

HF - causes

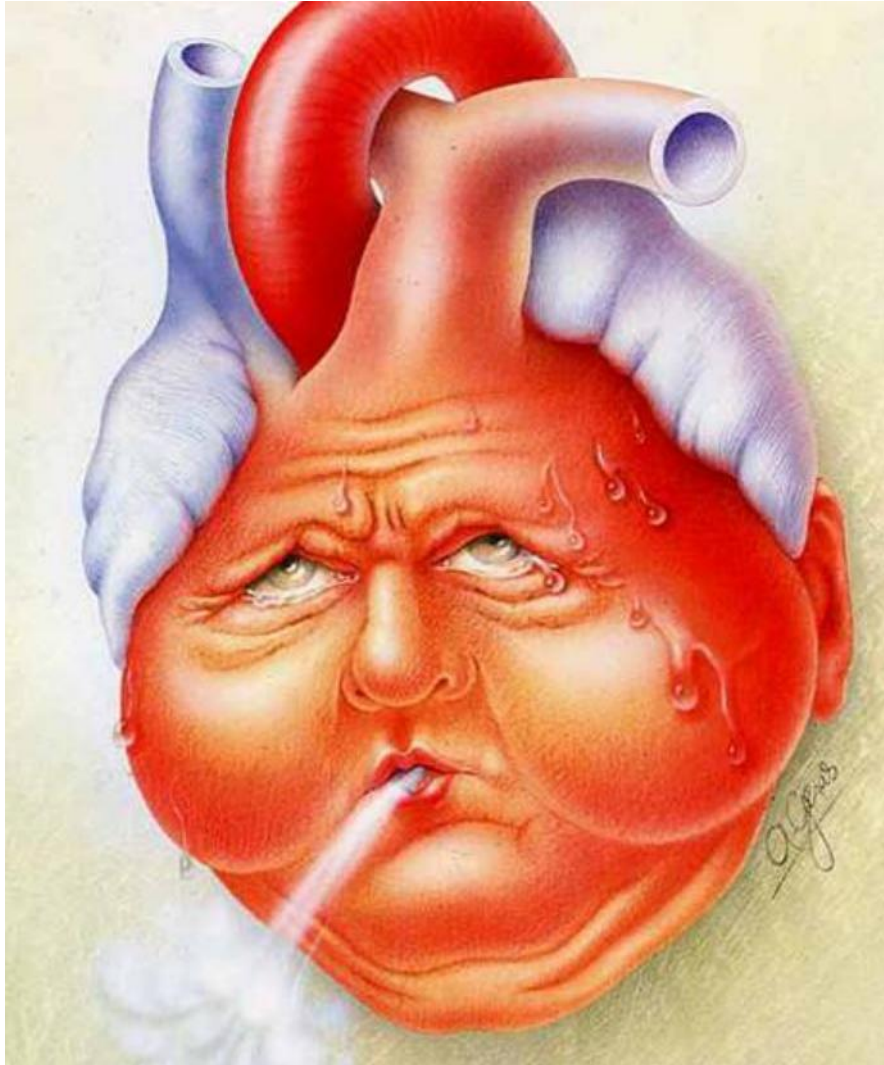
I Leontsinis

Cardiologist

Hippocratio Athens GH

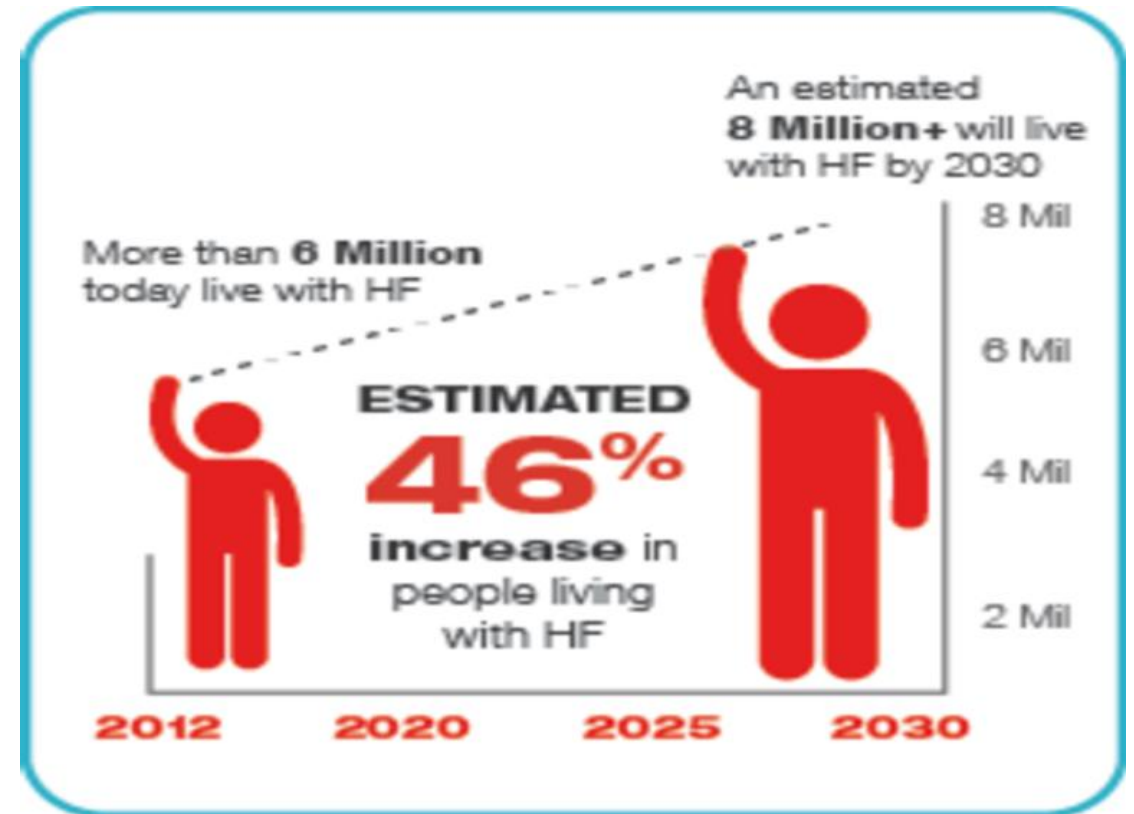
1st Cardiology University Dpt

Heart Failure



1 – 2 % adults in Europe

➤ **10% > 70 ys**





HF

Clinical syndrome

Symptoms

Signs

Structural and/or functional heart disorder

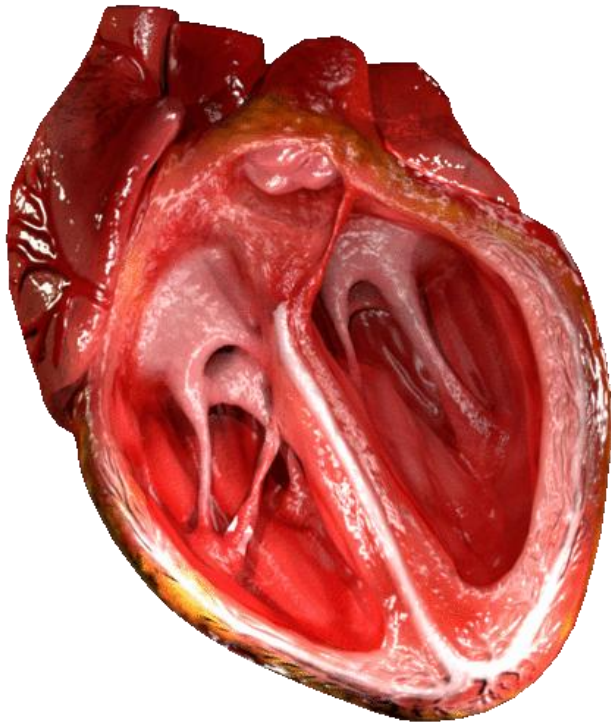
↑ elevated intracardiac pressures

↓ cardiac output (rest/exercise)

Symptoms	Signs
Typical	More specific
Breathlessness Orthopnoea Paroxysmal nocturnal dyspnoea Reduced exercise tolerance Fatigue, tiredness, increased time to recover after exercise Ankle swelling	Elevated jugular venous pressure Hepatojugular reflux Third heart sound (gallop rhythm) Laterally displaced apical impulse
Less typical	Less specific
Nocturnal cough Wheezing Bloated feeling Loss of appetite Confusion (especially in the elderly) Depression Palpitation Dizziness Syncope Bendopnea ^a	Weight gain (>2 kg/week) Weight loss (in advanced HF) Tissue wasting (cachexia) Cardiac murmur Peripheral oedema (ankle, sacral, scrotal) Pulmonary crepitations Pleural effusion Tachycardia Irregular pulse Tachypnoea Cheyne-Stokes respiration Hepatomegaly Ascites Cold extremities Oliguria Narrow pulse pressure

