



HOW DO WE UTILIZE ECHO IN EMERGENCY PATIENTS?

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Role of echo in Emergency setting

01

ACUTE CHEST PAIN

02

ACUTE DYSPNOEA

03

STROKE

04

SYNCOPE

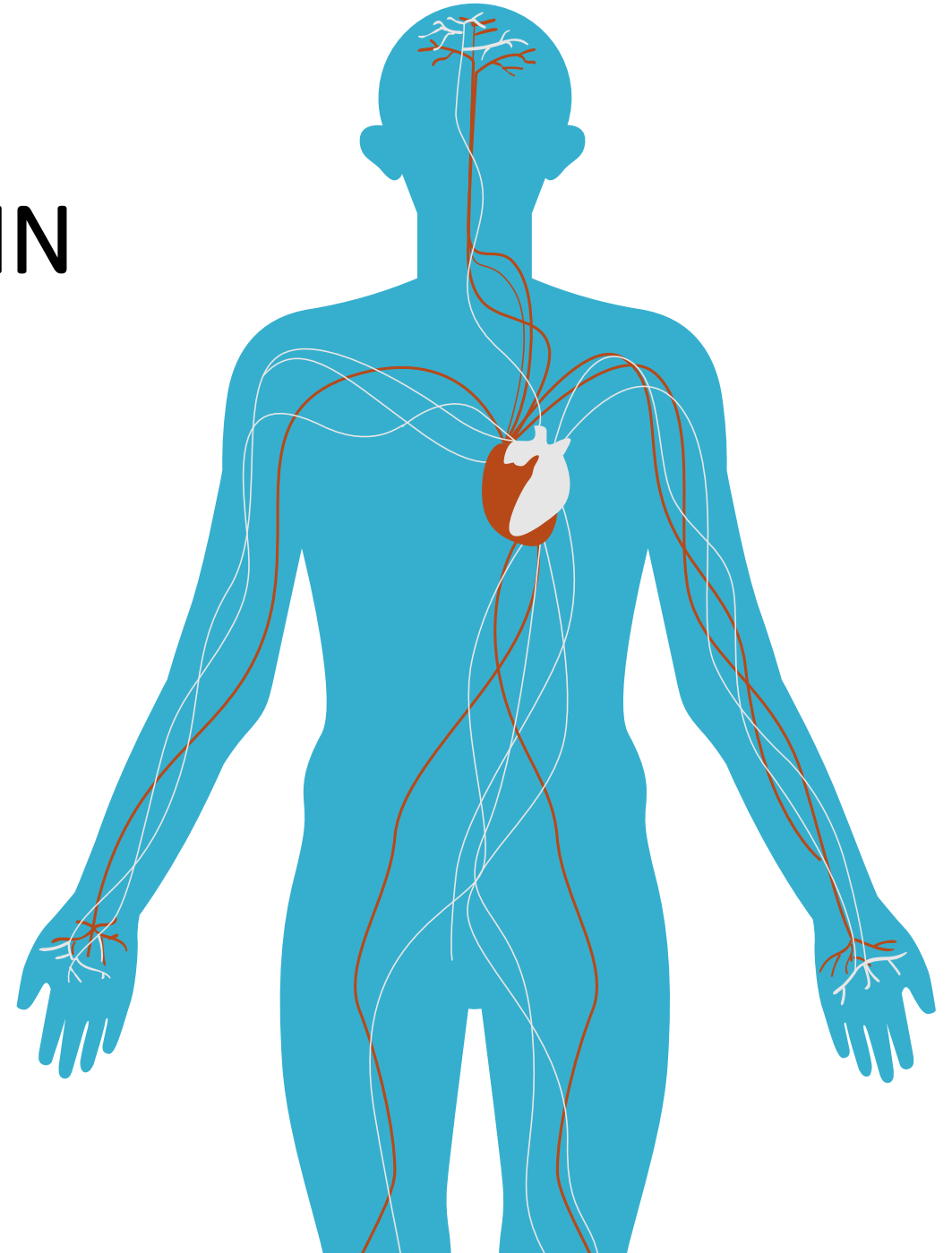
05

PALPITATION

06

HYPOTENSION

ECHO IN ACUTE CHEST PAIN SYNDROME



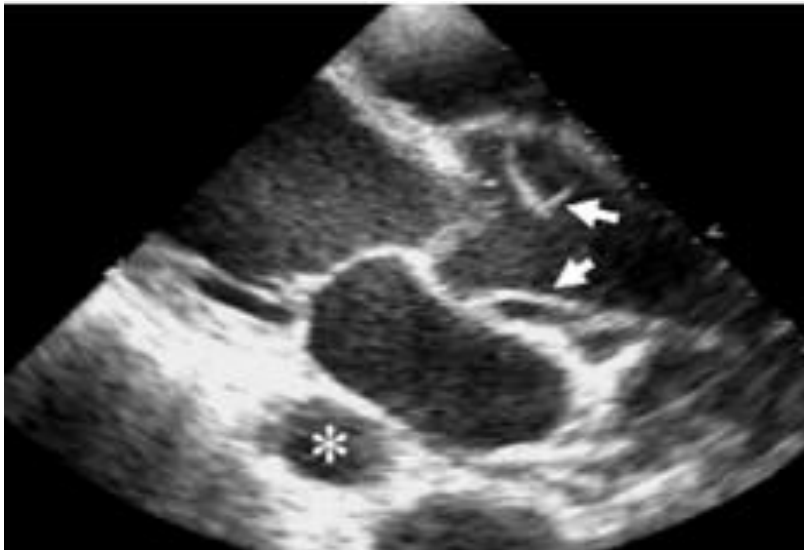
CASE 1

- 27 / Male/ smoker
- Presented with sudden onset of chest pain
- BP 98/50
- PR 120
- CXR done
- Echo bedside



Diagnosis :Aortic Dissection

Parasternal : the aortic root, the lower third of the ascending aorta, part of descending aorta



