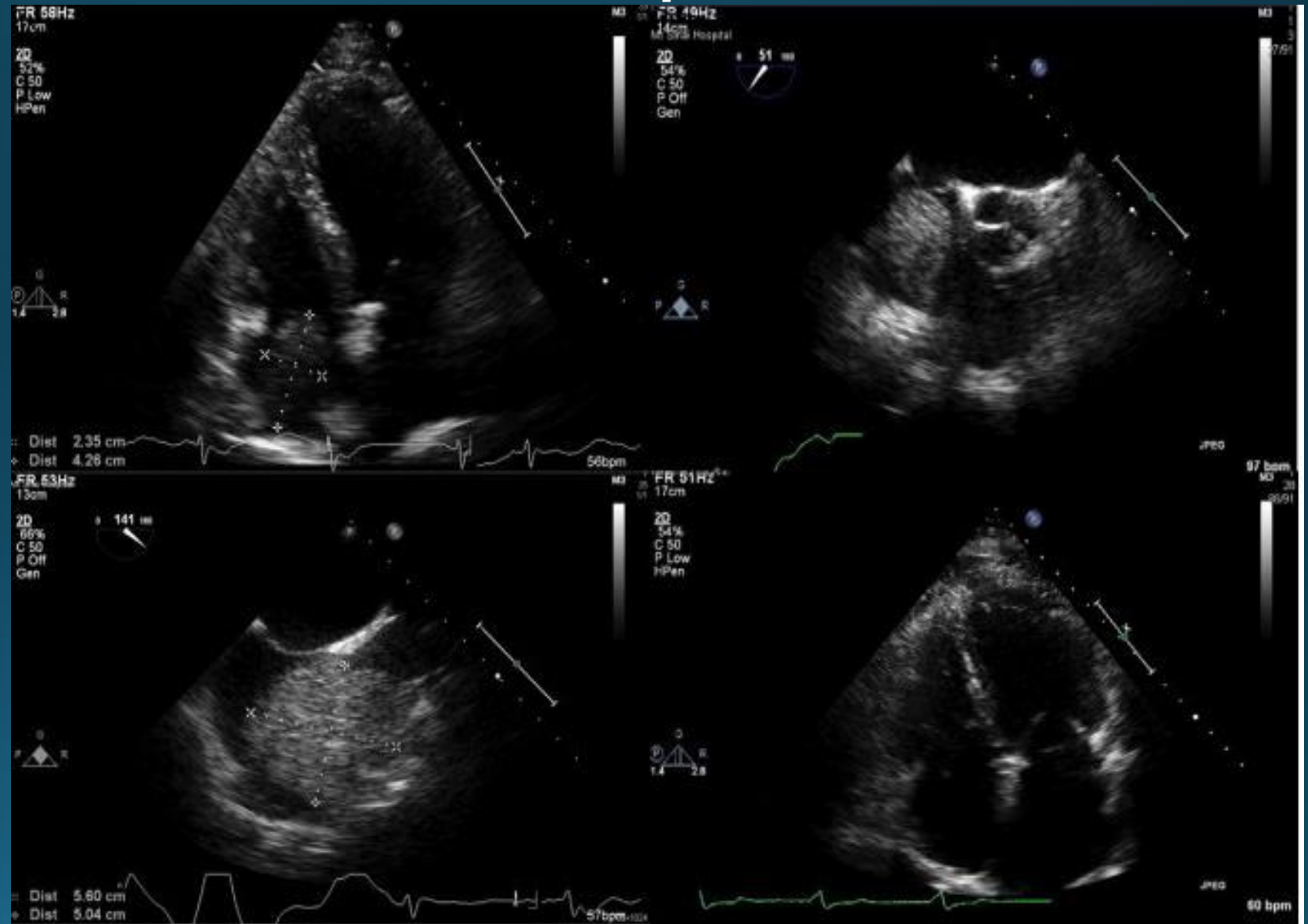
- Most common primary cardiac tumor
- 75% in LA; 23% RA; 2% ventricles
- Friable, leading to emboli in 40-50% of cases
- TTE appearance: mobile, usually w stalk, heterogeneous echogenicity, calcifications