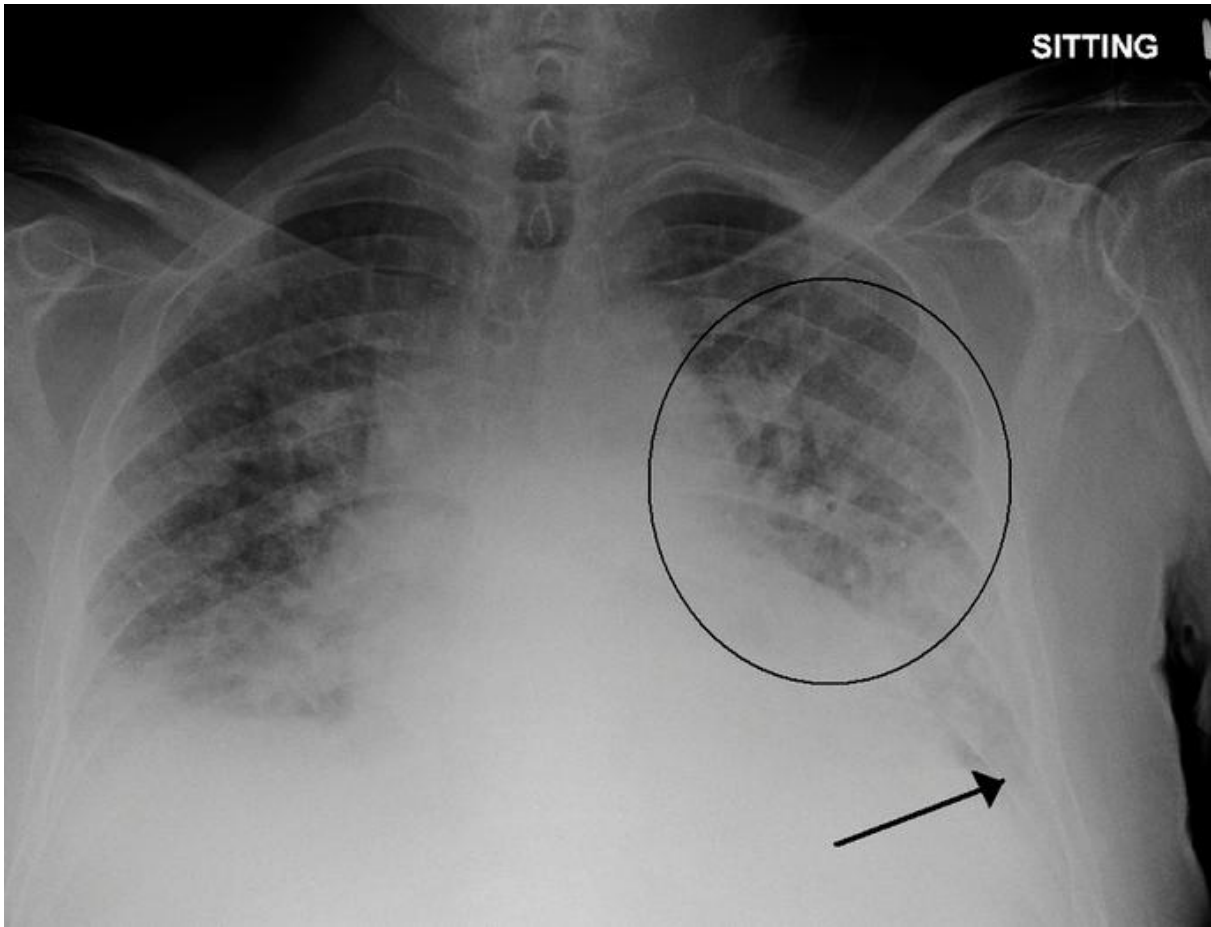
Type of HF		HFrEF	HFmrEF	HFpEF
CRITERIA	1	Symptoms ± Signs ^a	Symptoms ± Signs ^a	Symptoms ± Signs ^a
	2	LVEF ≤40%	LVEF 41 – 49% ^b	LVEF ≥50%
	3	—	—	Objective evidence of cardiac structural and/or functional abnormalities consistent with the presence of LV diastolic dysfunction/raised LV filling pressures, including raised natriuretic peptides ^c

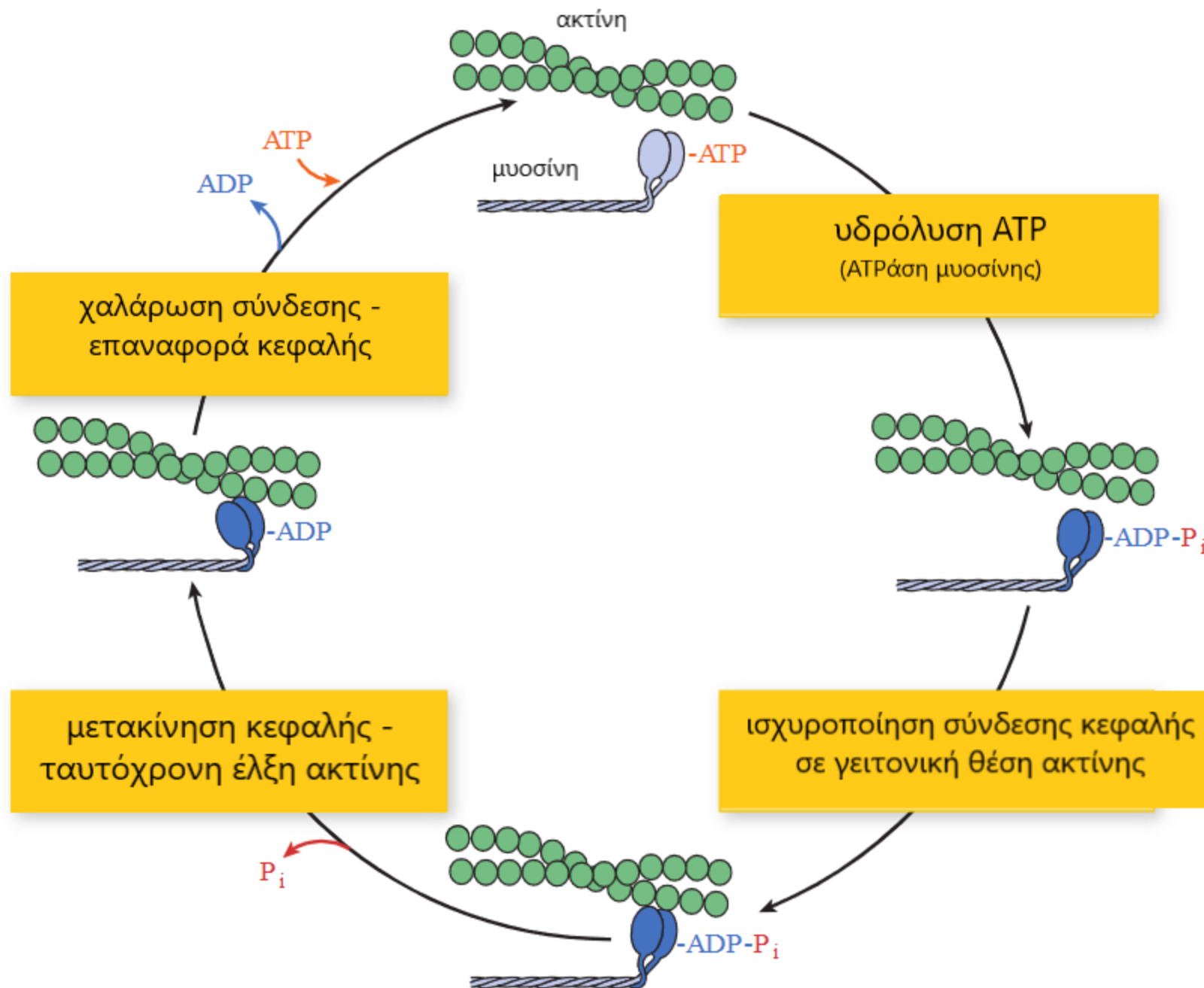
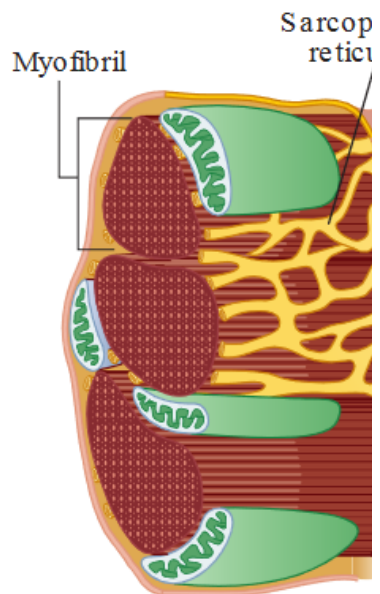
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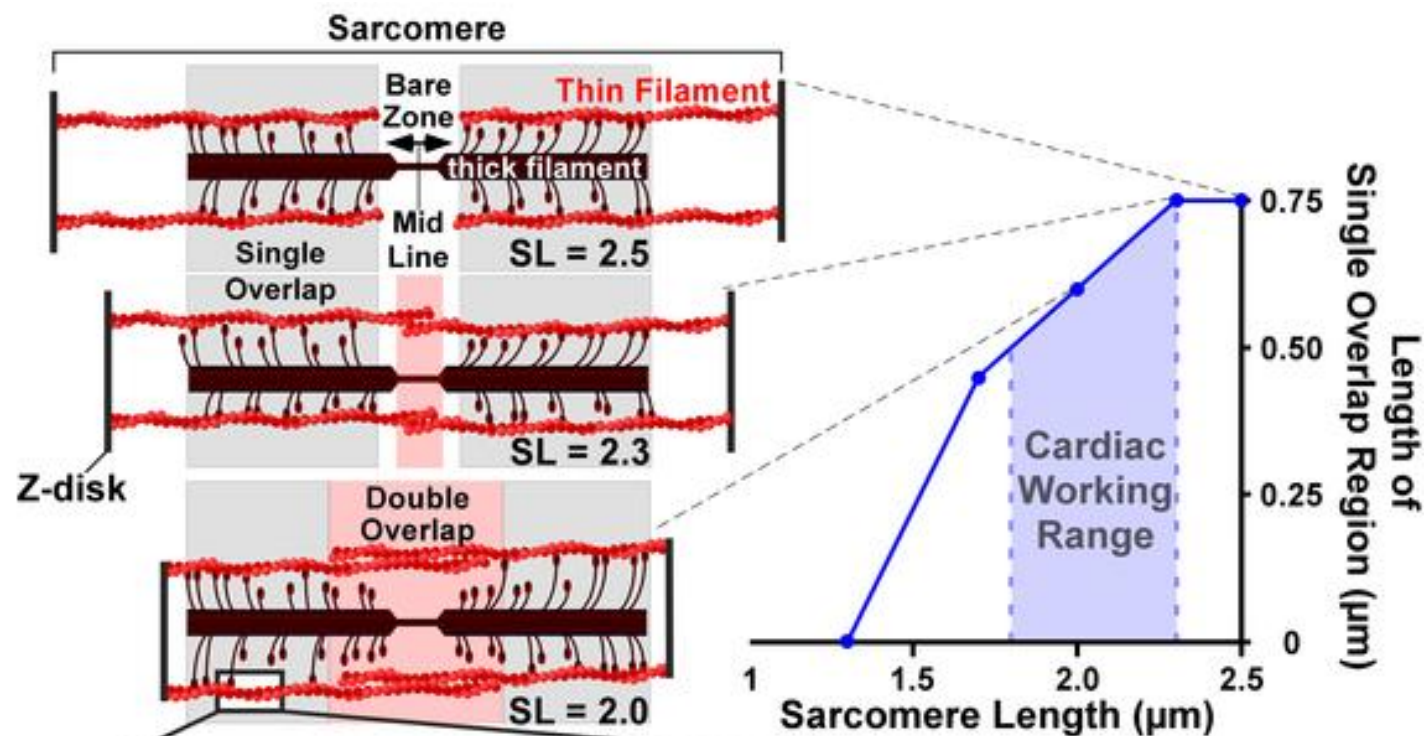
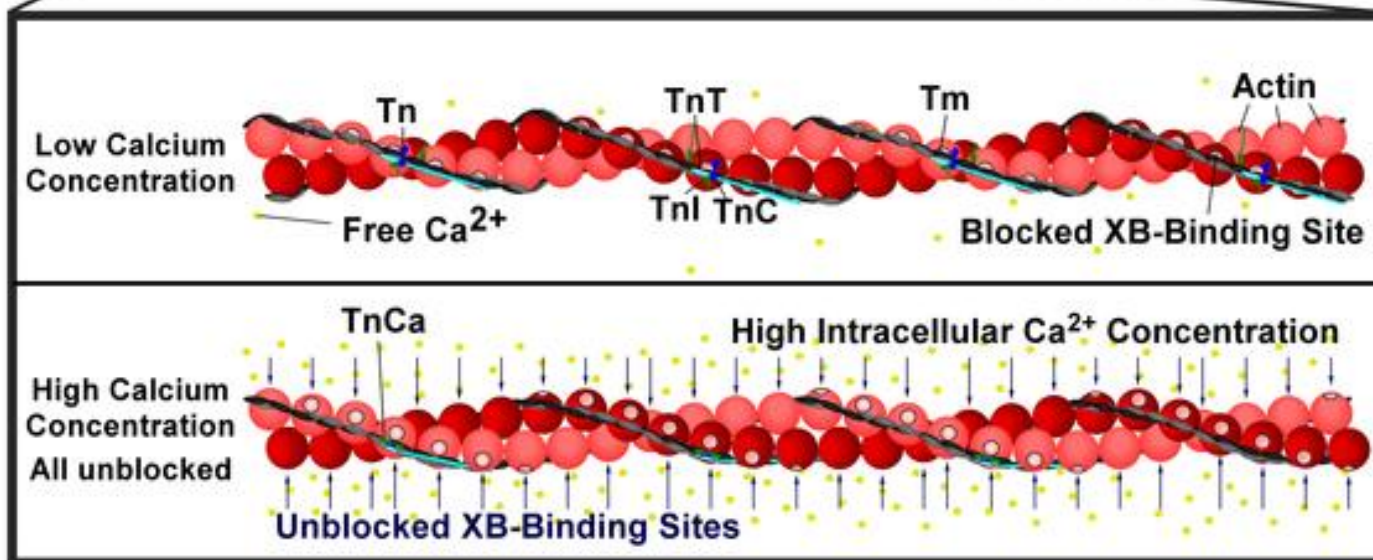