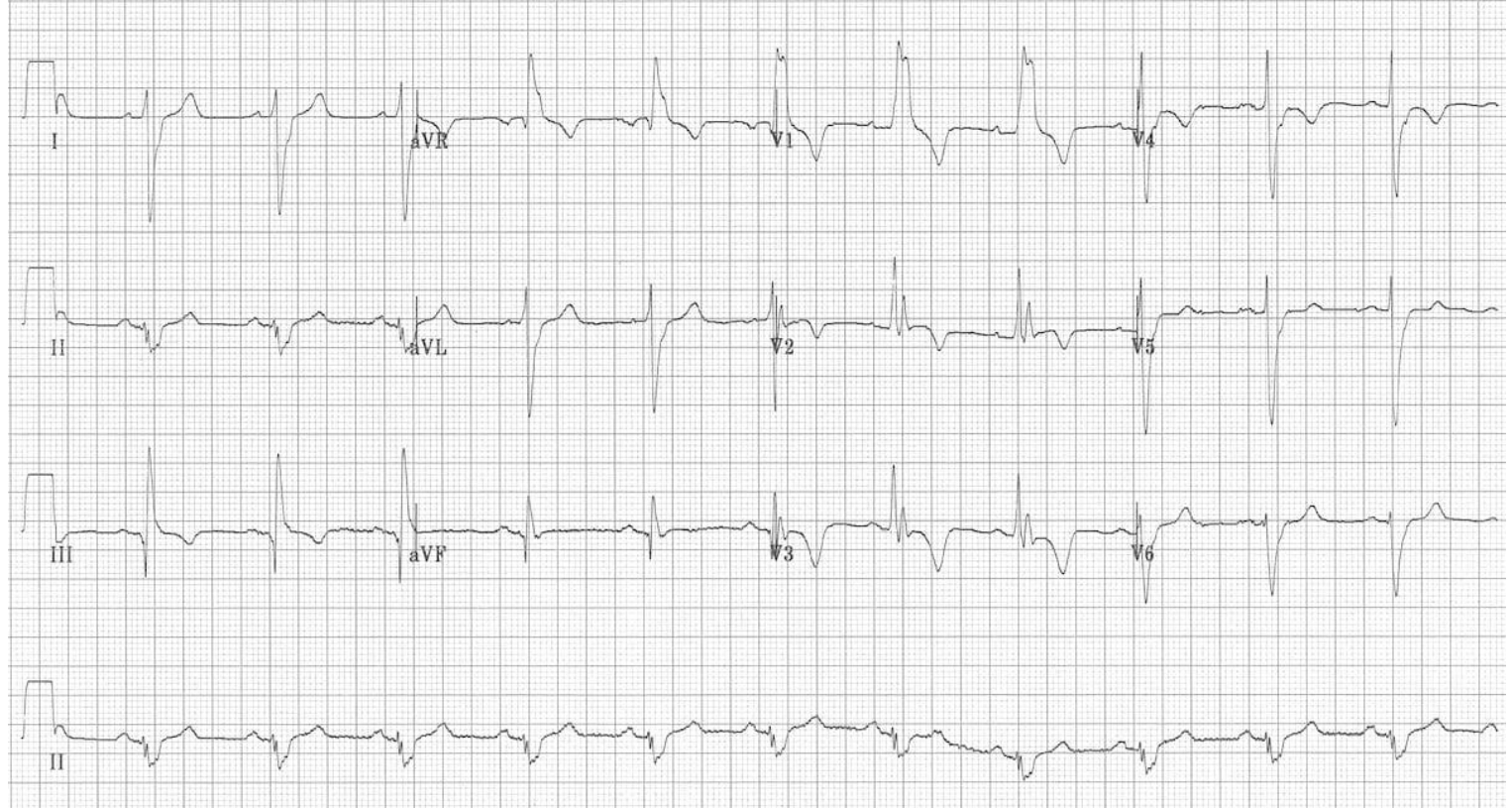
Suprasternal view

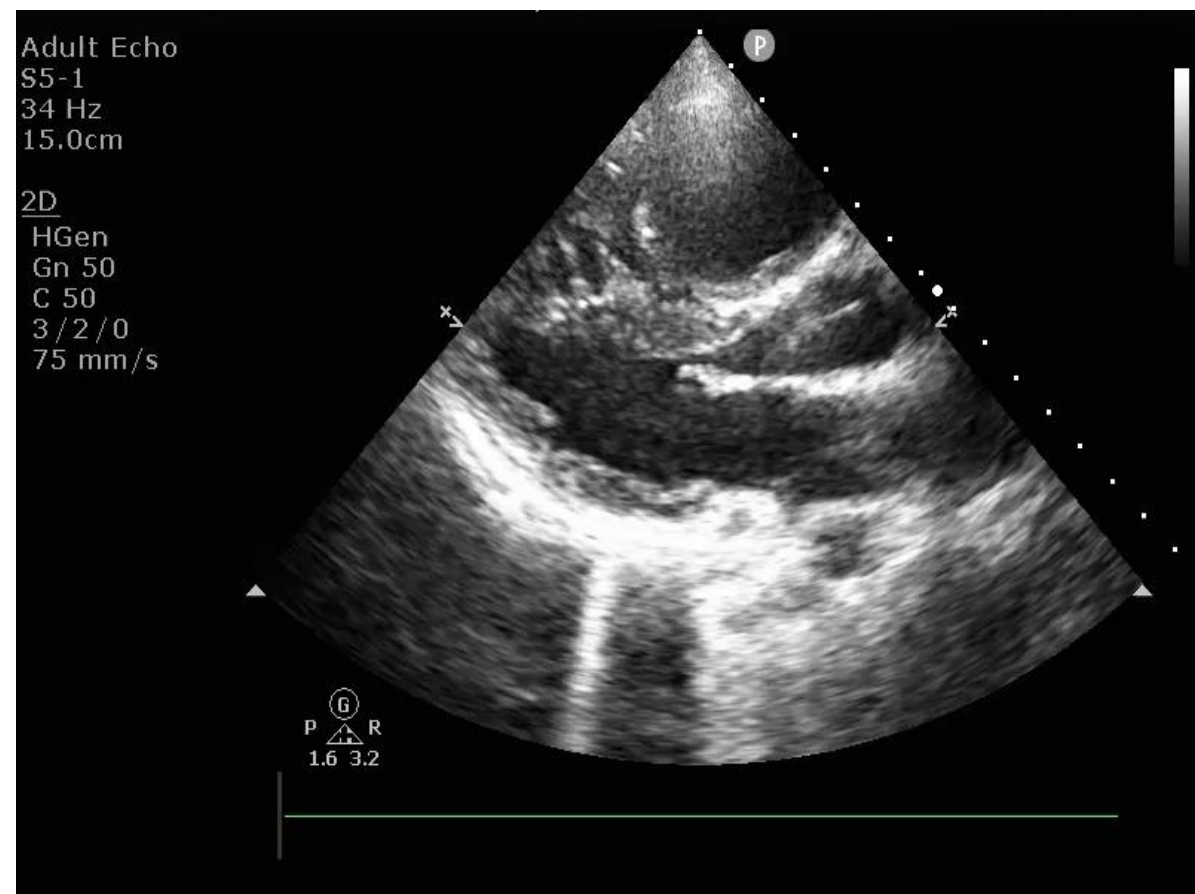
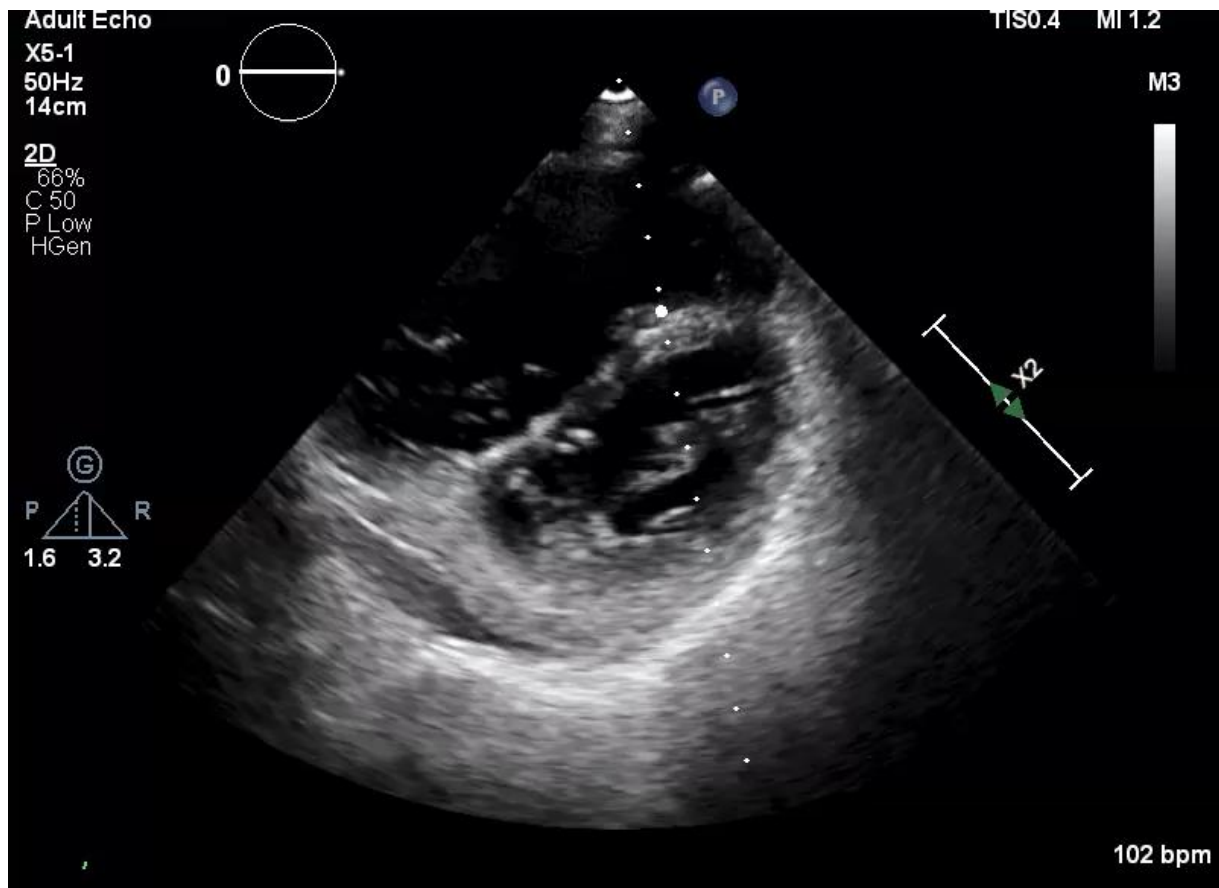
- aortic arch
- Origin of supra-aortic trunks
- Proximal third of descending aorta

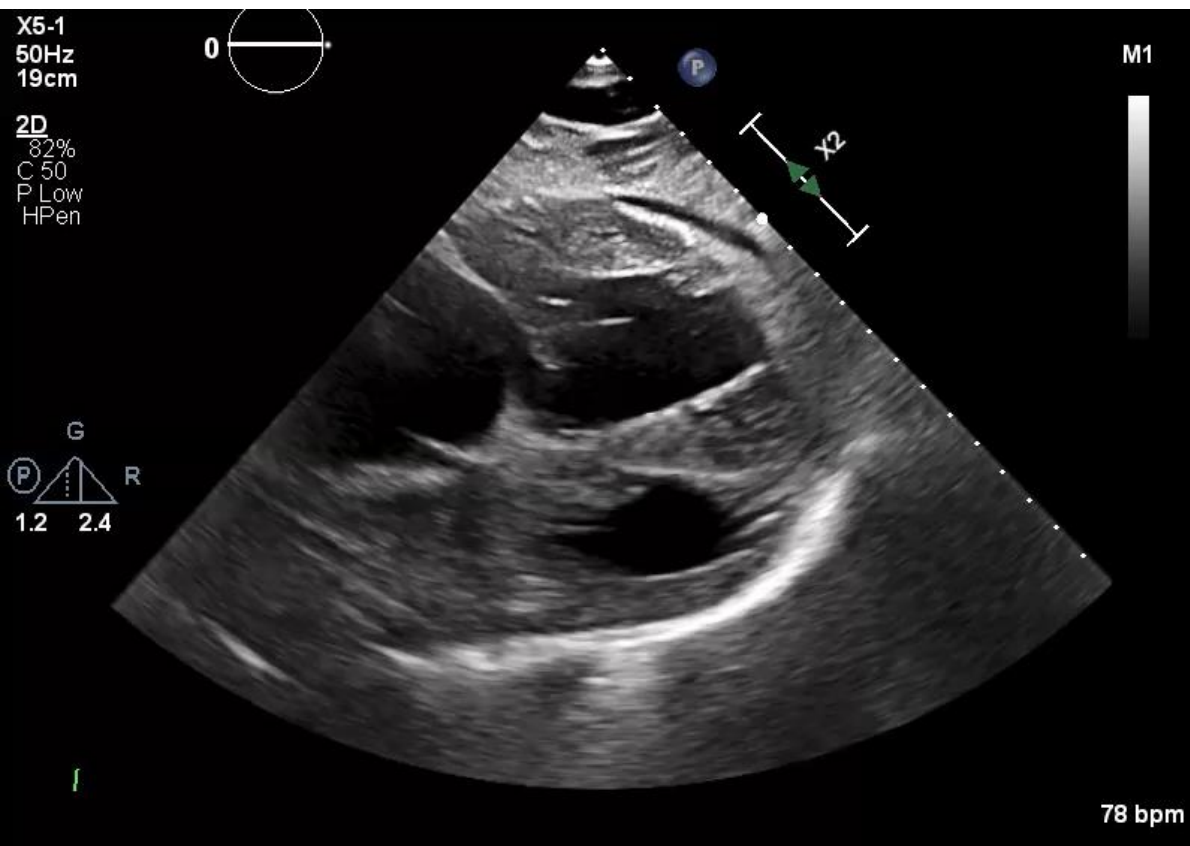


Case 2

- 27 year old lady
- c/o inability to breath
- Obese
- HR 123
- SPO2 78%
- BP 88/66
- Chest clear, no oedema
- Bedside echo done



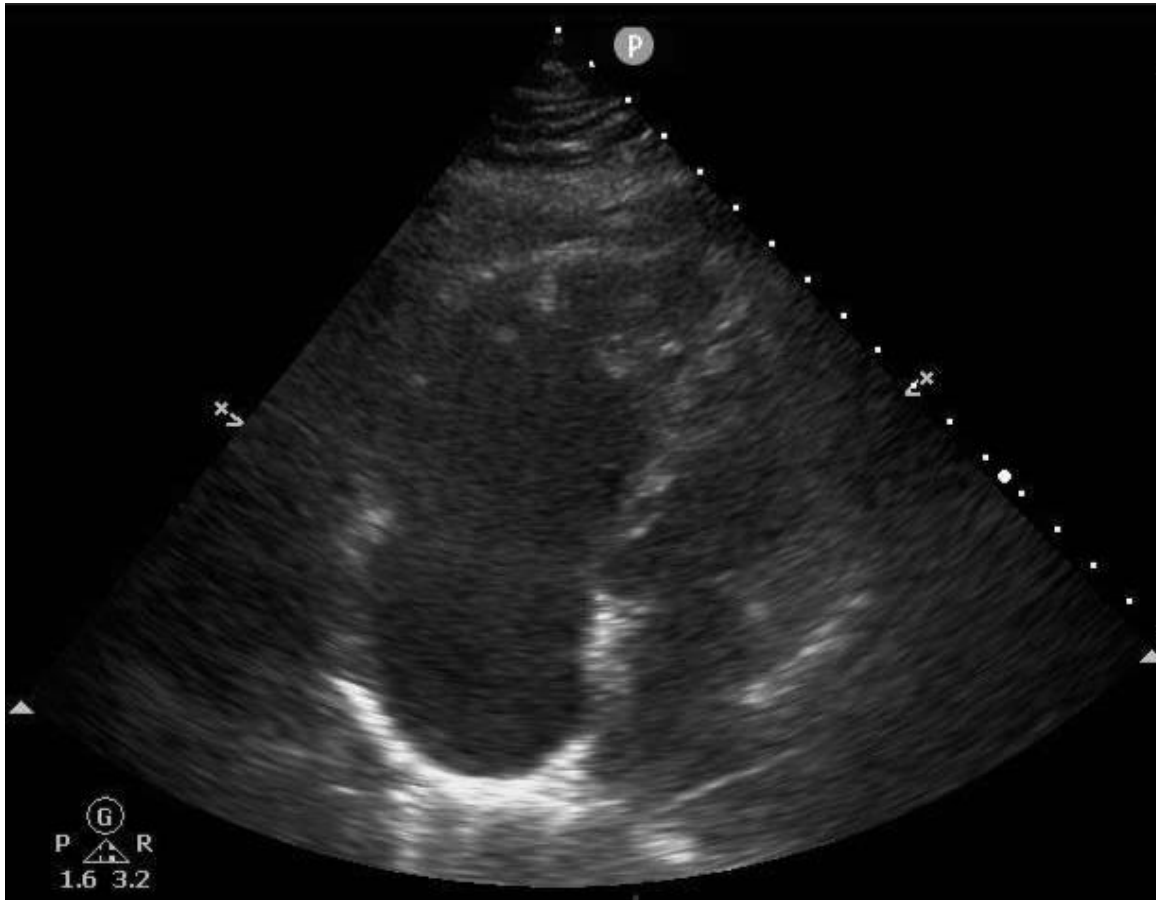




McConnell's sign :

- RV free wall hypokinesia
- Normal RV apical motion
- It is hypothesized to be due to tethering of the RV apex to the LV

Echo findings in Acute PE



- Evaluate the RV size
- Normally, RV size is $\leq 2/3$ rd of the LV size
- A ratio of RV:LV size ≥ 1 is suggestive of severe RV dilatation



- Thrombi-in-transit at right side chambers
- Worse prognosis : indicates massive PE
- May push clinician for administration of thrombolytic therapy