# Benign cardiac tumors: Lipoma

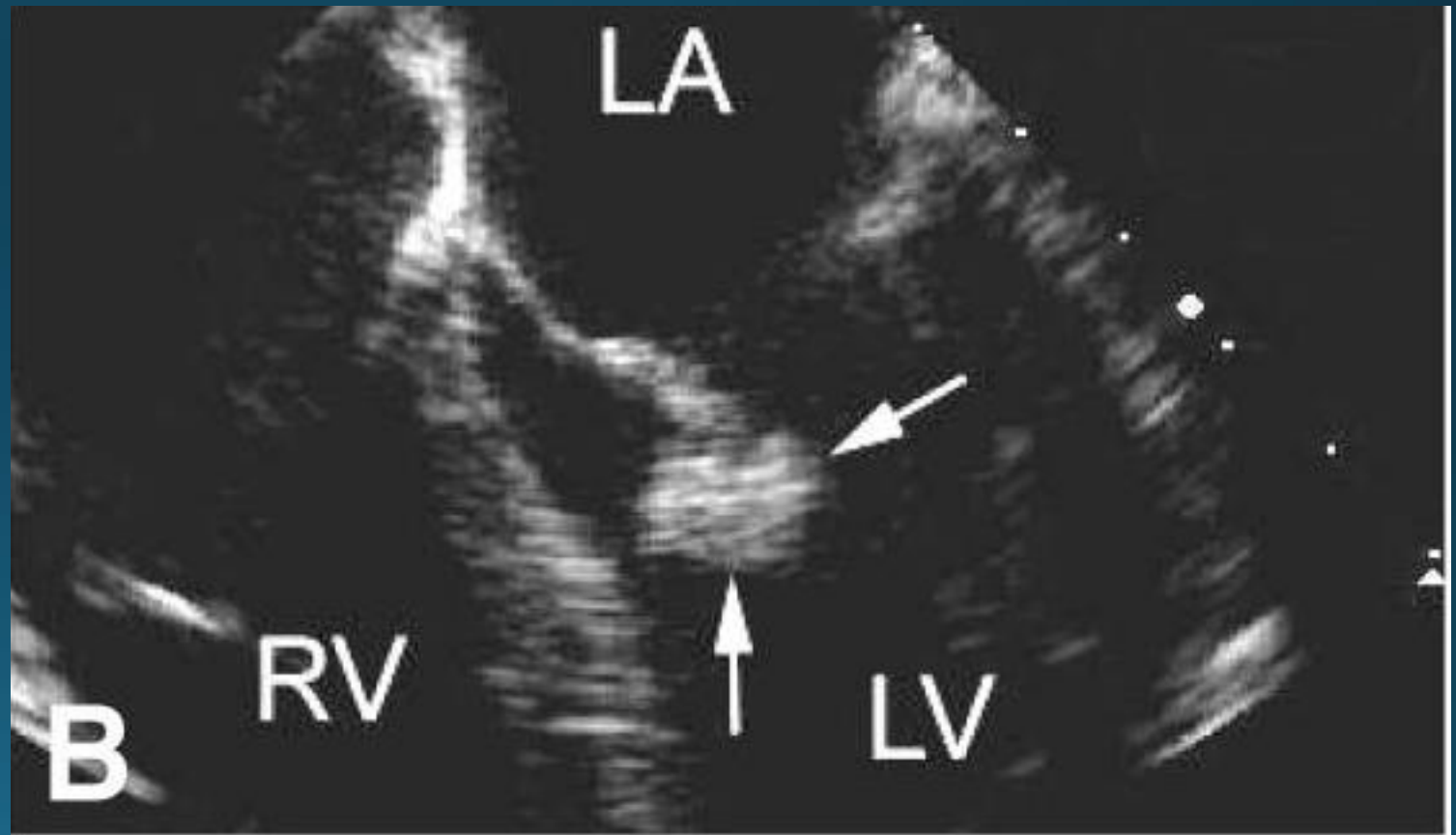
- Second most common primary cardiac tumor
- LV, RA, interatrial septum, pericardium
- TTE appearance: homogeneous, hyperechoic
- Readily visible on CT and MRI