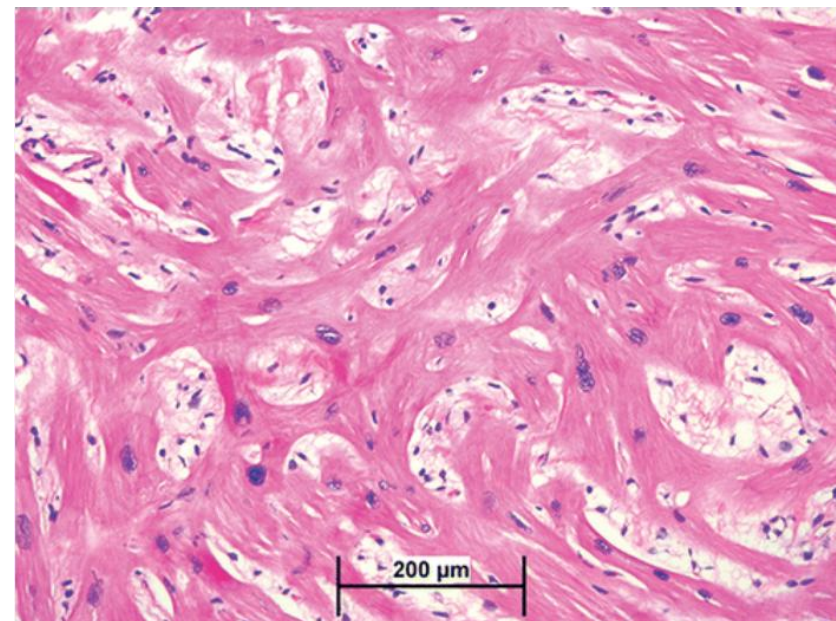
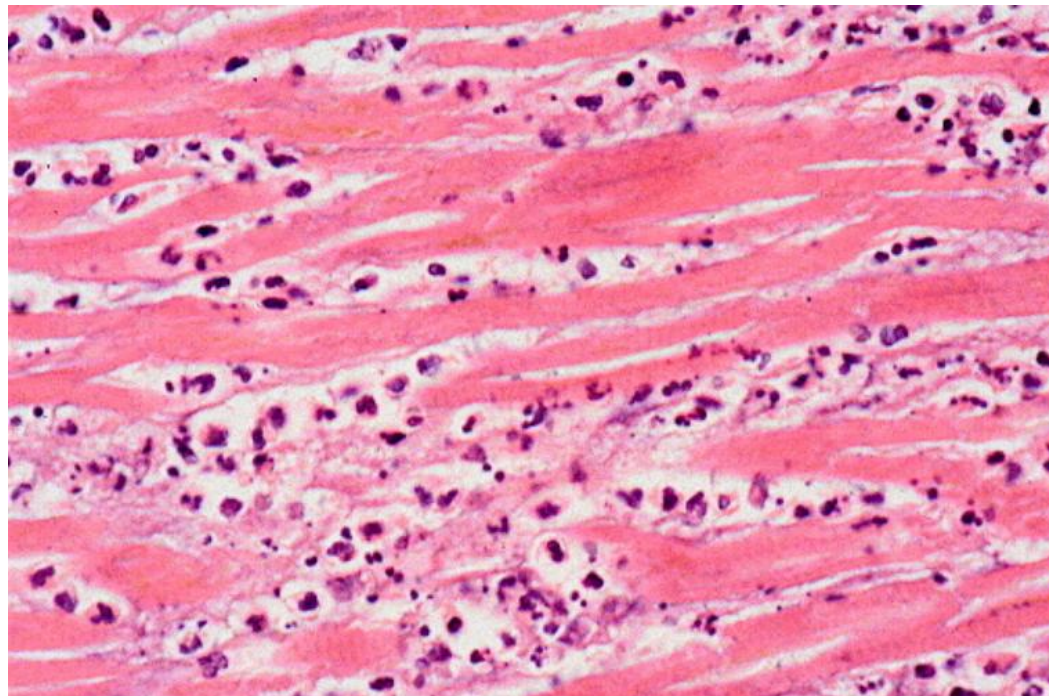
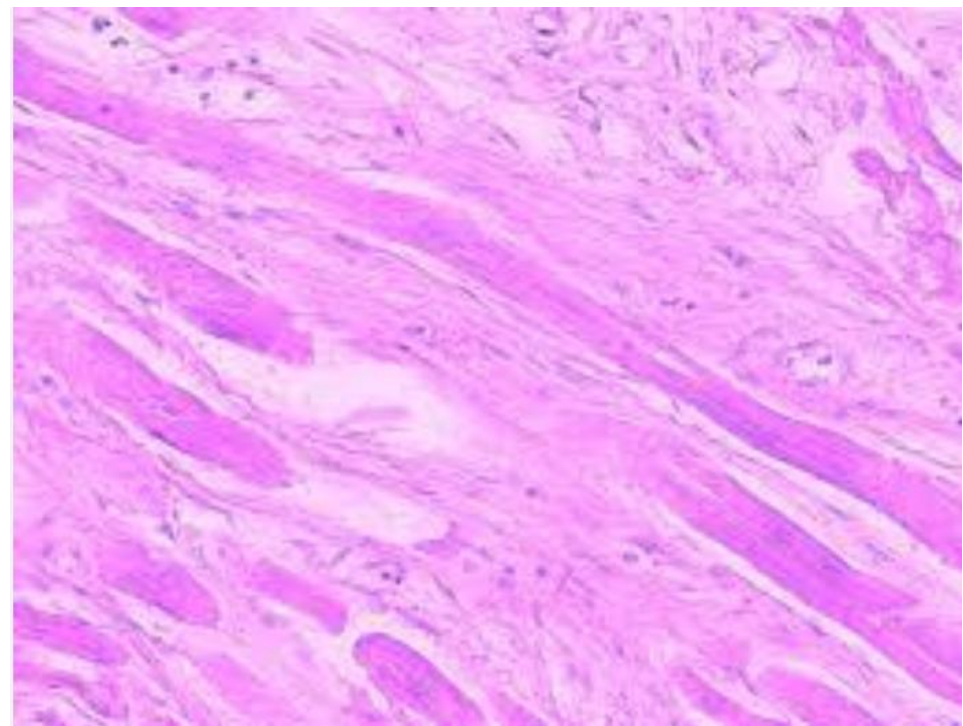
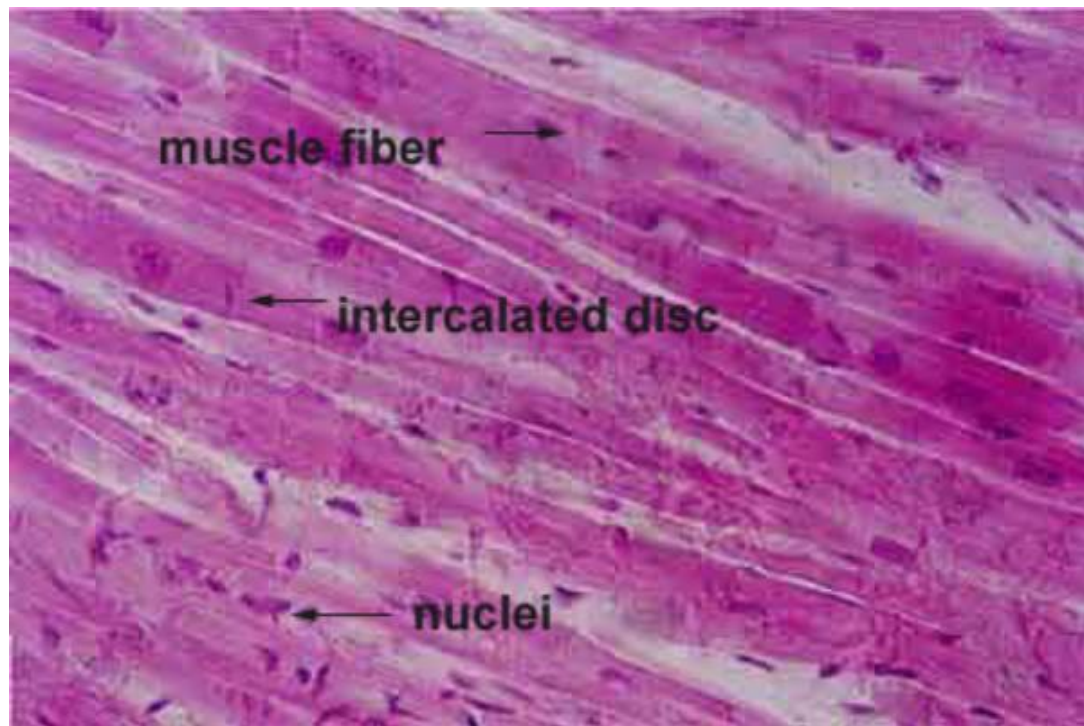
Dysfunctional