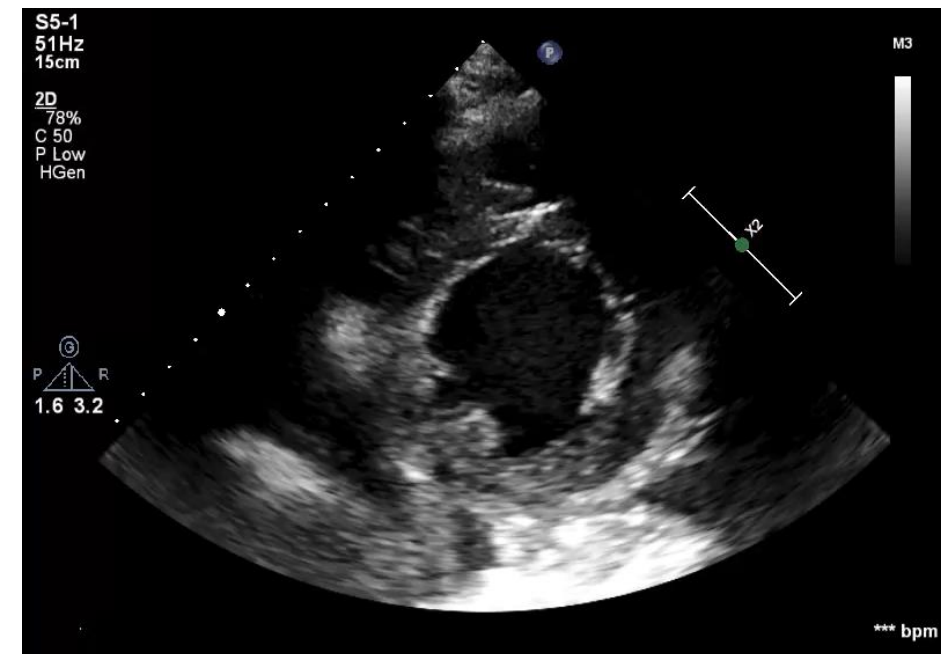
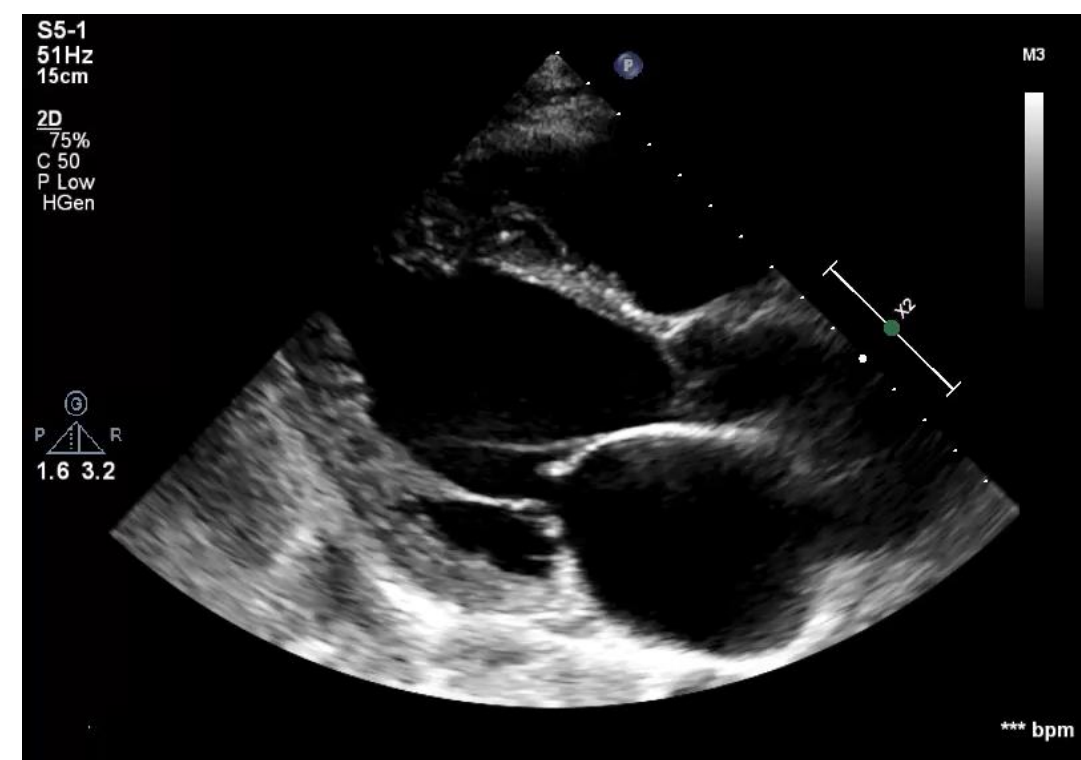
Case 3

35 year old gentleman, smoker
Presented with chest pain for 2 weeks.

BP:90/50mmhg

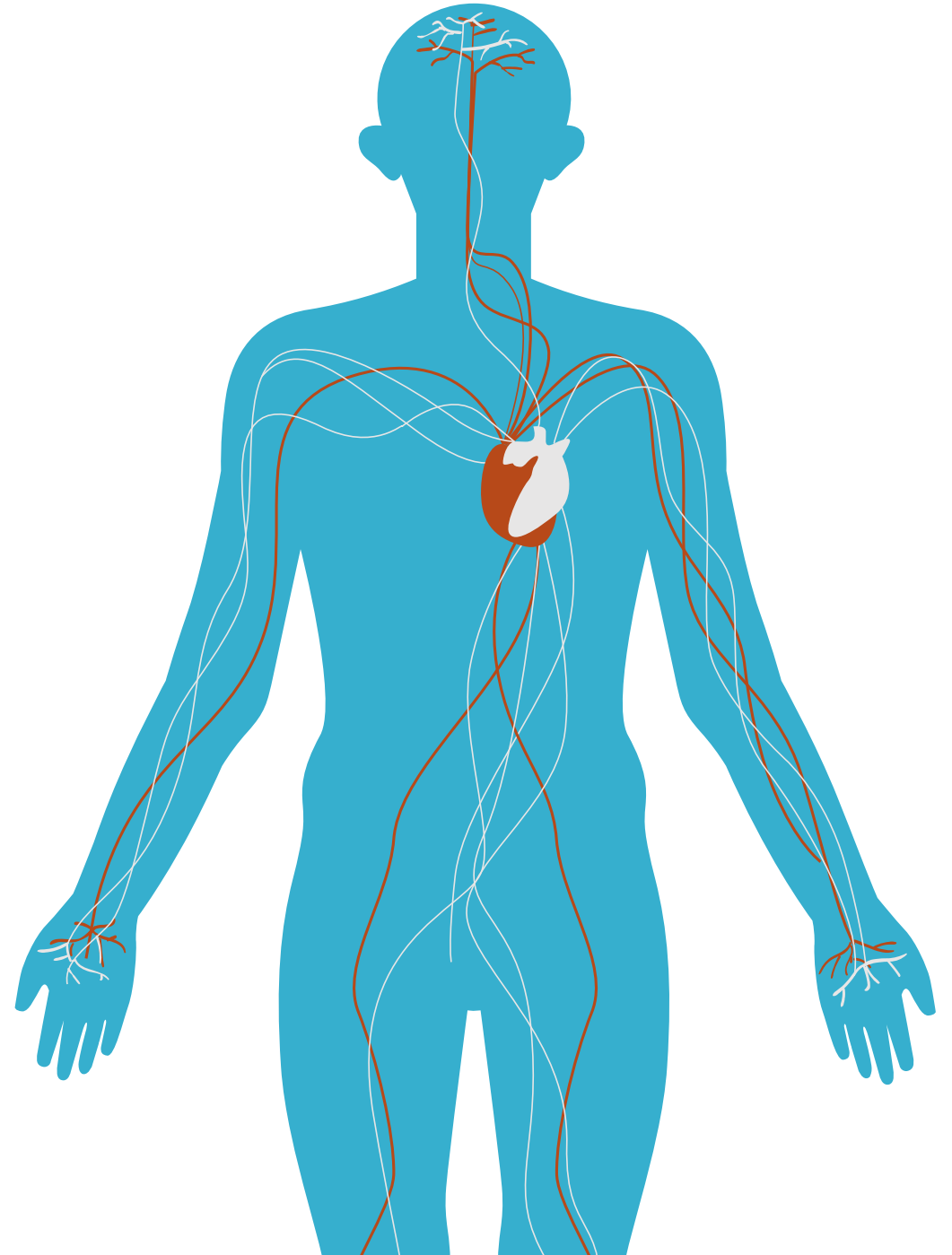
Pr:70bpm

Lungs: basal crepts



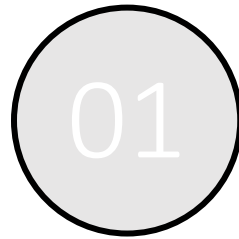
02

ECHO IN DYSPSNOEA

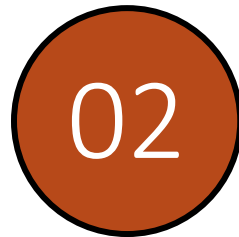


CAUSES OF ACUTE DYSPNOEA

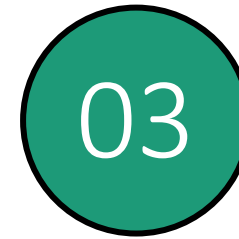
**MASSIVE
PULMONARY
EMBOLISM**



**LEFT
VENTRICULAR
FAILURE**



**CARDIAC
TAMPONADE**

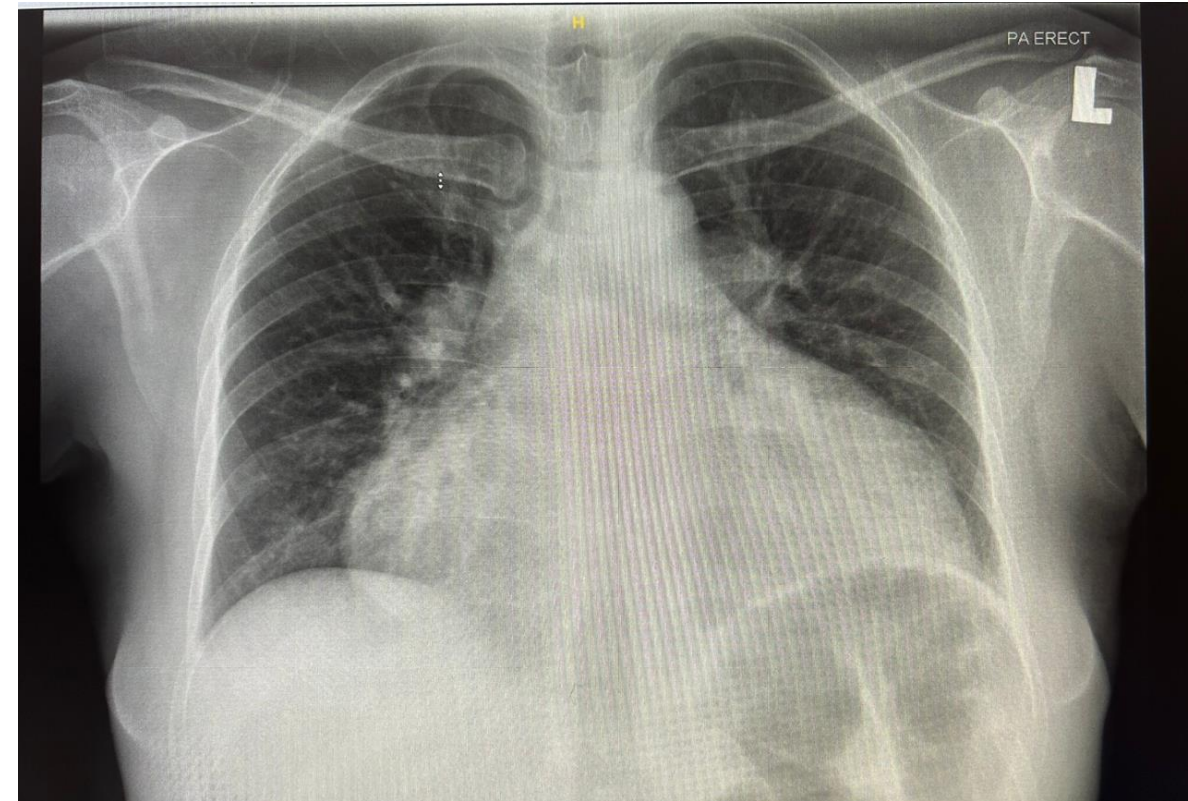
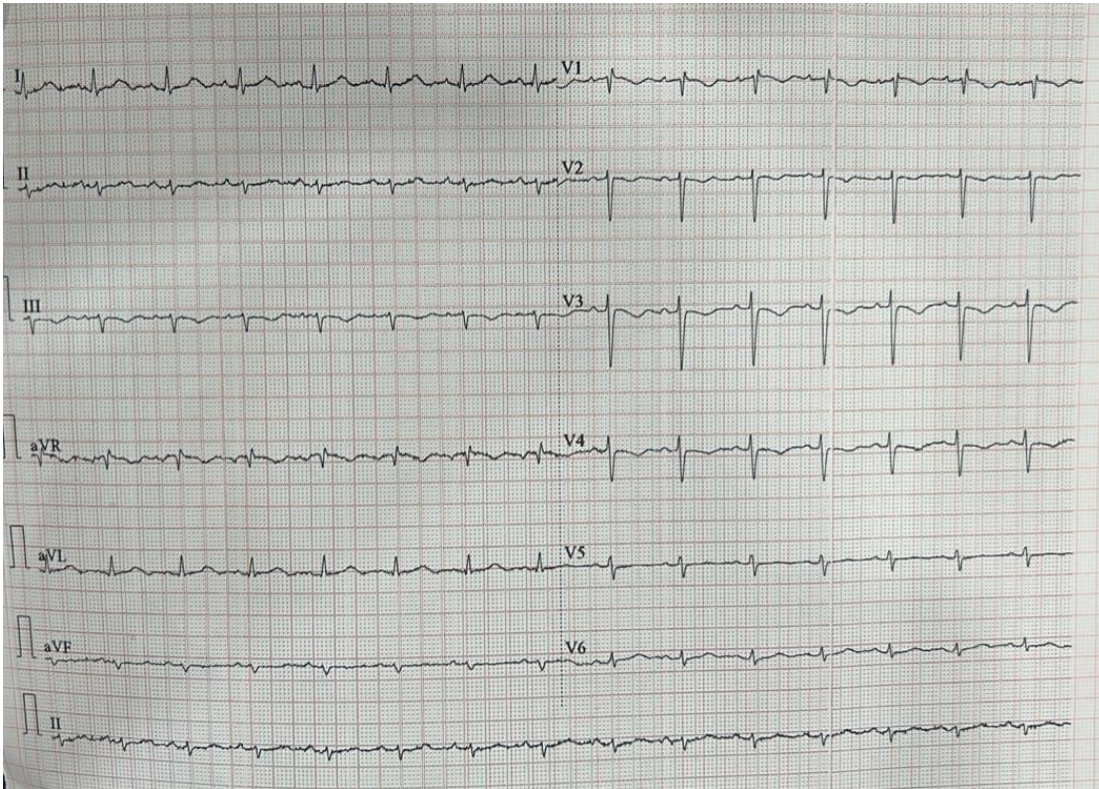