# Benign cardiac tumors: papillary fibroelastoma

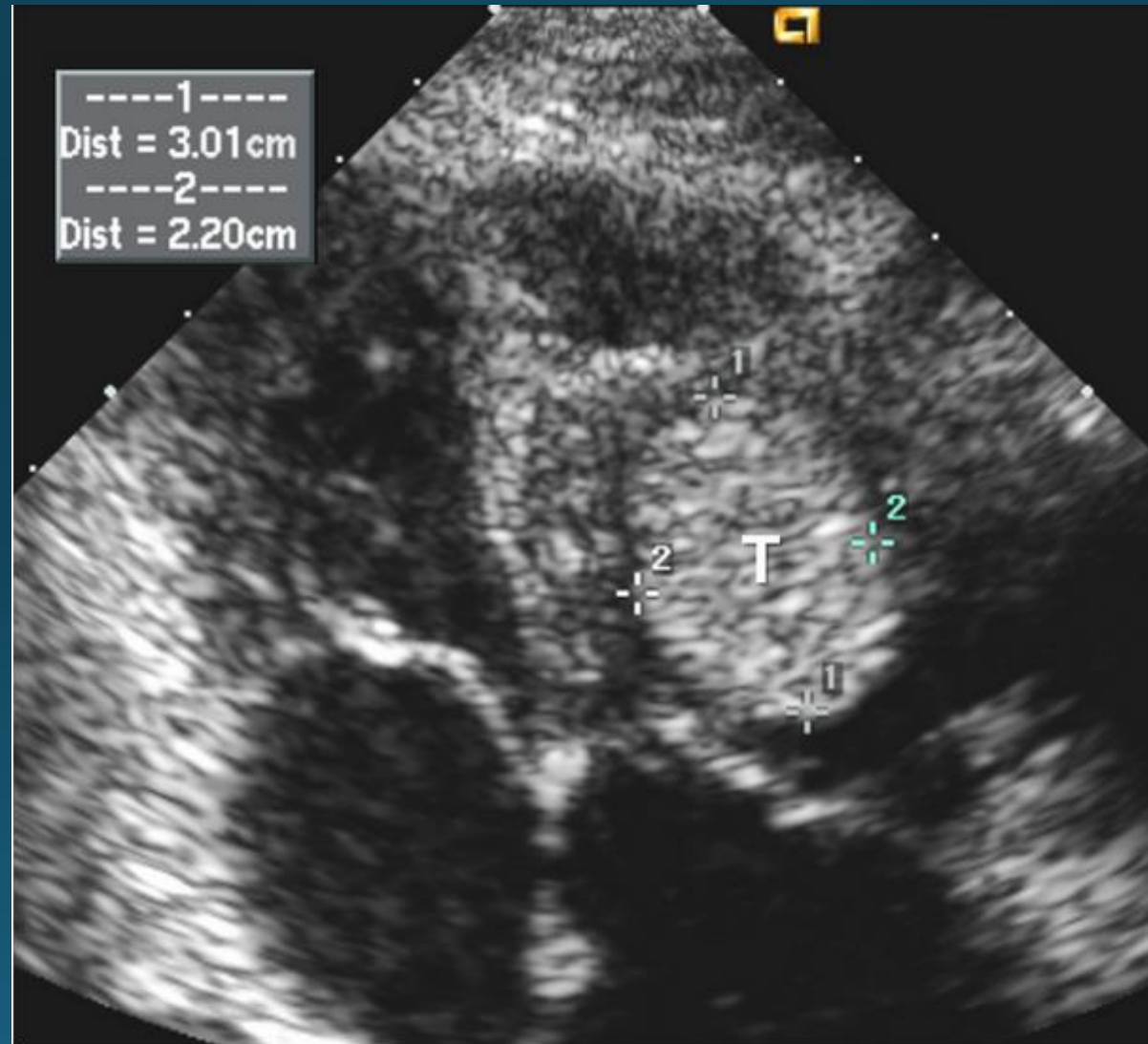
- Primarily in older patients (average age 60)
- Mitral valve > Aortic valve
- Downstream side of valve (as opposed to vegetations)
- Do NOT cause valvular dysfunction (as opposed to vegetations)
- Can cause emboli
- Lambl's excrescences



# Malignant cardiac tumors

- 95% sarcomas, 5% lymphoma (extranodal non-Hodgkin's)
- Predilection for right atrium
- Initial presentation: hypotension (2/2 obstructed blood flow); arrhythmias (2/2 local invasion)
- Sarcomas have poor prognosis: 6-12 month median survival