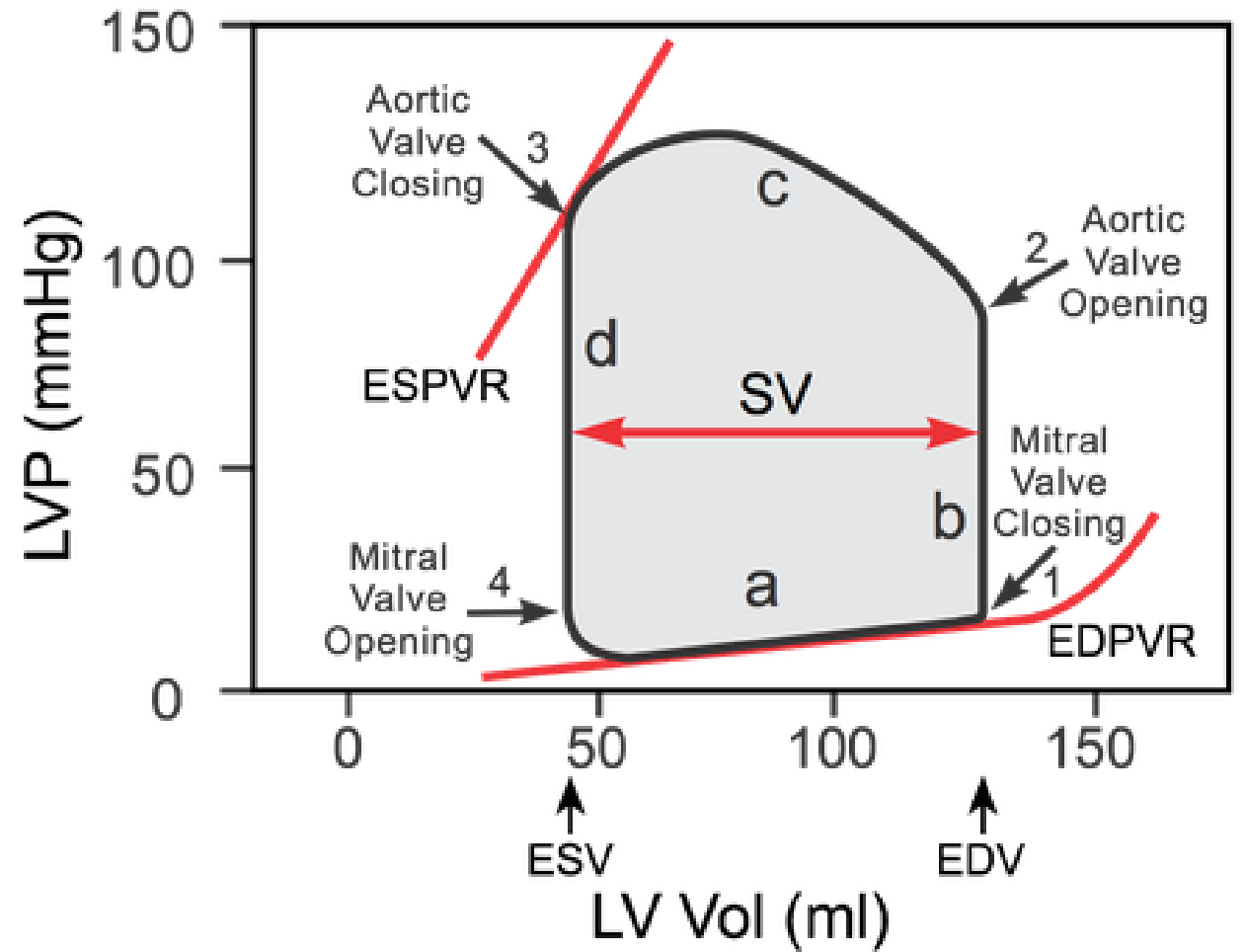
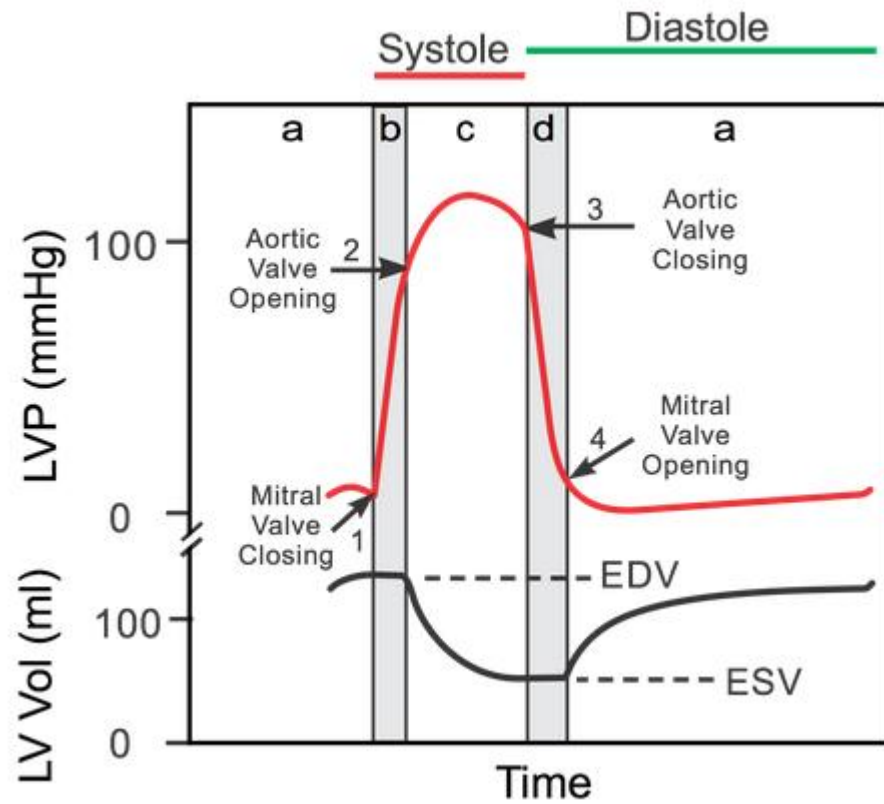
- Myocardium
- Valves
- Pericardium
- Endocardium
- Heart rhythm generator/transmission