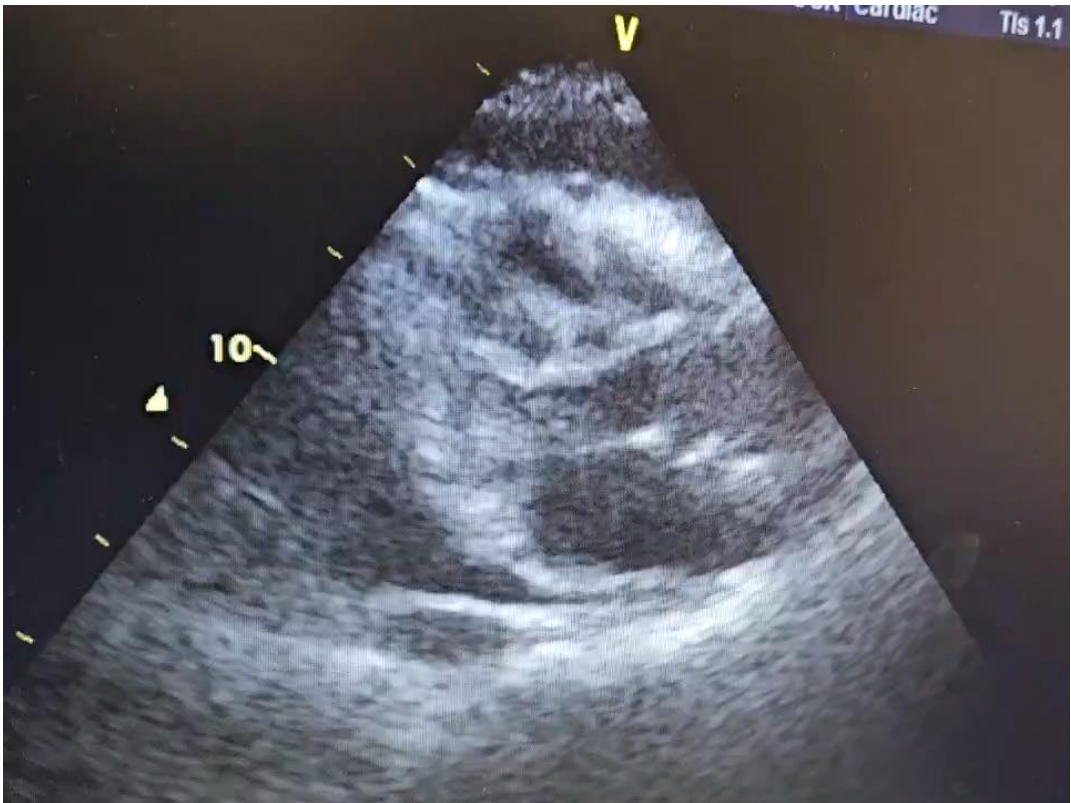
Case 4

50 year old lady

No known medical illness

Presented with shortness of breath for 2 weeks.





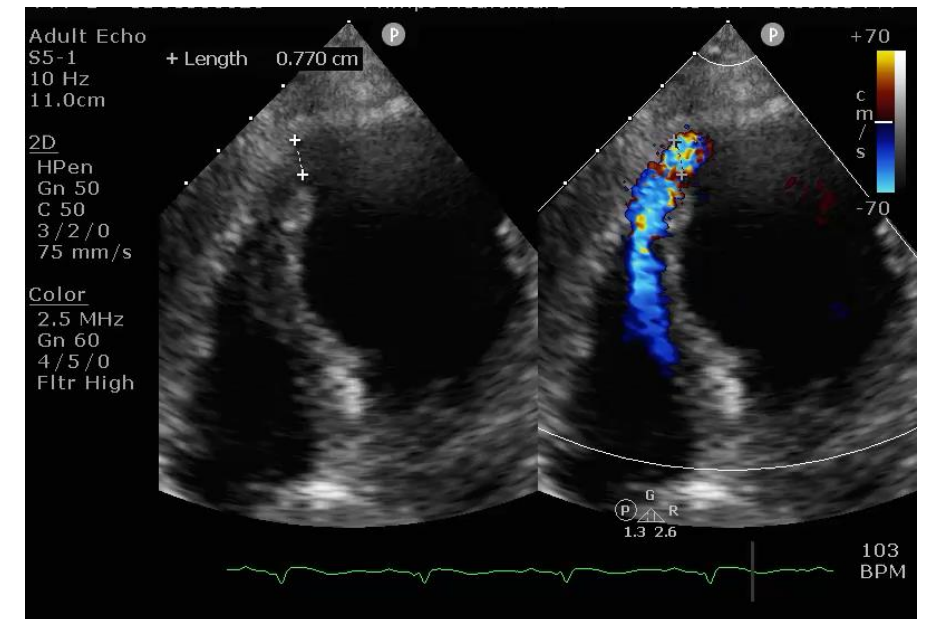
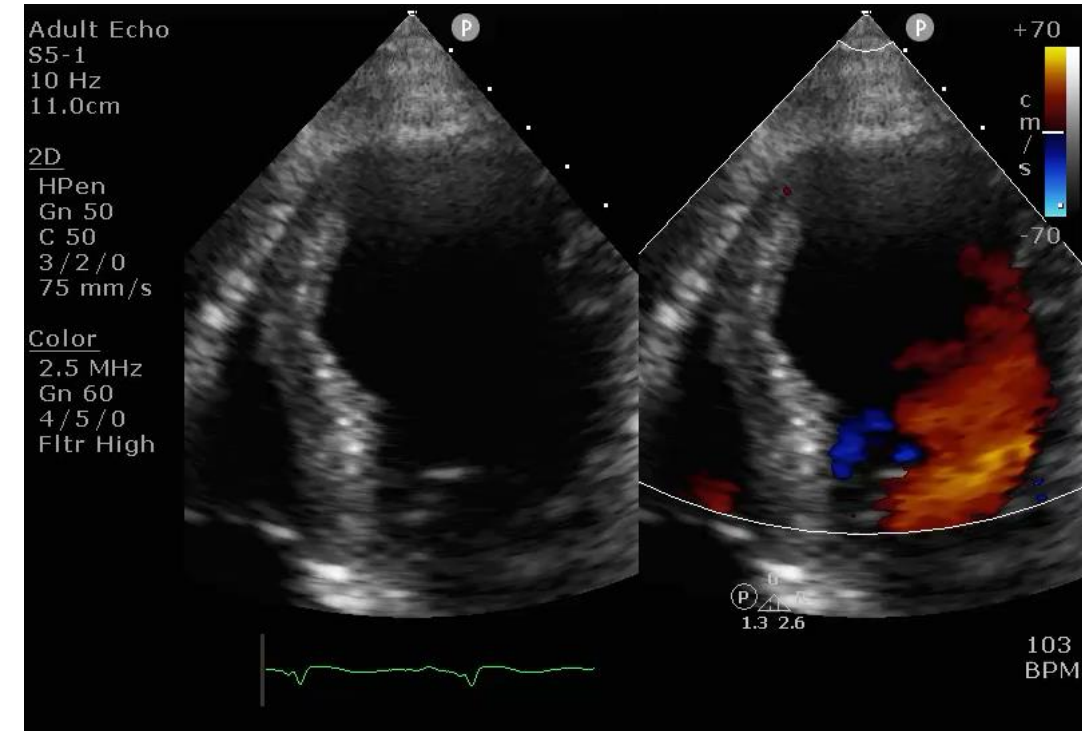
Case 5

60 year old gentleman

Presented with chest pain
for 24 hours associated
with sob

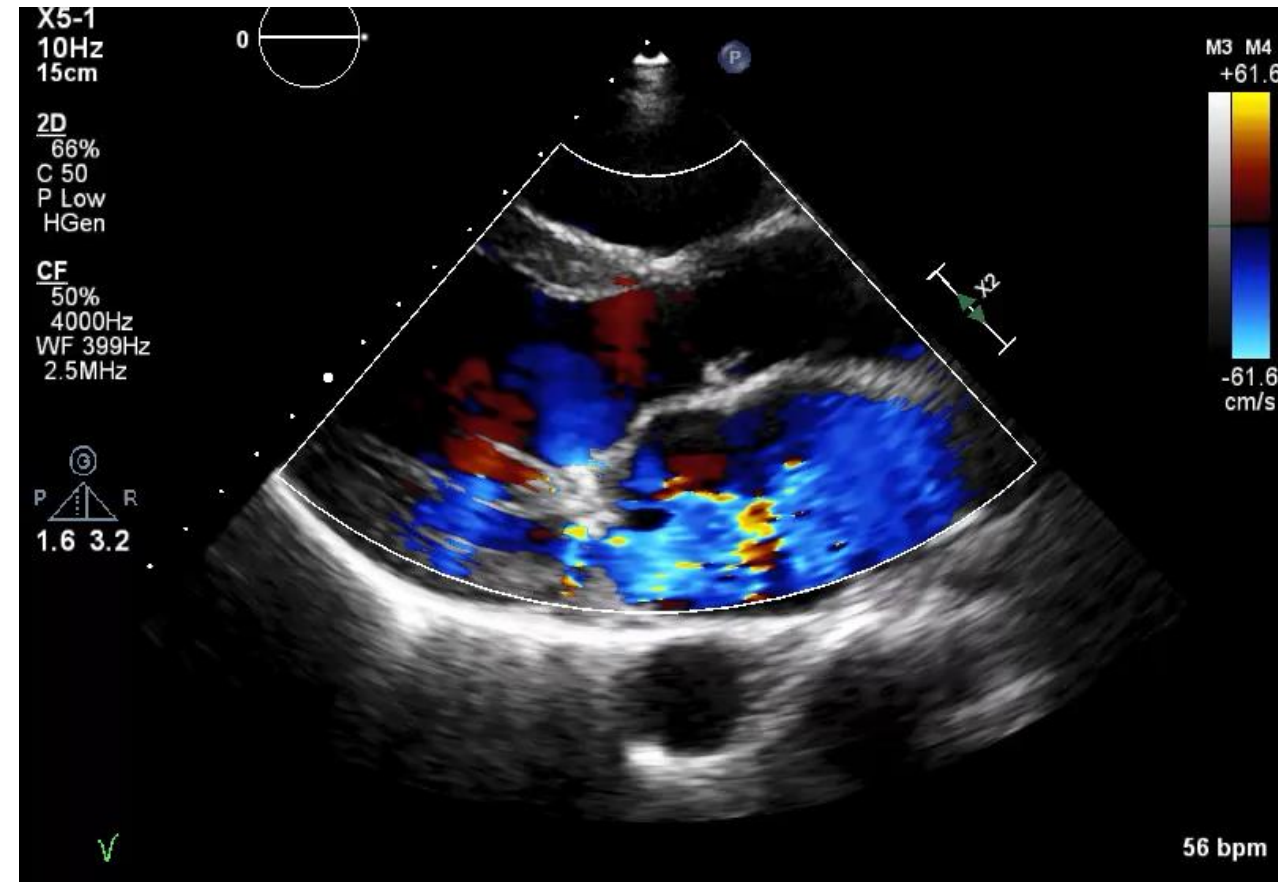
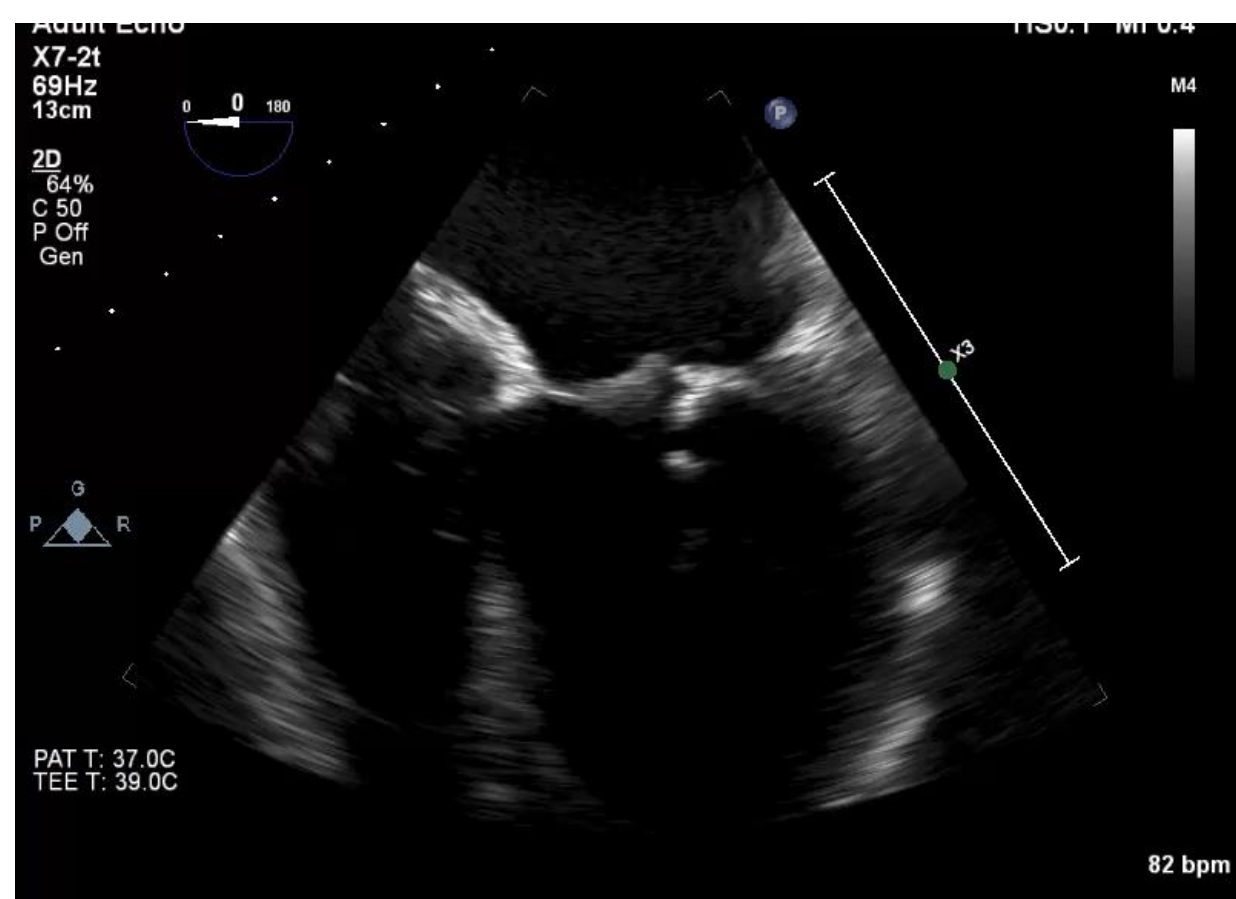
ECG: ST elevation in
anterior leads