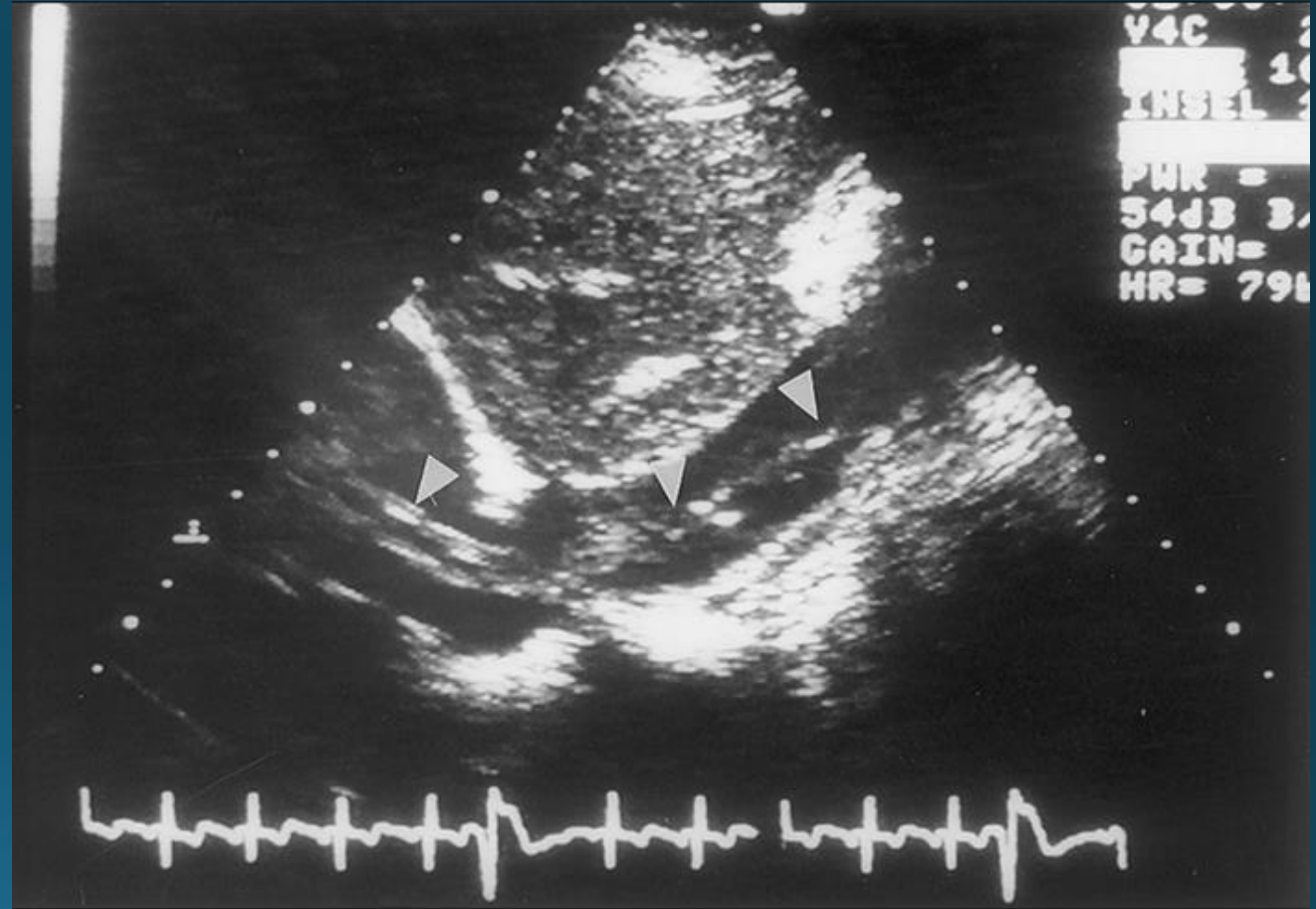