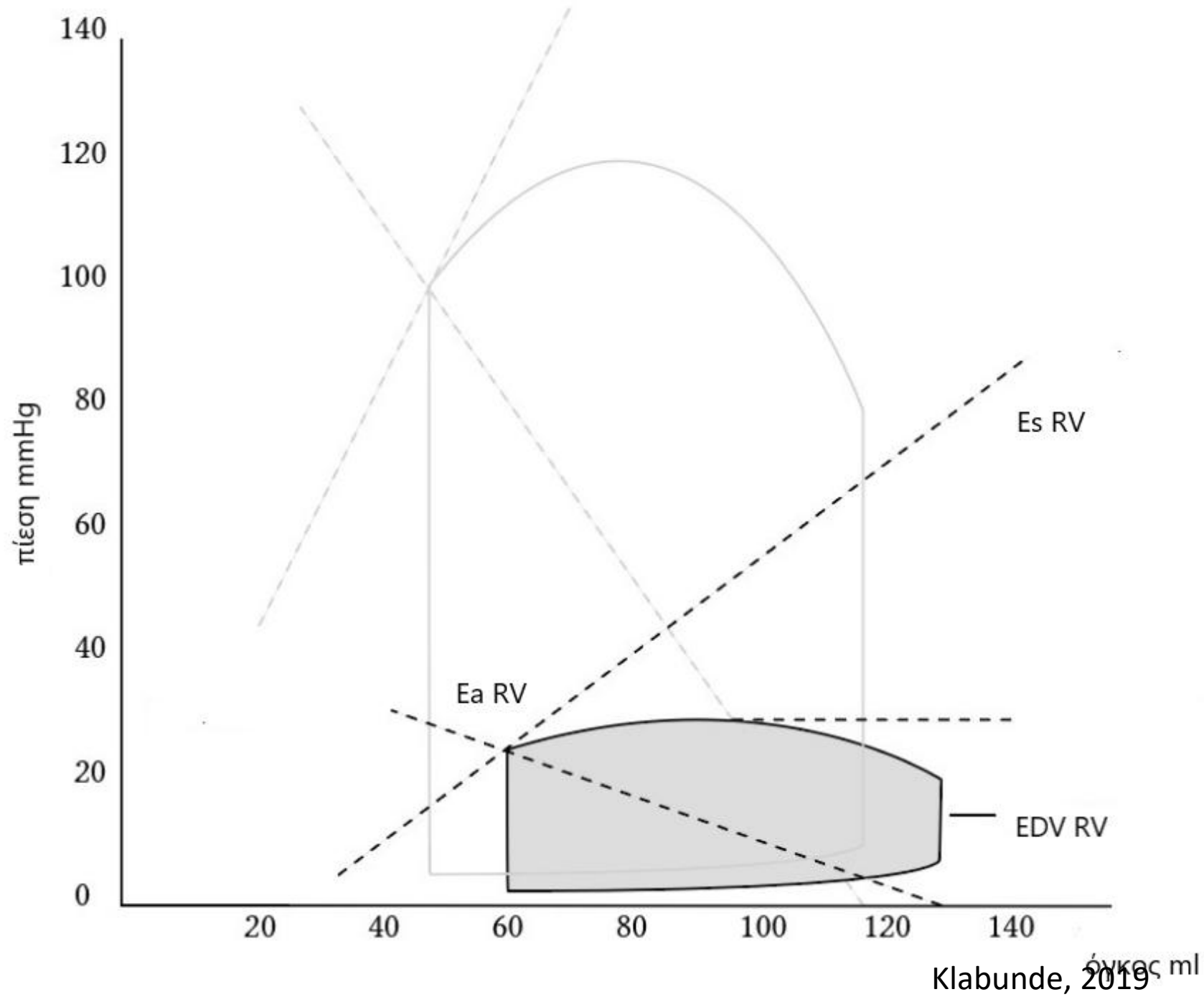


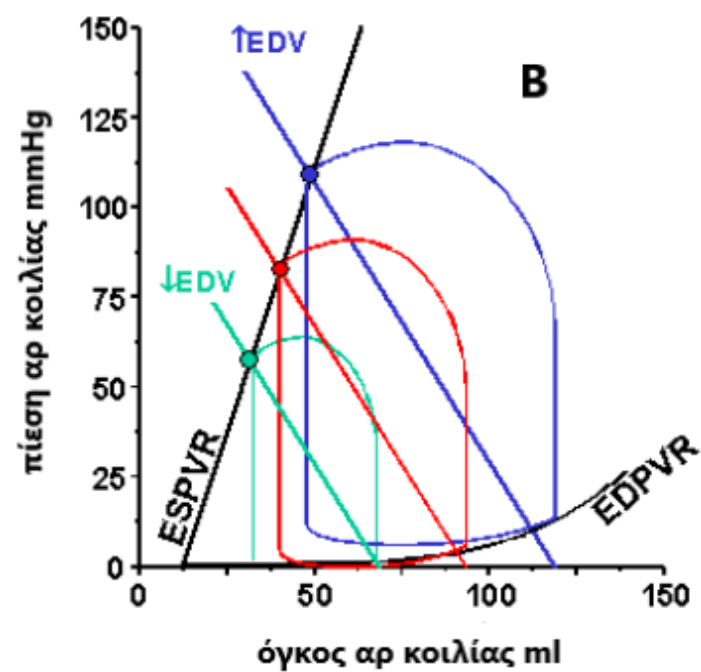
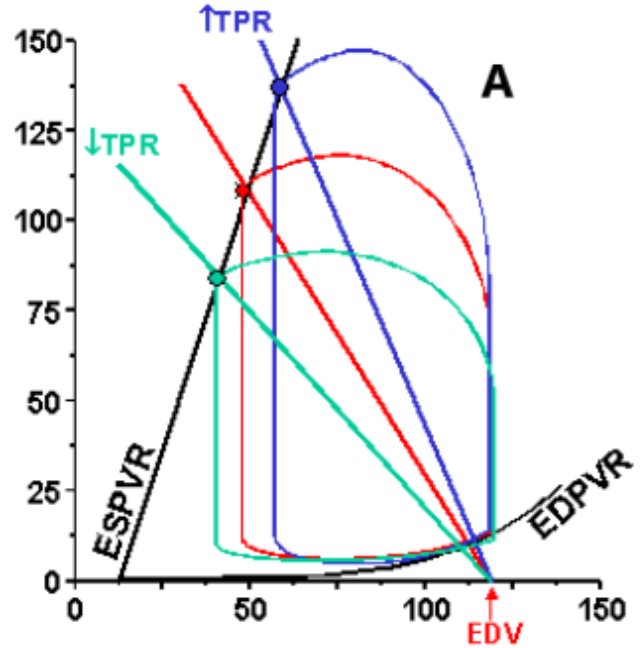


A**B**

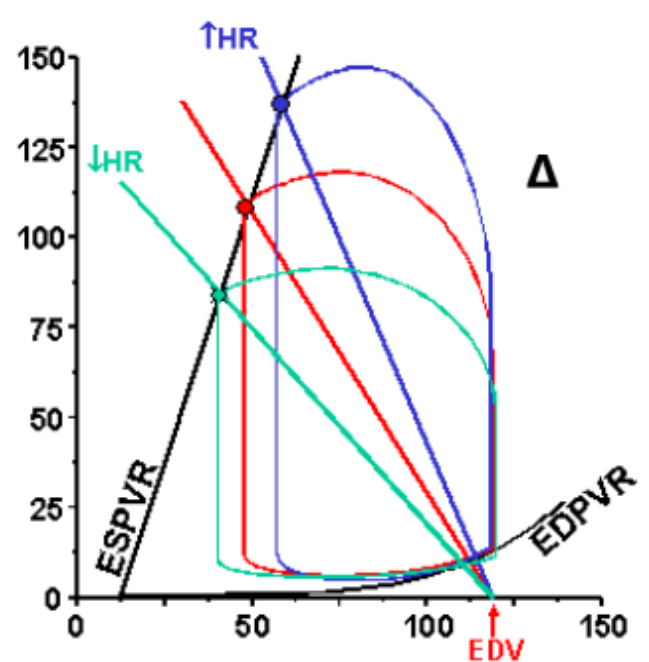
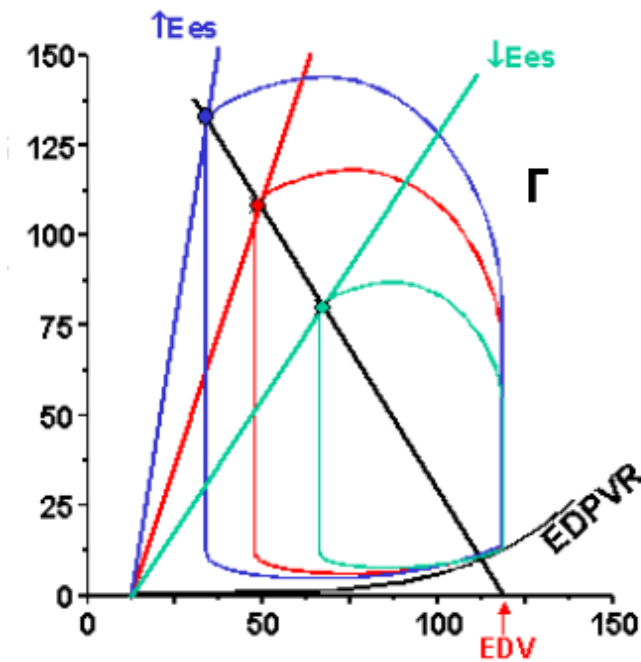