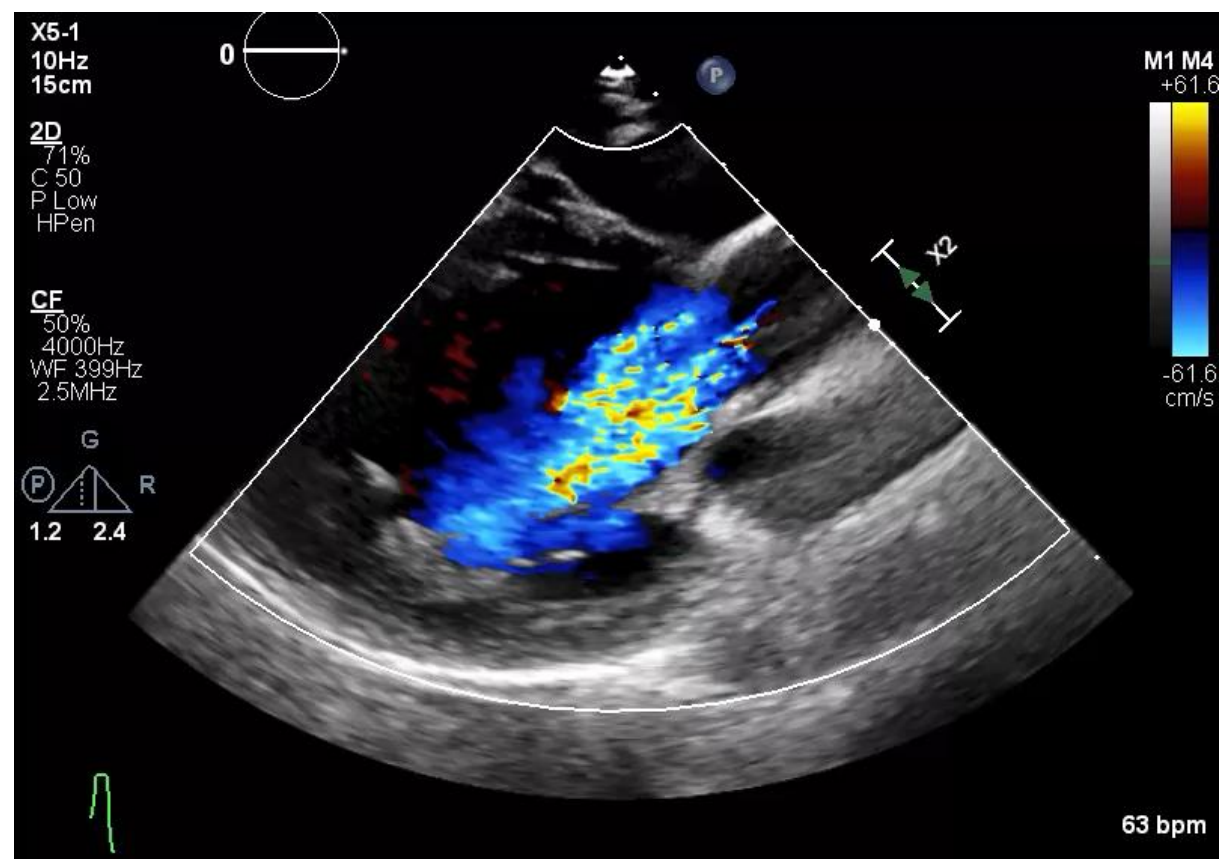
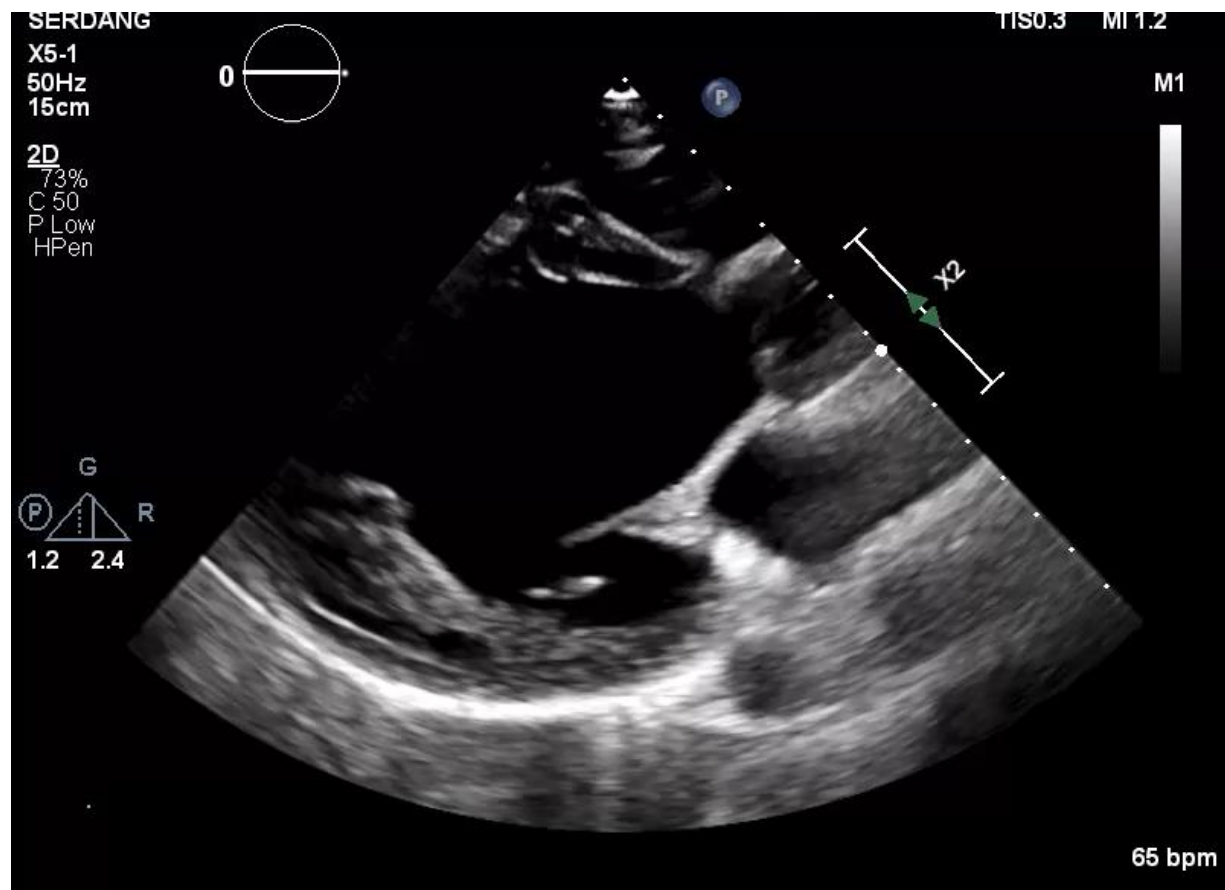
PCI done to the LAD, 3
days later noted patient
having worsening sob.



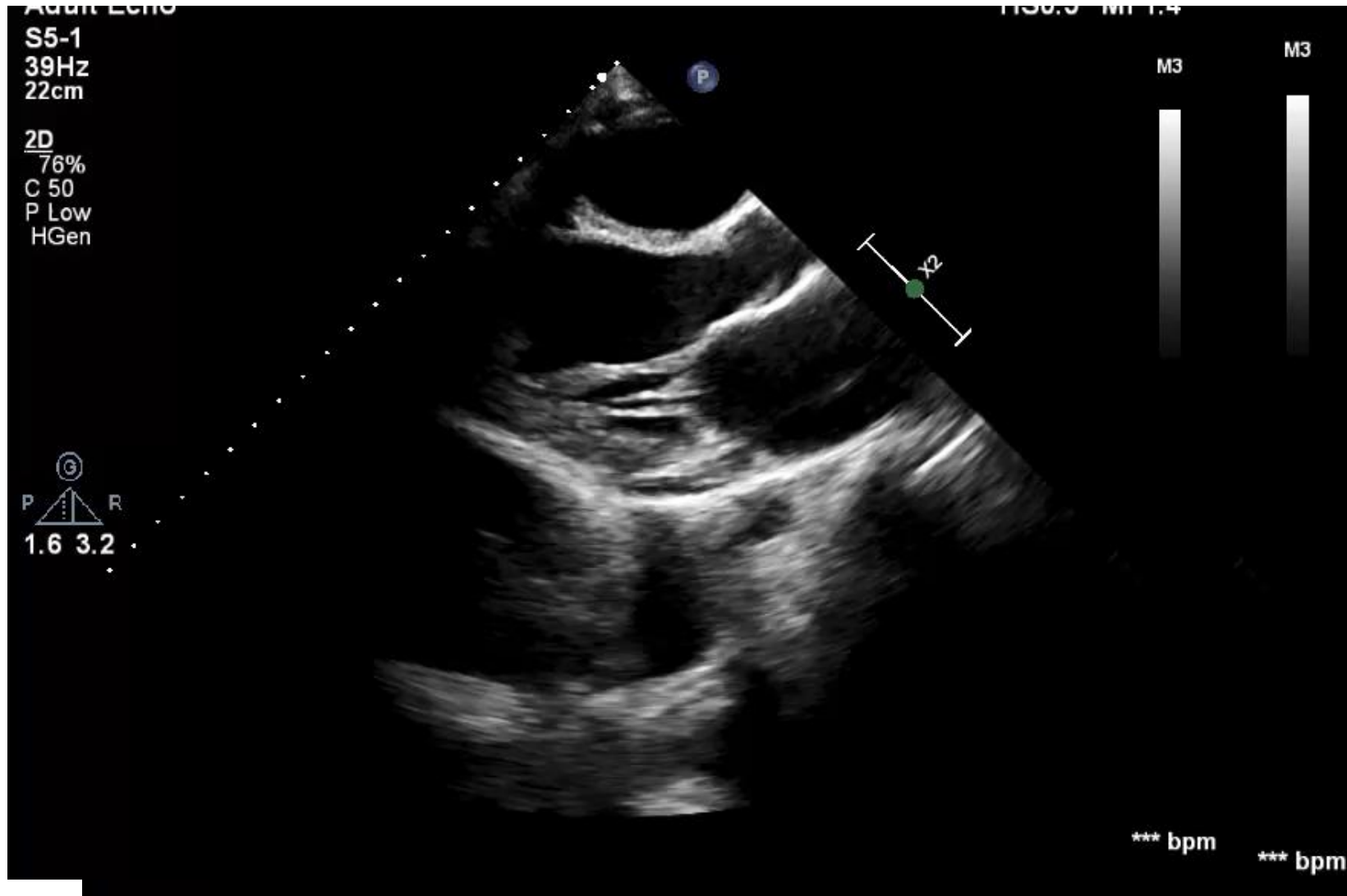
Case 6

38 year old gentleman presented with fever for 2 weeks associated with shortness of breath.