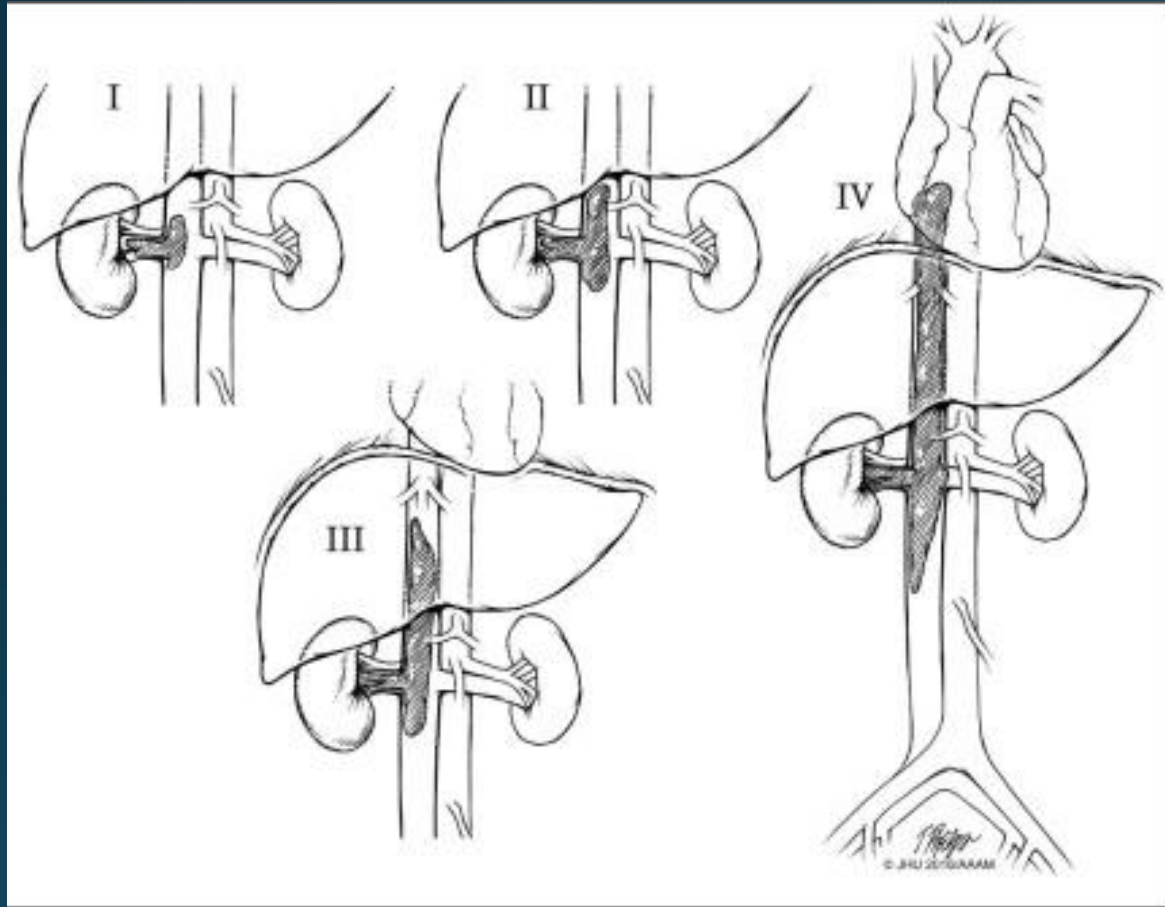
# Malignant cardiac tumors: sarcoma