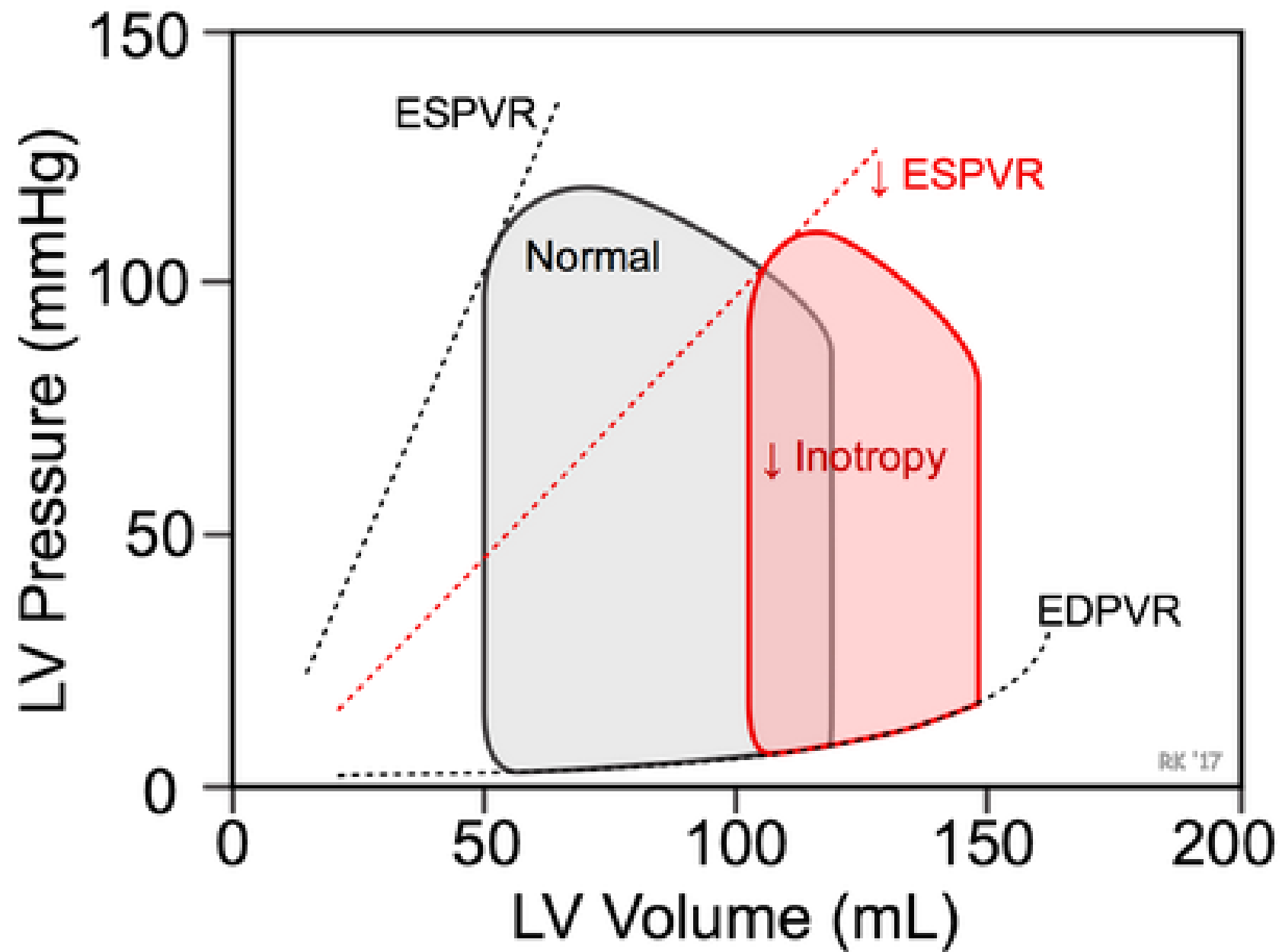




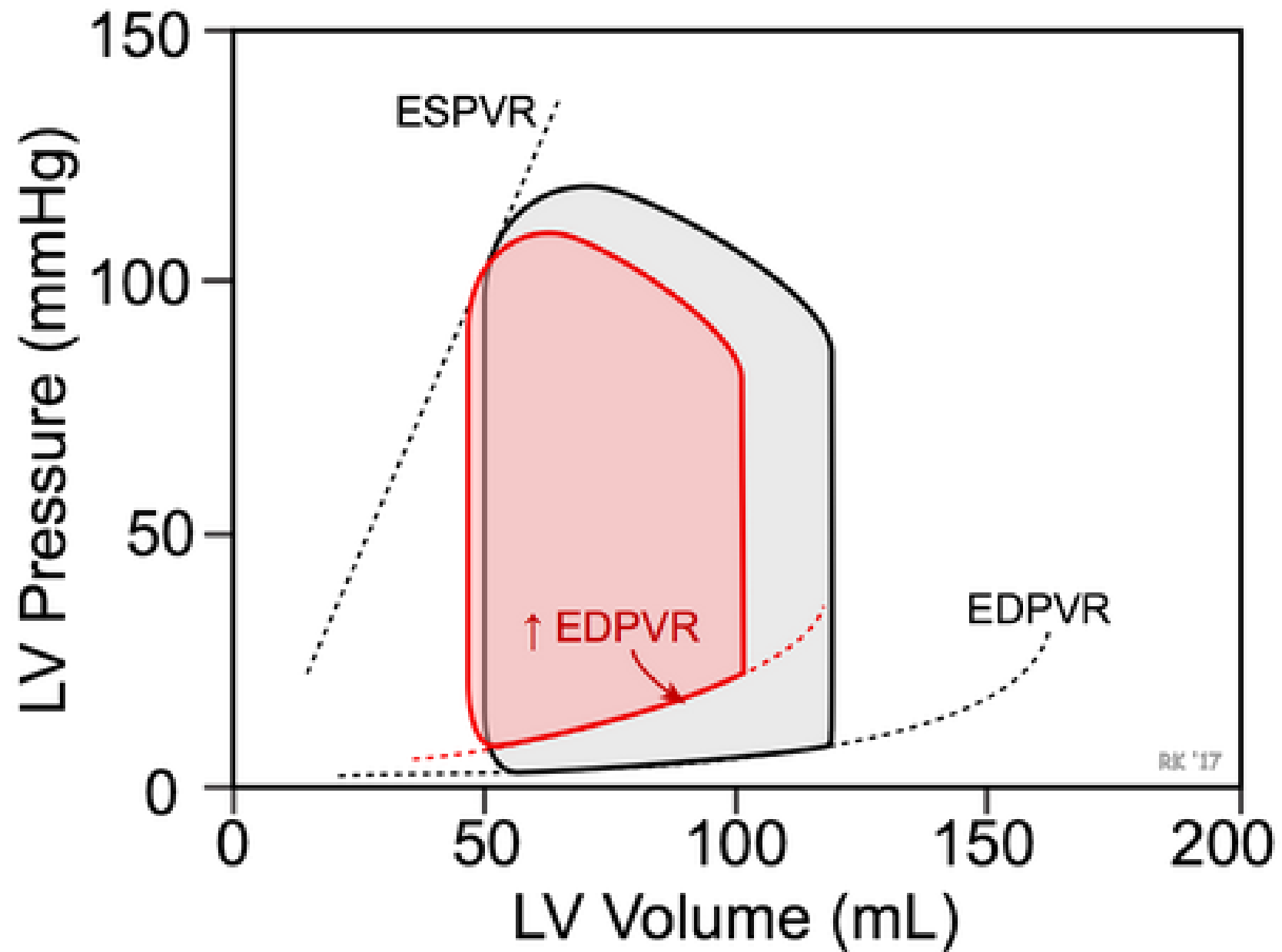


Cardiac Output = Stroke Volume x Heart Rate

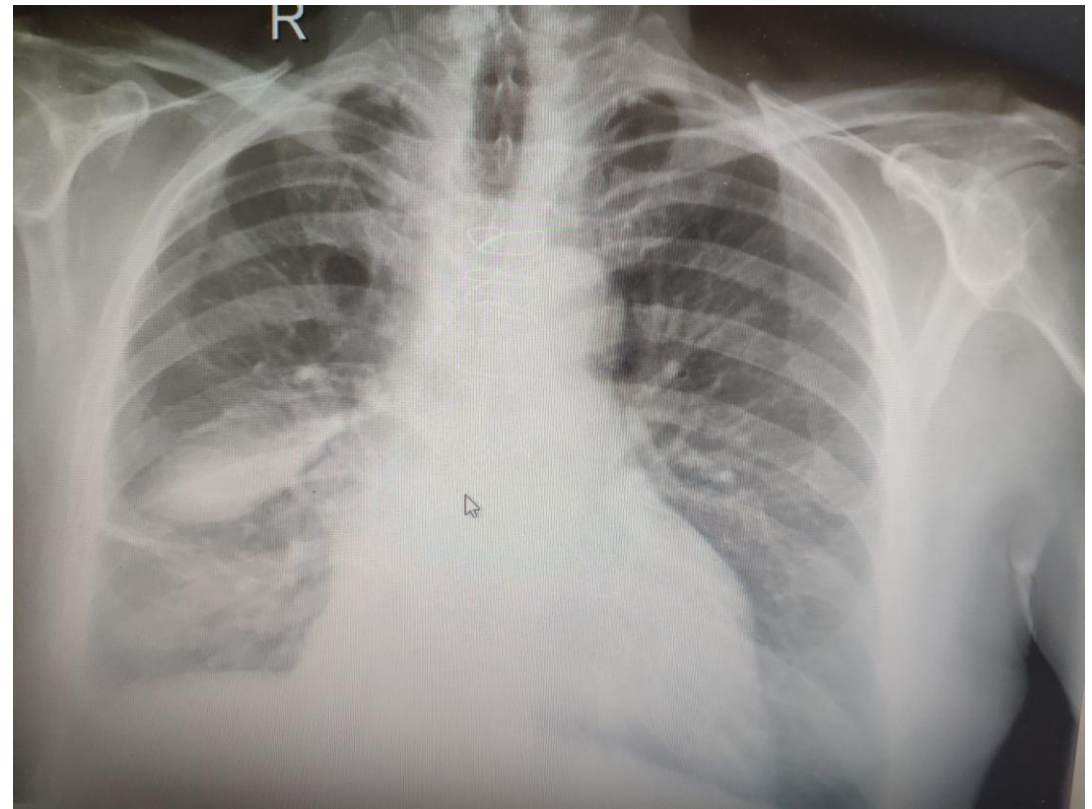
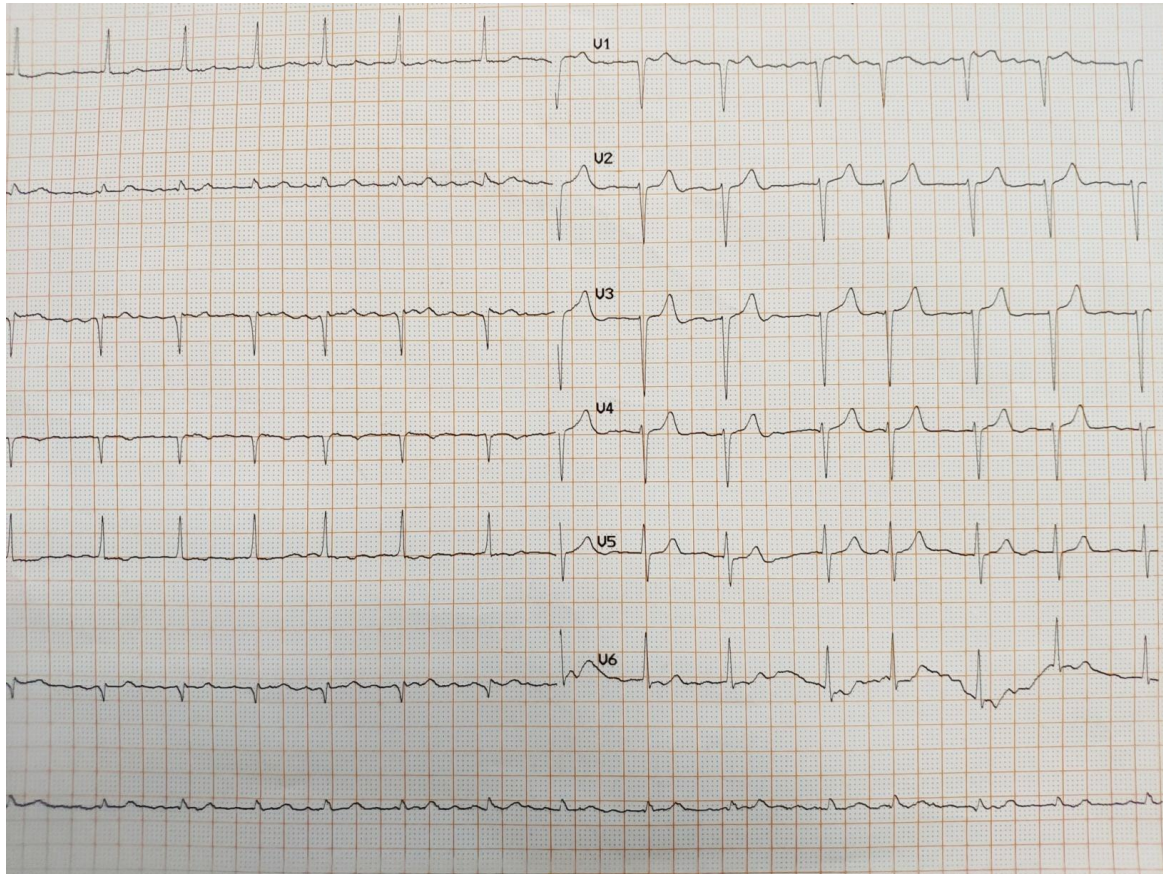