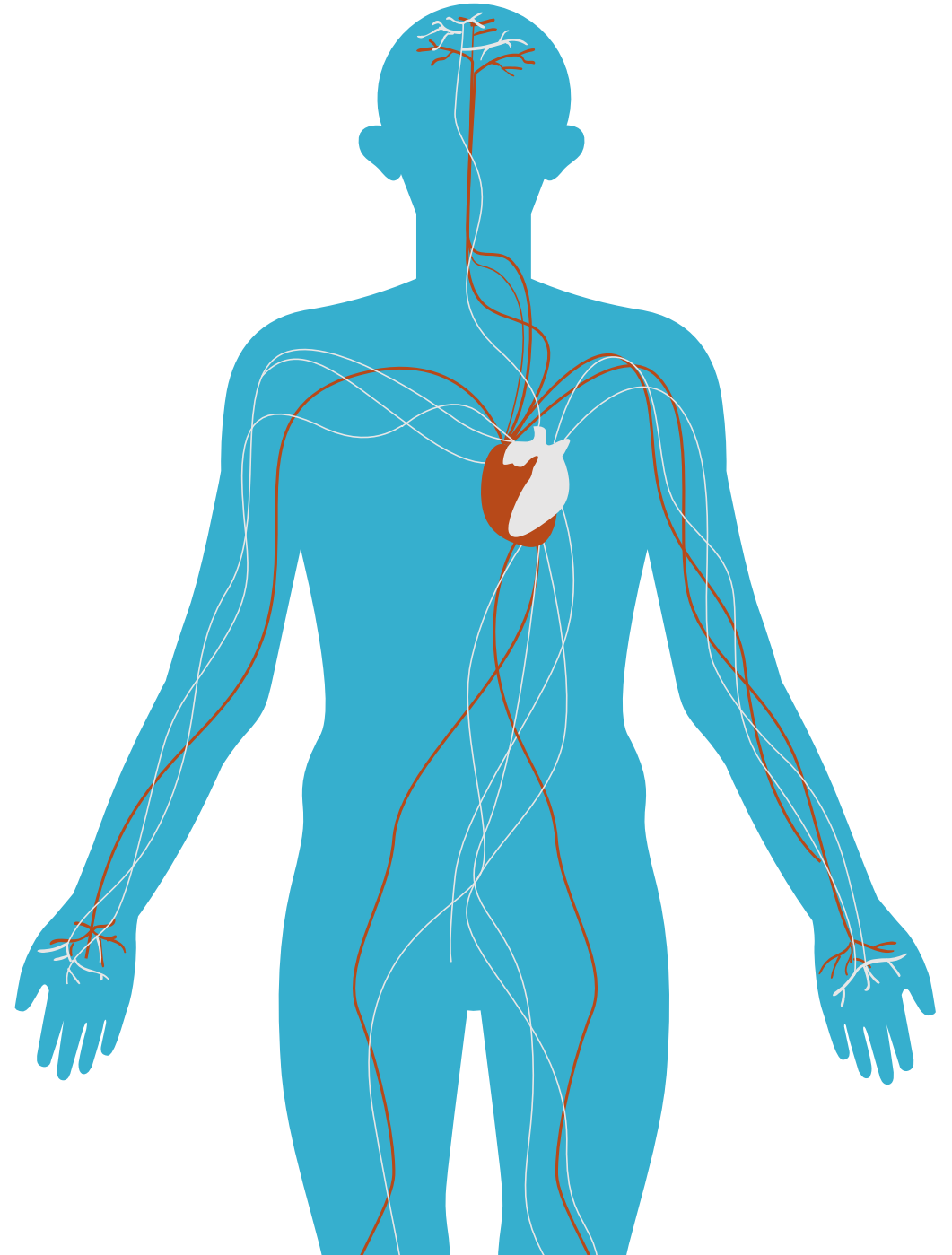


Can rule out other causes of SOB



03

ECHO IN HYPOTENSION & SHOCK



The Hypotensive patients

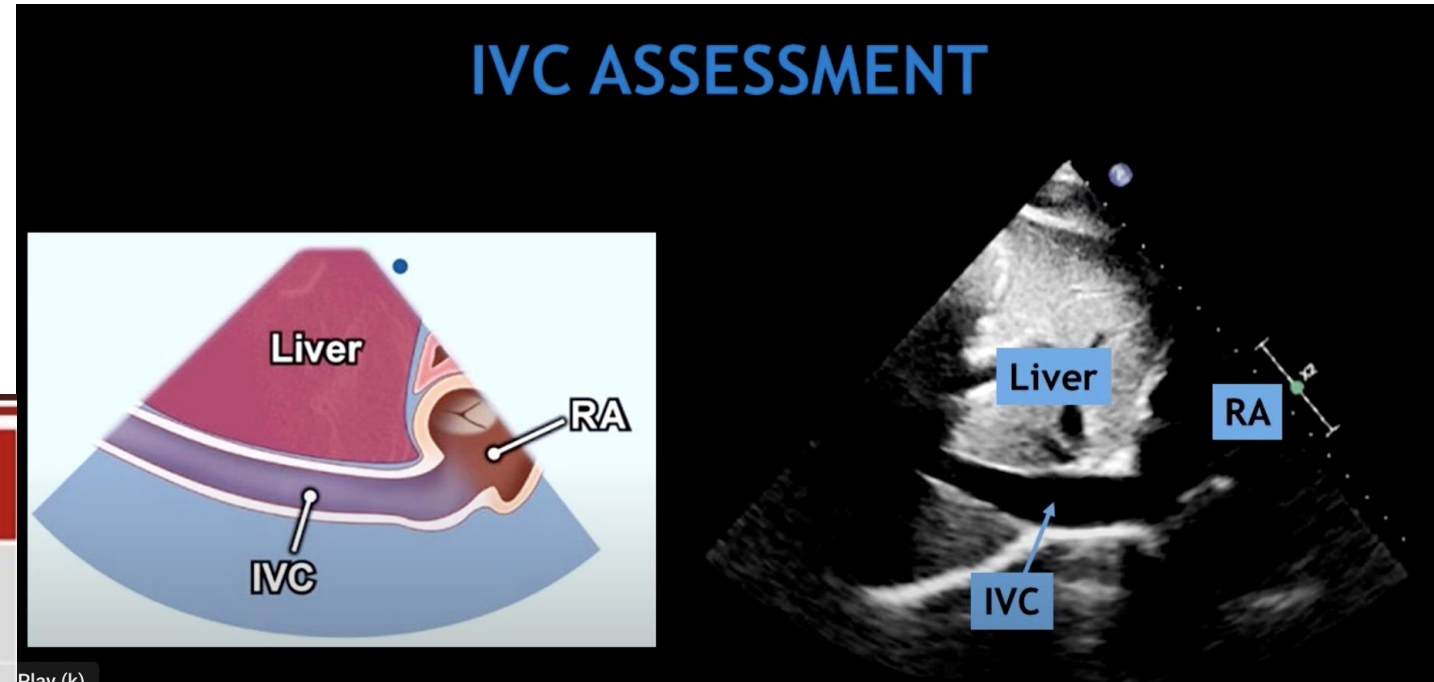
Cardiovascular cause for hypotension

- Pump function : quantify left & right-sided systolic dysfunction & identify its specific cause eg ischemia, stress cardiomyopathy
- Valve regurgitation
- Obstructive lesion : AV stenosis, dynamic LVOT from HCM and/or SAM of MV
- Pulmonary embolism
- External compression : tamponade physiology from pericardial effusion
- Vascular emergencies : aortic dissection

Echo in hypotensive : IVC assesment

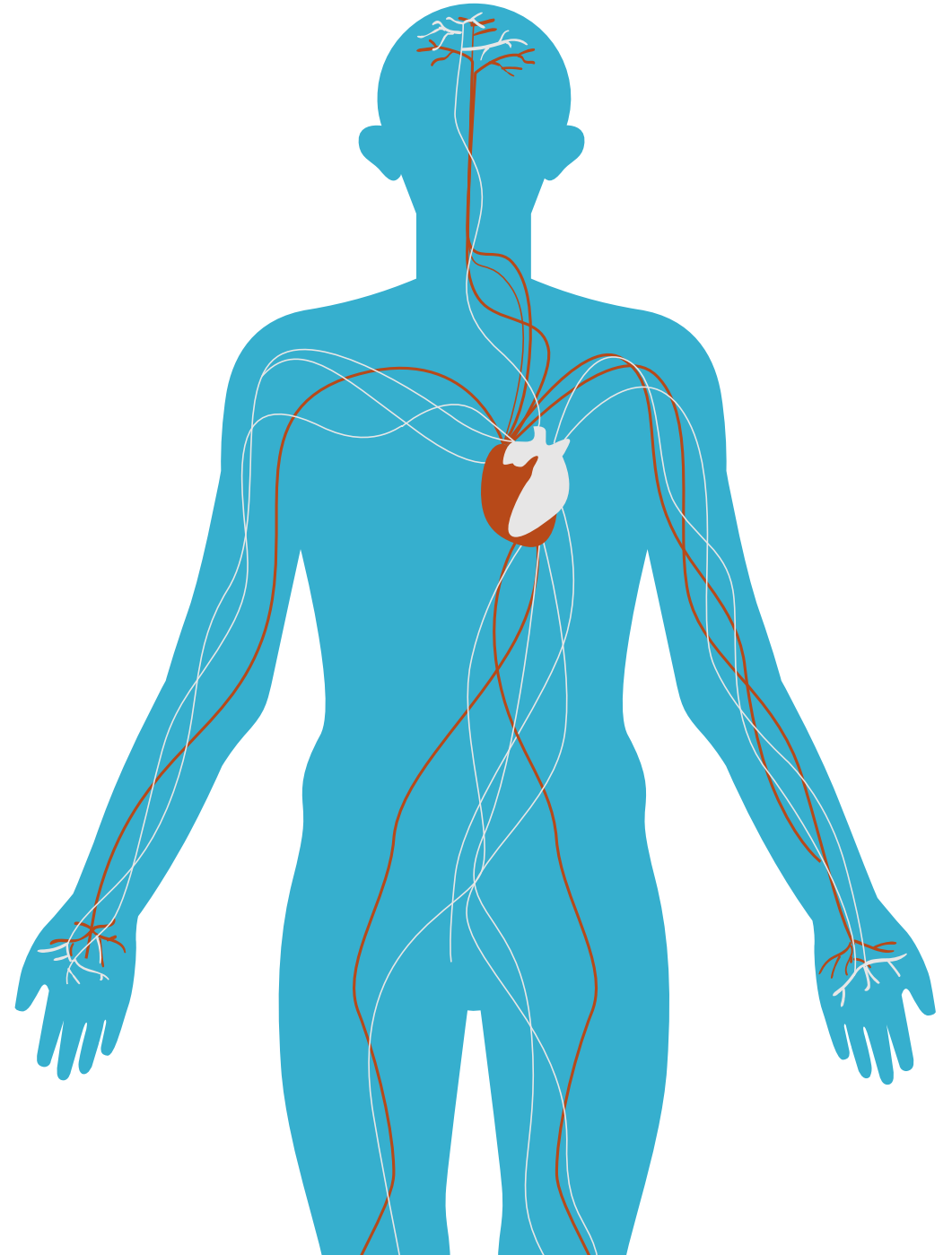
- IVC can be used to estimate RAP
- In patients with hypovolemic shock, the IVC diameter will be expected to be <2.1 cm and collapse $>50\%$ with inspiration

	IVC Size	% Collapse	RA Pressure
Low	< 2.1 cm Normal	$> 50\%$ Normal	3 mmHg
Intermediate	< 2.1 cm Normal	$< 50\%$ Abnormal	8 mmHg
	> 2.1 cm Abnormal	$> 50\%$ Normal	8 mmHg
High	>2.1 cm Abnormal	$< 50\%$ Abnormal	15 mmHg