# Metastatic tumors

- 20 times more common than primary cardiac tumors
- Lung, breast, lymphoma, leukemia, melanoma, renal
- 75% involve pericardium or epicardium

# Metastatic tumors: Renal Cell Carcinoma



# Thrombi

- Most often in areas of stasis
  - LV apex in patients w low EF
  - RA appendage in patients w AF
- Uncommon in RA/RV
- Right Heart Thrombi (RHT)
  - Type A: large, freely mobile, high propensity for embolization
  - Type B: small, immobile, low risk of embolization

# Echocardiographic Differentiation of Intracardiac Masses

	Morphology	Mobility	Contrast Findings	Effusion/invasion
Benign	Regular (exception: myxoma)	Maybe	Homogeneous, low enhancement	Neither
Malignant	Regular or irregular	No	Heterogeneous, high enhancement	Yes
Thrombus	Irregular	No (exception: RHT type A)	Non-enhancing	No

# Case: Mr. M

- RA mass presumed to be “clot-in-transit”
- CT surgery, IR consulted
- Admitted to MICU for tPA



# Thrombolysis for PE

[ Evidence-Based Medicine ]

 CHEST

## Antithrombotic Therapy for VTE Disease CHEST Guideline and Expert Panel Report



*Clive Kearon, MD, PhD; Elie A. Akl, MD, MPH, PhD; Joseph Ornelas, PhD; Allen Blaivas, DO, FCCP;  
David Jimenez, MD, PhD, FCCP; Henri Bounameaux, MD; Menno Huisman, MD, PhD;  
Christopher S. King, MD, FCCP; Timothy A. Morris, MD, FCCP; Namita Sood, MD, FCCP;  
Scott M. Stevens, MD; Janine R. E. Vintch, MD, FCCP; Philip Wells, MD; Scott C. Woller, MD;  
and COL Lisa Moores, MD, FCCP*



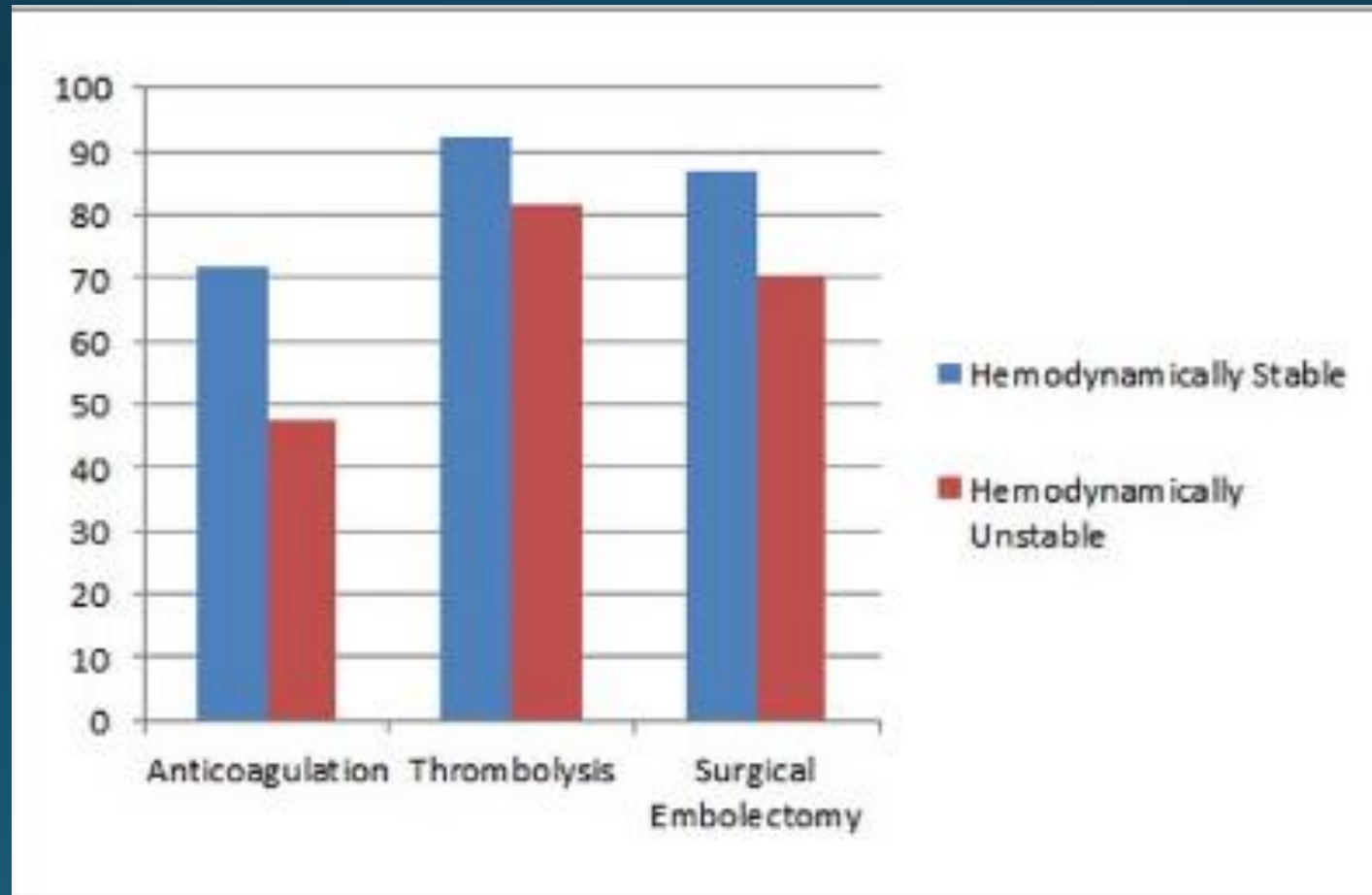
**21. In patients with acute PE associated with hypotension (eg, systolic BP <90 mm Hg) who do not have a high bleeding risk, we suggest systemically administered thrombolytic therapy over no such therapy (Grade 2B).**