RK '17



1. CAD



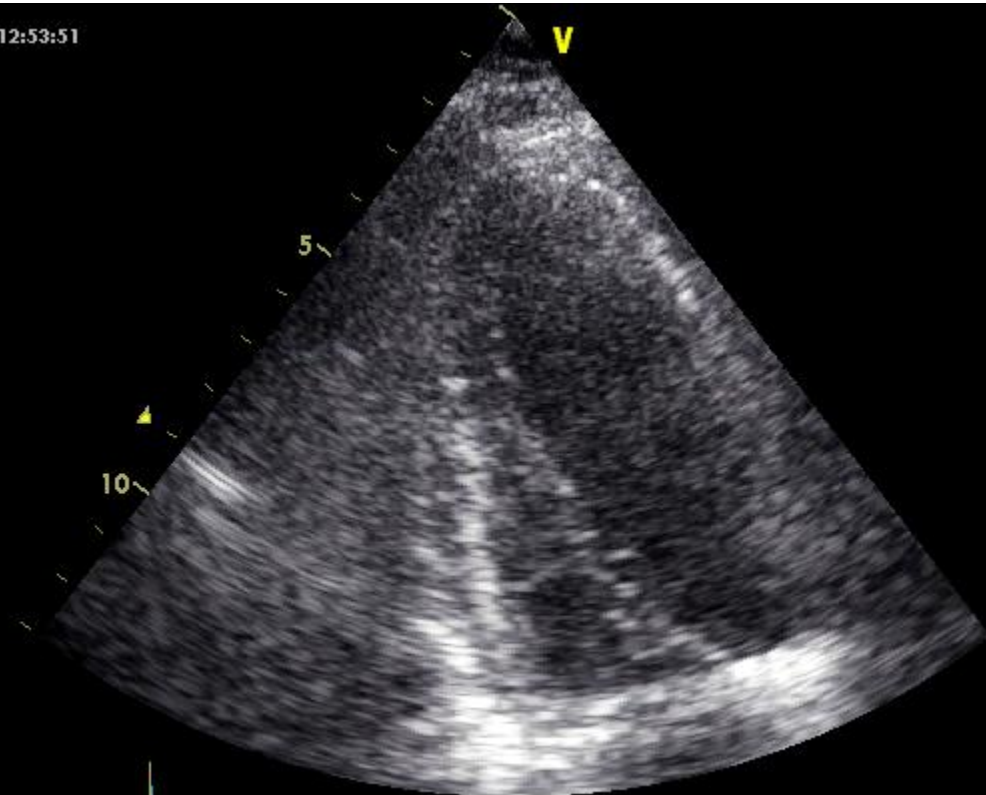
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V