04

ECHO IN STROKE



CASE 7

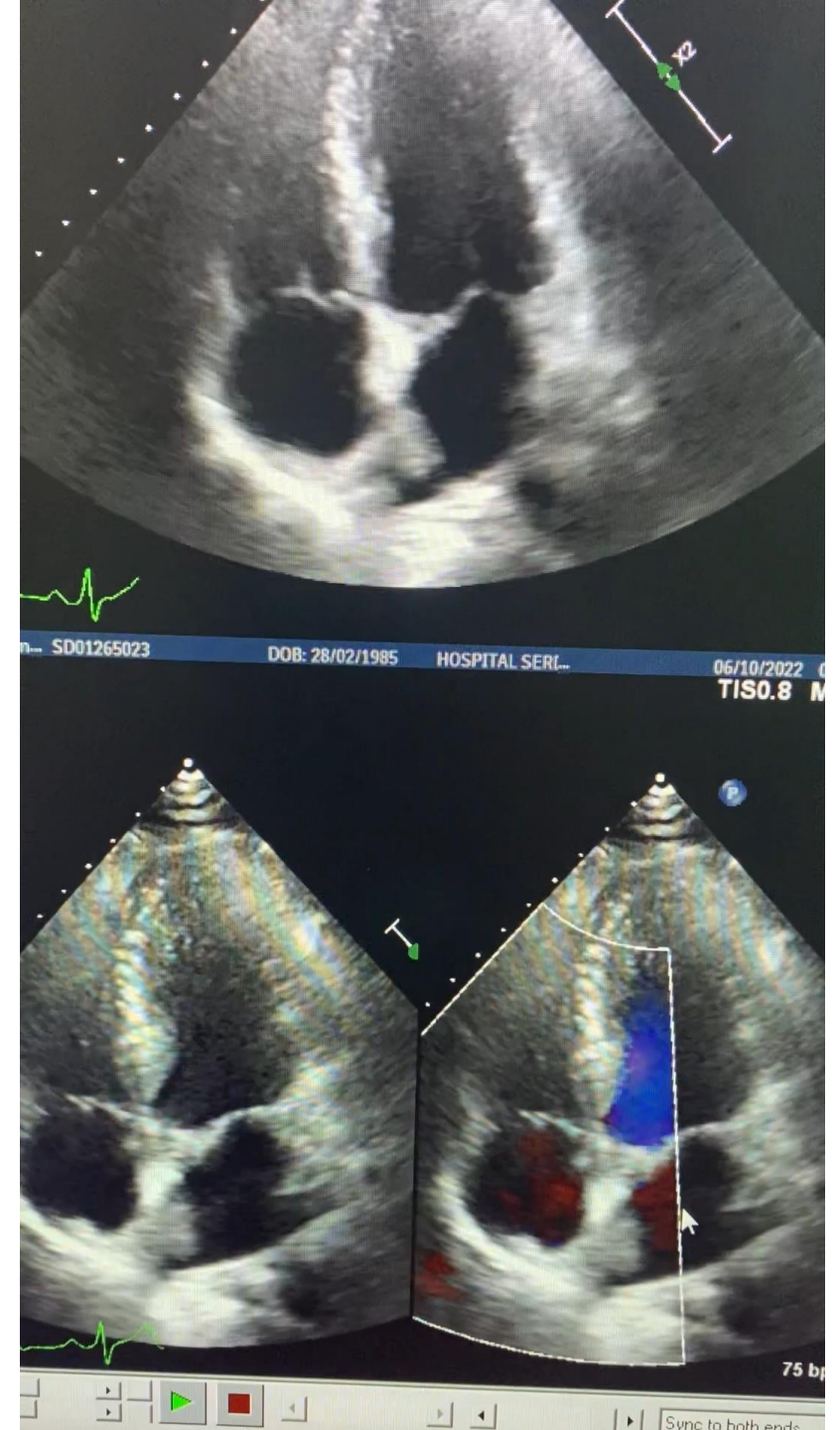
30/Male

Presented with Acute CVA

GCS E4,V1,M5

Referred to cardio for young stroke, to look for shunt / thrombus

- Commonly associated with mitral stenosis and atrial fibrillation
- Most common site : LAA
- Stasis of blood within LA predisposes to thrombus formation
- Spontaneous echo contrast or smoke is the swirling hazy echo appearance due to poor blood flow



CASE 8

60/Male

Referred from district hosp for Wellen's syndrome with persistent chest pain and reduced effort tolerance.

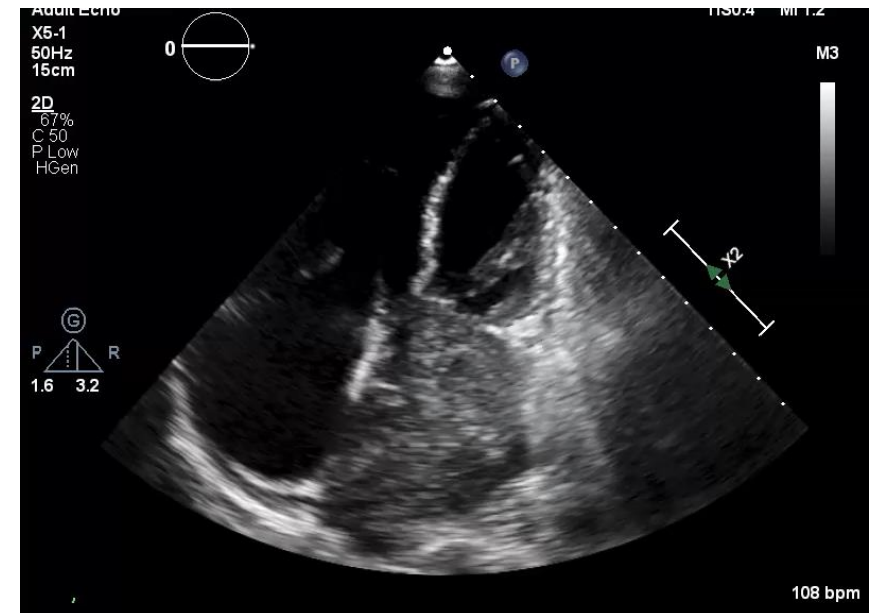
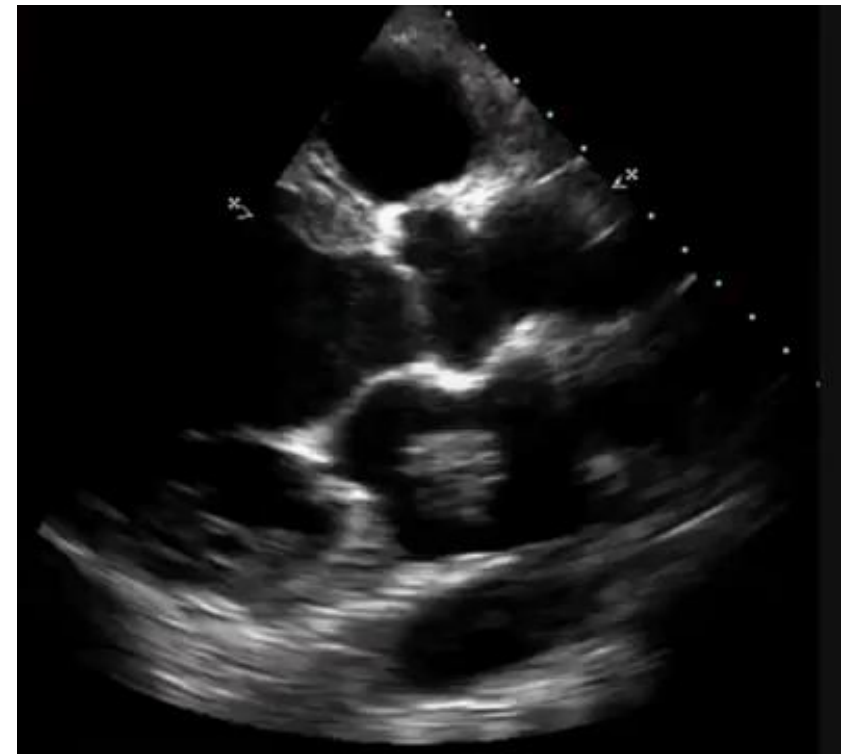
Urgent COROS : Single vessel disease, PCI LAD

At recovery area, noted facial asymmetry and slurred speech



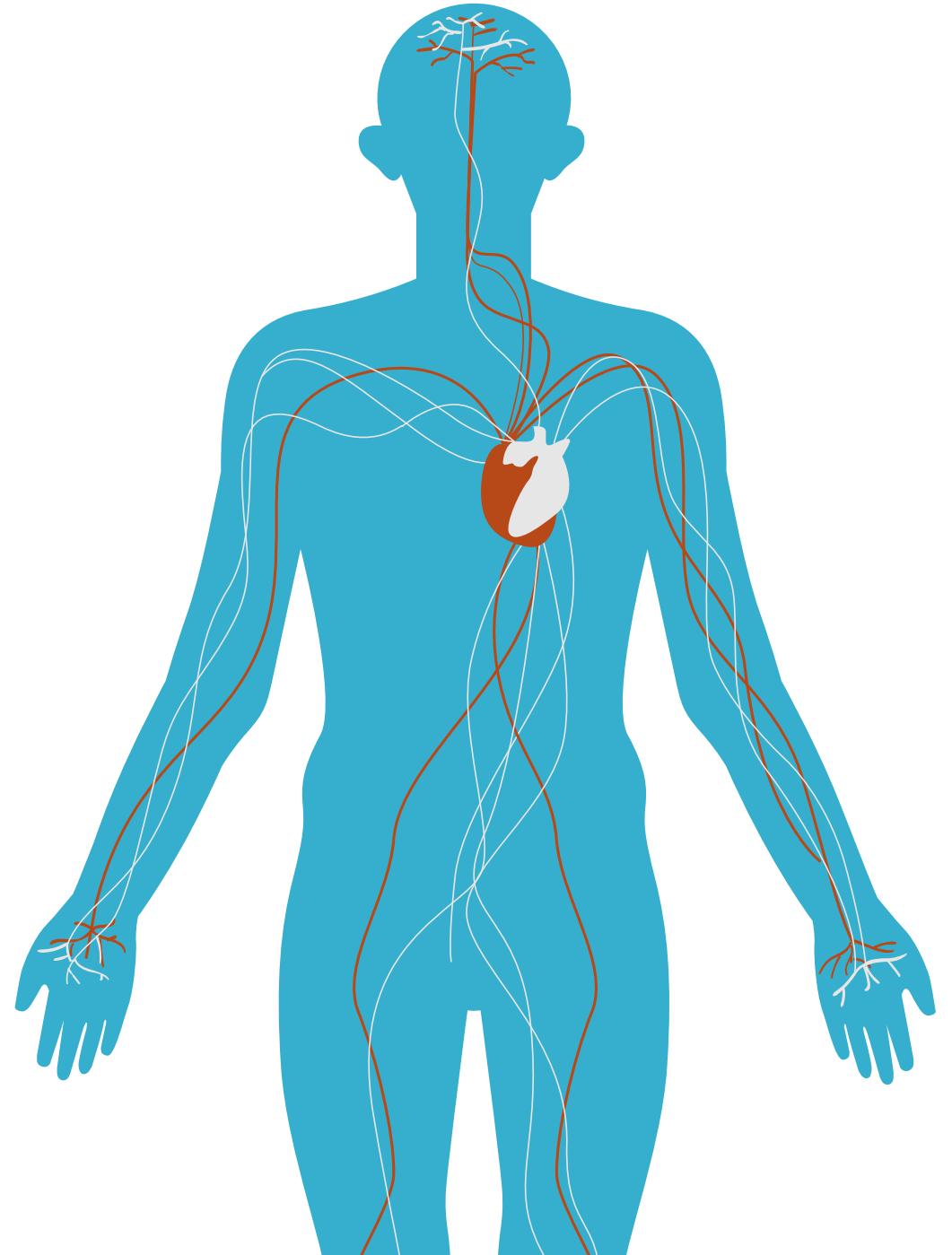
CASE 9

- 30 year old lady presented with right lower limb weakness.
- Hemodynamically stable
- BP:90/50mmhg Pr:90bpm
- Heart: no murmur
- Lungs:clear



05

ECHO IN SYNCOPE



Various anatomic cardiac causes of syncope are:

- Severe AS
- Large atrial myxoma
- HOCM
- Valve : MS, PS
- Cardiac tamponade
- Massive pulmonary embolism
- Severe pulmonary hypertension
- Acute MI