**±22. In most patients with acute PE not associated with hypotension, we recommend against systemically administered thrombolytic therapy (Grade 1B).**

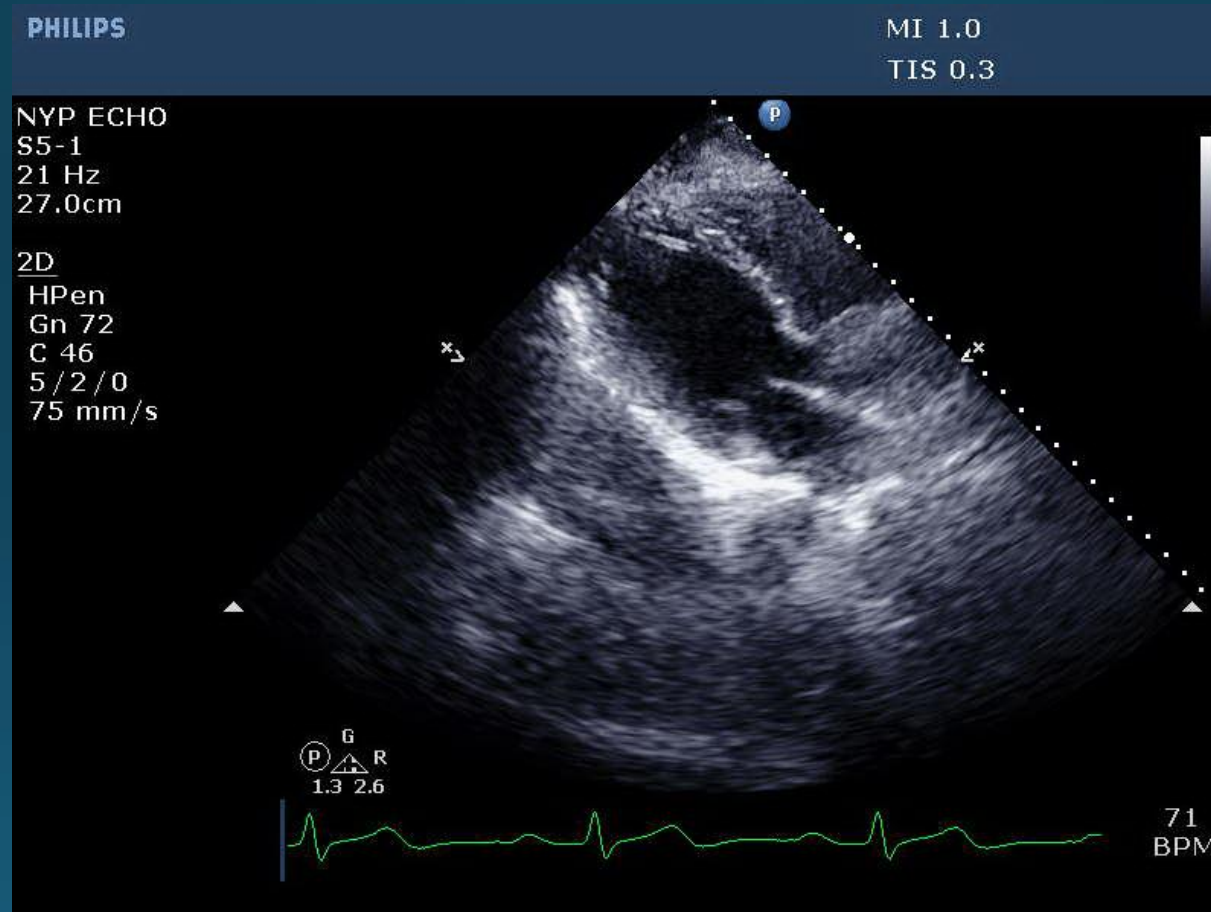
**±23. In selected patients with acute PE who deteriorate after starting anticoagulant therapy but have yet to develop hypotension and who have a low bleeding risk, we suggest systemically administered thrombolytic therapy over no such therapy (Grade 2C).**