Case 10

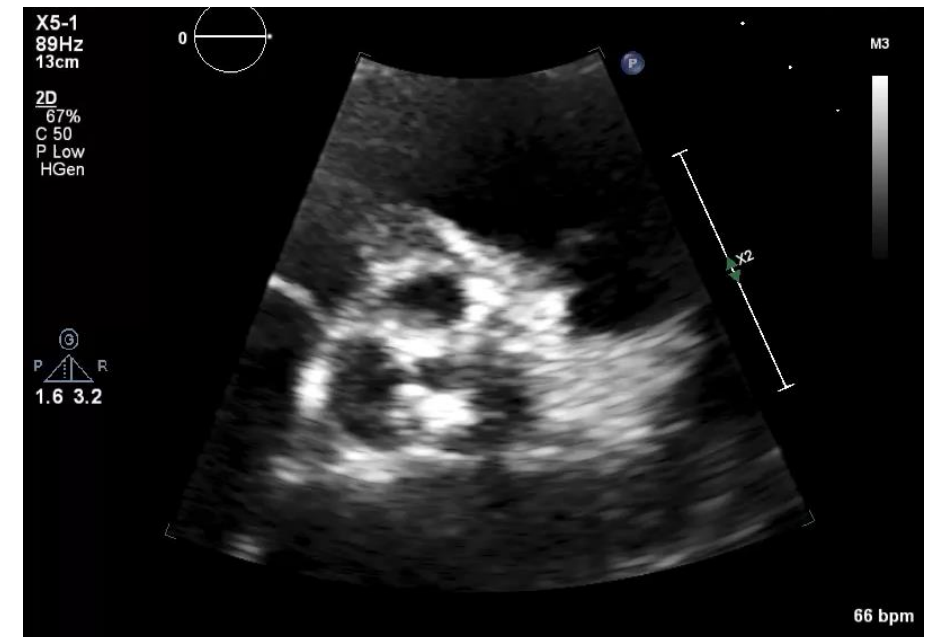
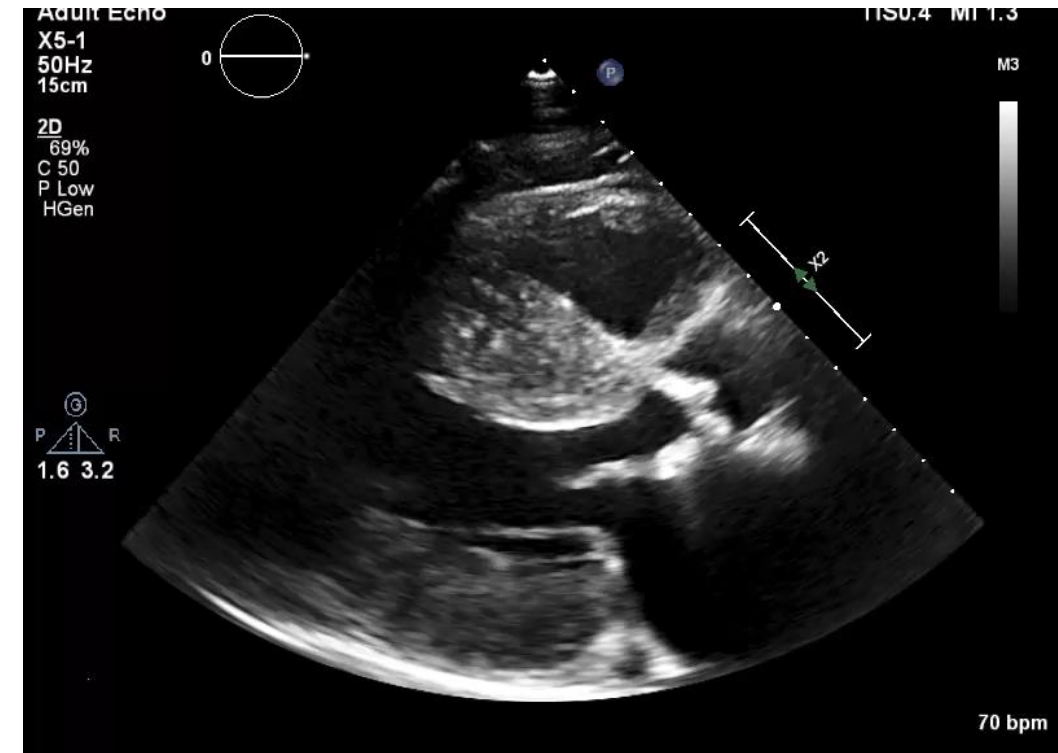
76 year old lady, presented with progressive shortness of breath for 3 months associated with chest pain on exertion and had 1 episode of syncope.

BP:180/90mmhg

Pr:89bpm

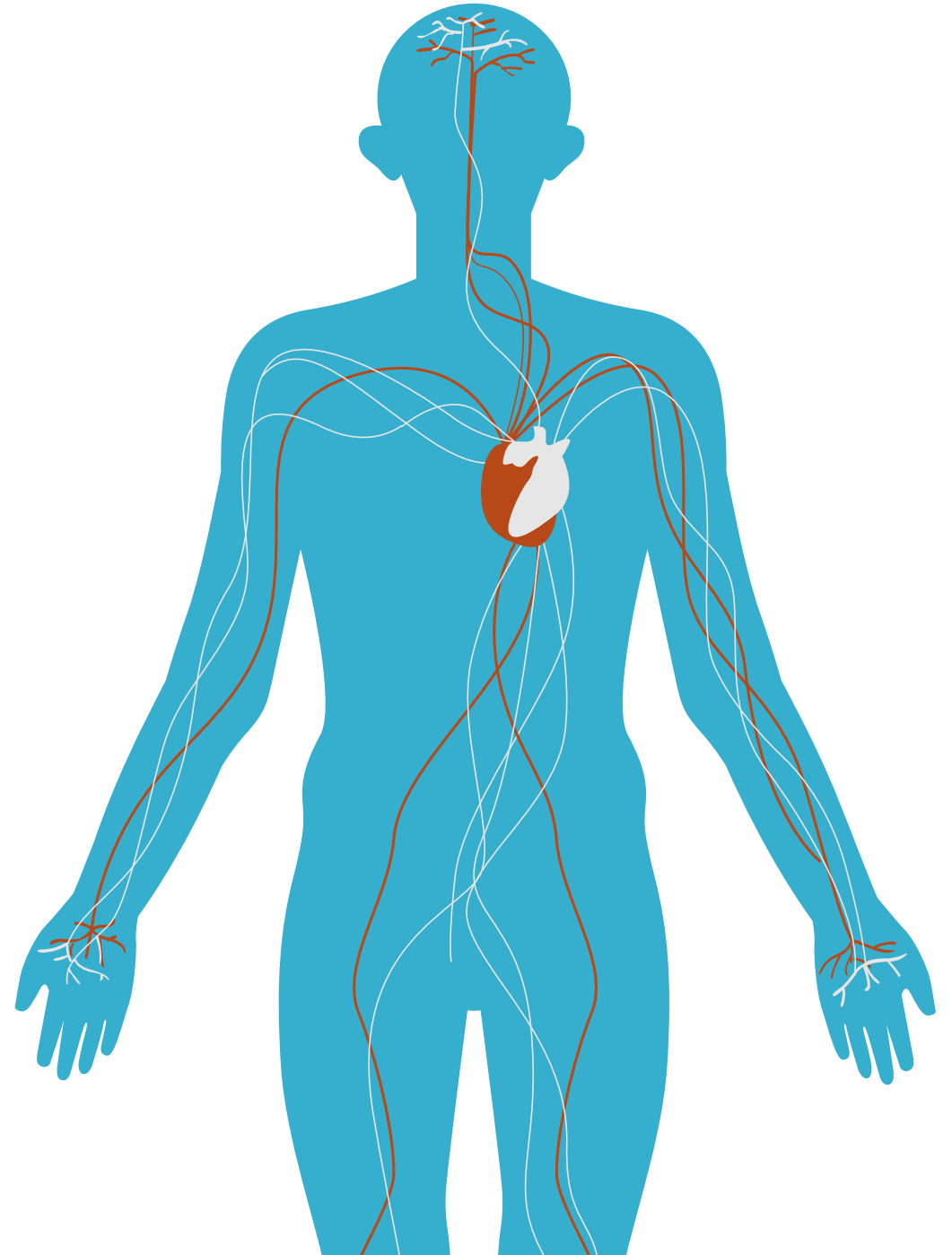
Lungs:clear

Heart: Loud ejection systolic murmur



06

ECHO IN PALPITATION



ECHO IN PALPITATION

- Arrhythmias are important cause of palpitation
- These arrhythmias can occur in a structurally normal heart or when there is an anatomical disorder



Use of echo for Atrial Fibrillation :

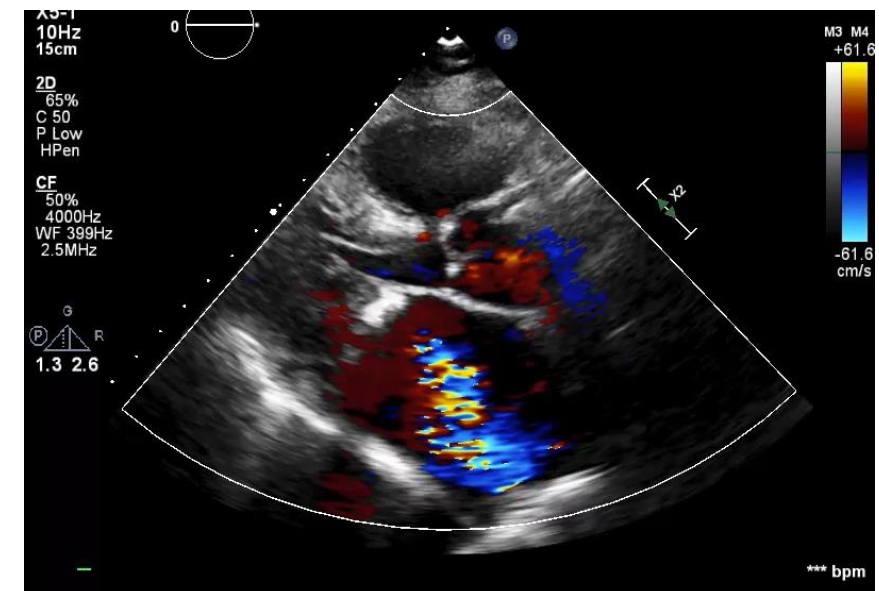
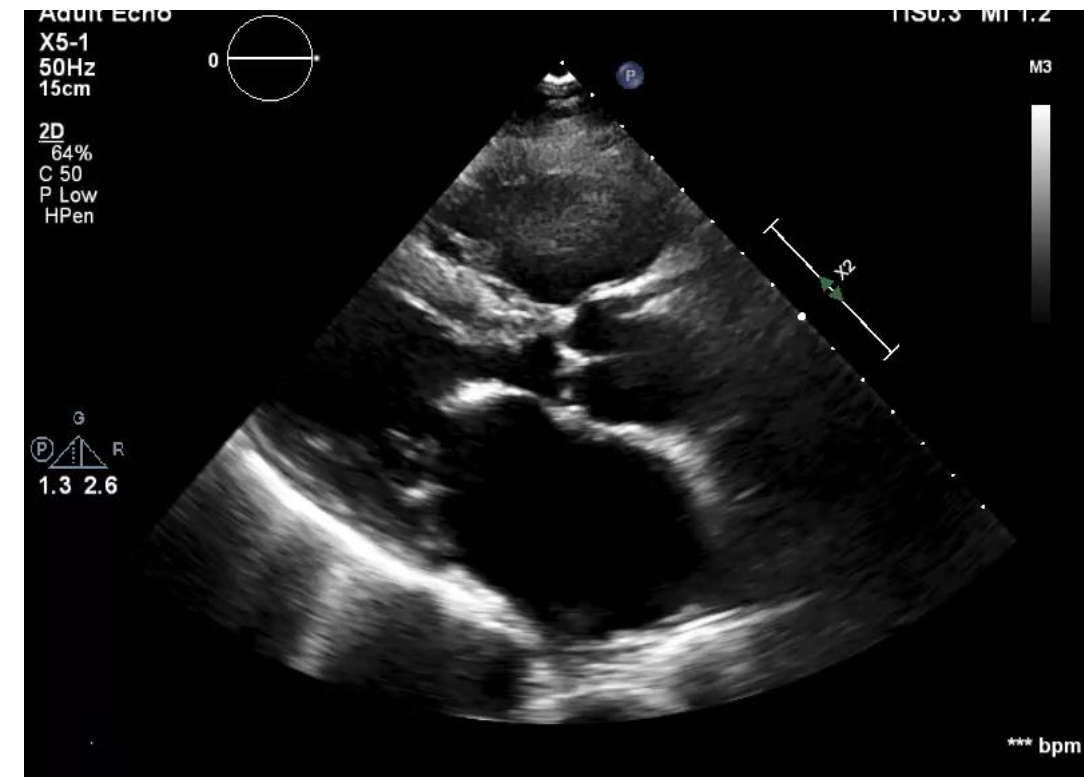
- AF : high prevalence of associated underlying CV diseases which often have specific therapeutic implications
- To diagnose the anatomical disorder : MS
- Useful to evaluate the LV function and LA size which determine the success of cardioversion

Case 11

35 year old lady presented with palpitations and shortness of breath.

BP:100/50mmhg
Pr:90bpm
Lungs:clear
Heart: diastolic murmur

Ecg: Atrial fibrillation



Role of echo in Emergency setting

Chest pain

Syncope

Hypotension &
Shock



Dyspnoea

Stroke

Palpitation

Thank You!