# RHT prognosis

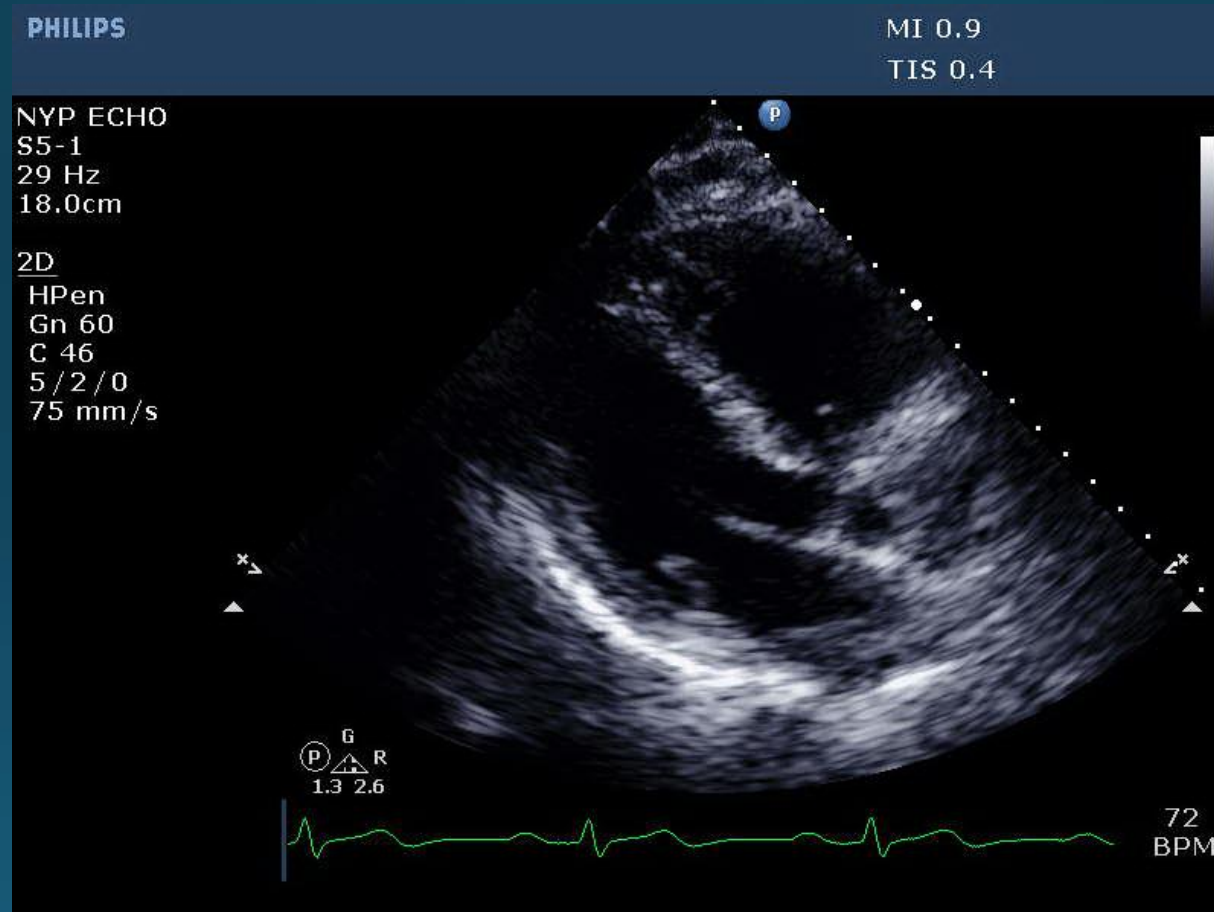
Percent survival for three therapies in patients w  
RHT +PE



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