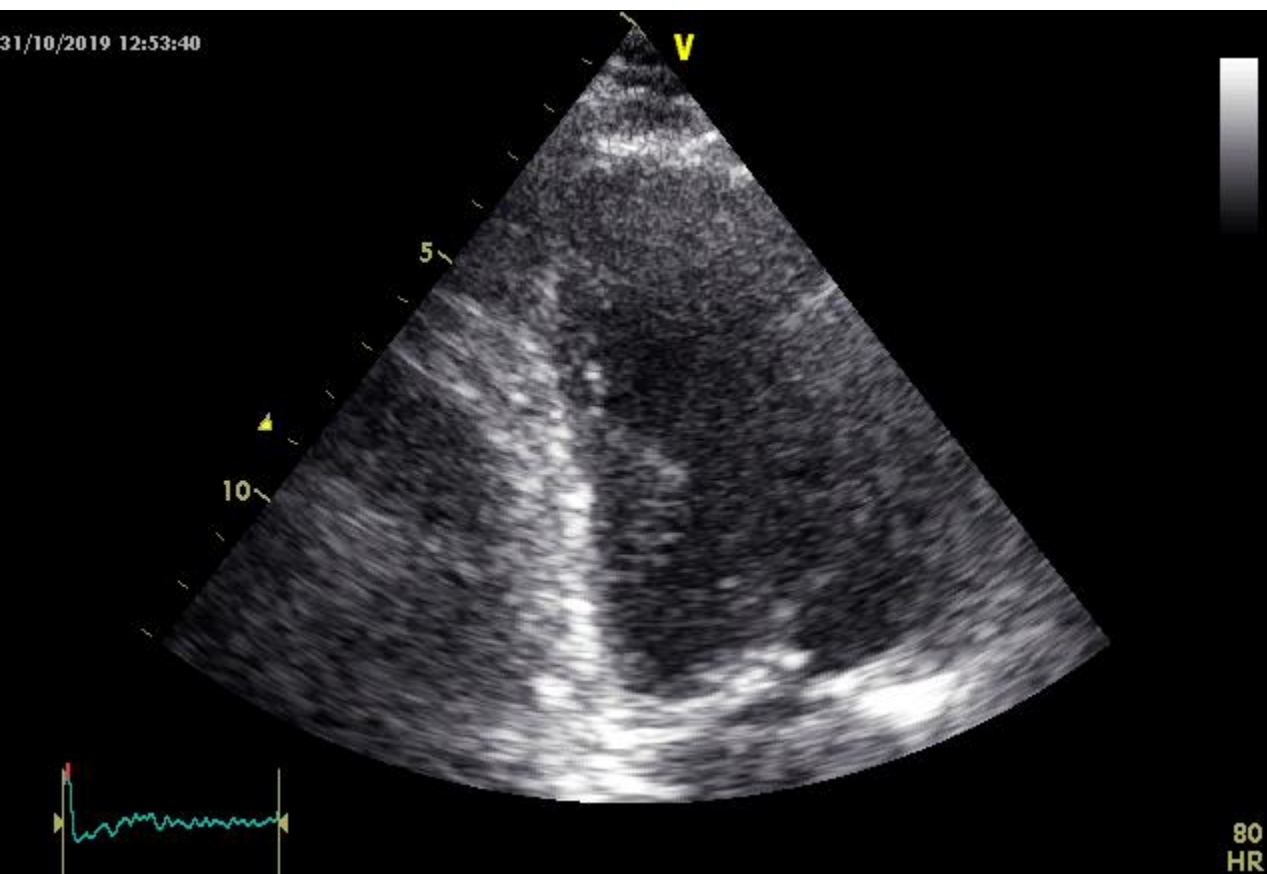
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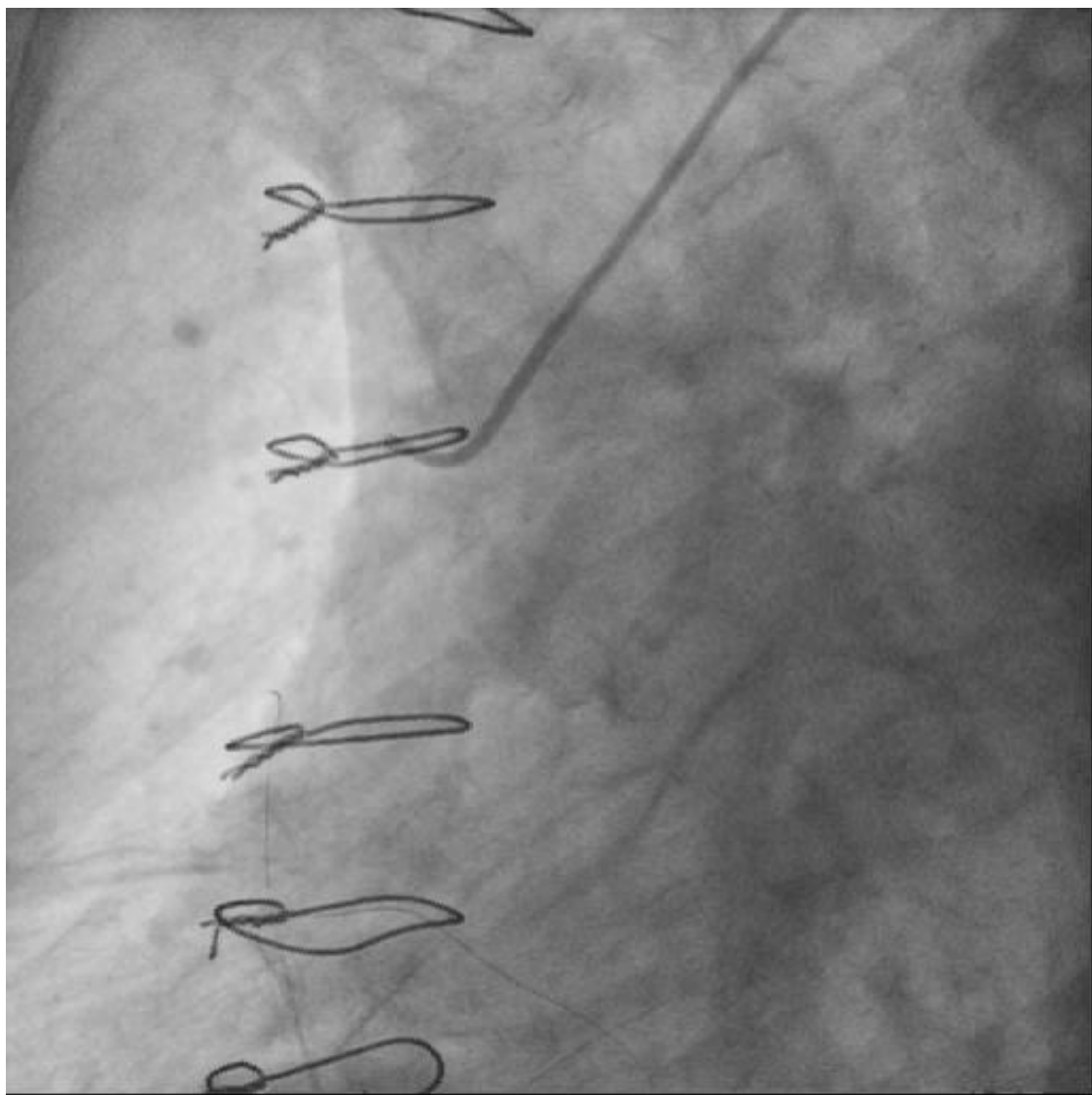
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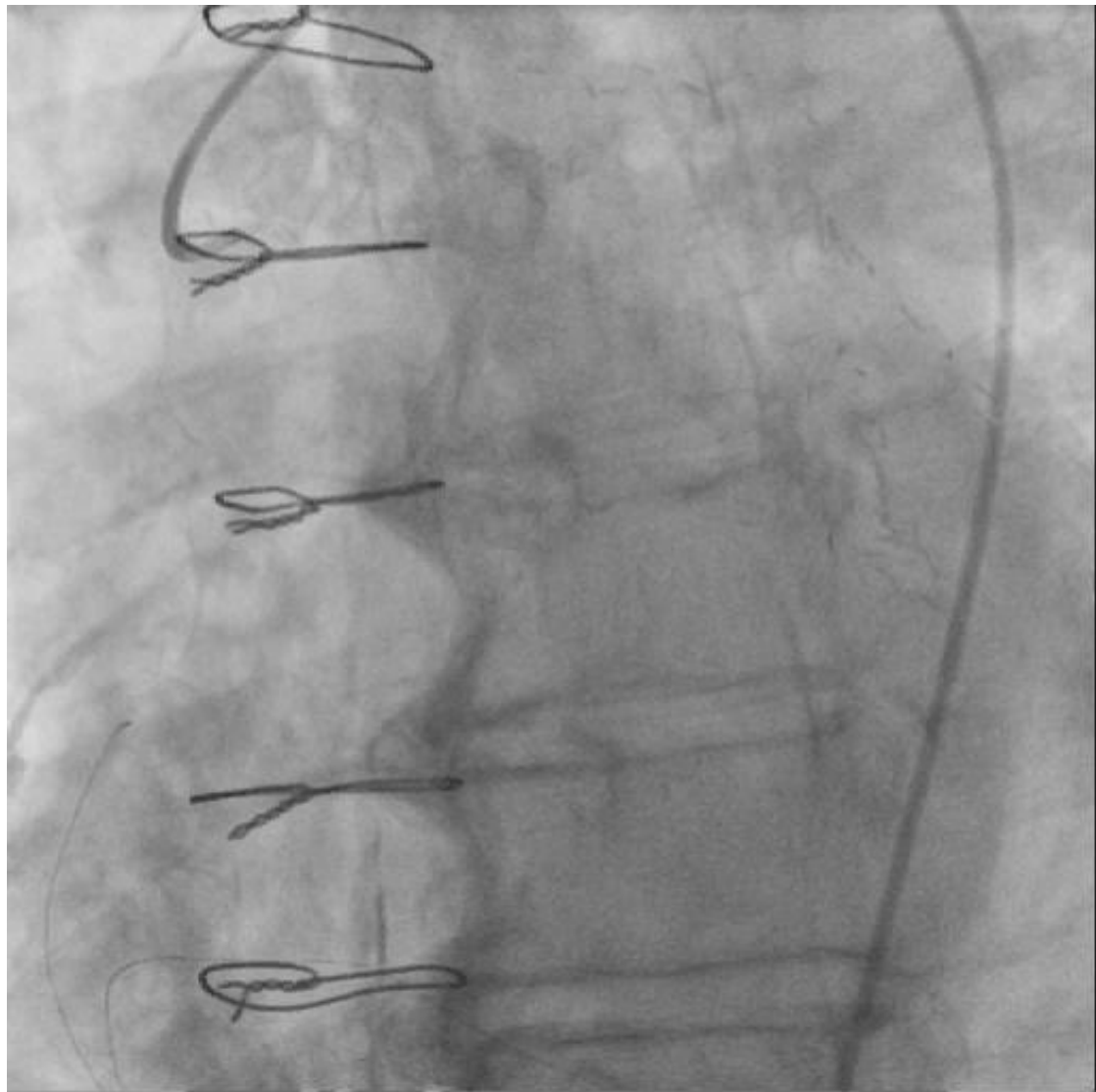
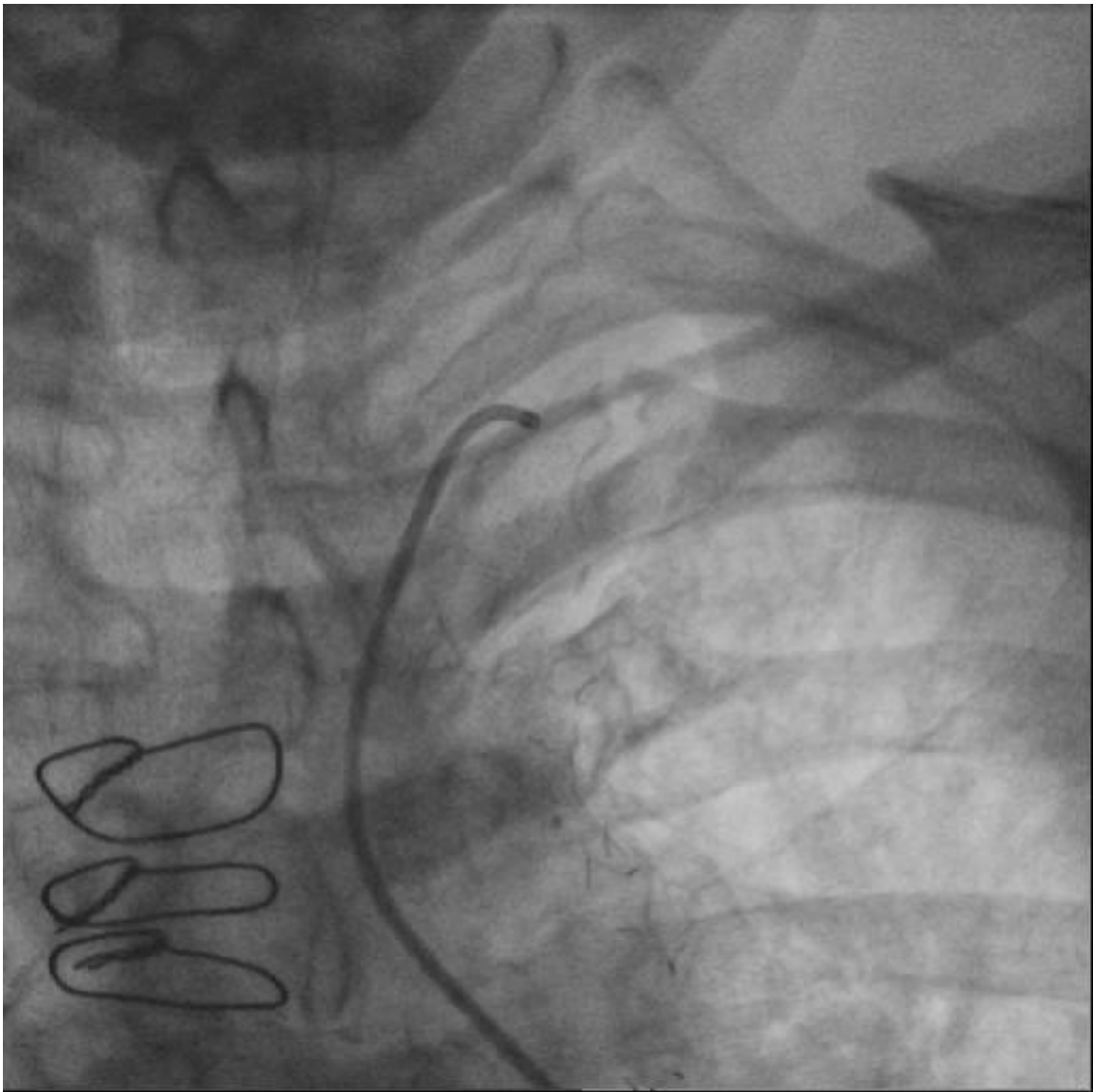


84
HR

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CAD - HF

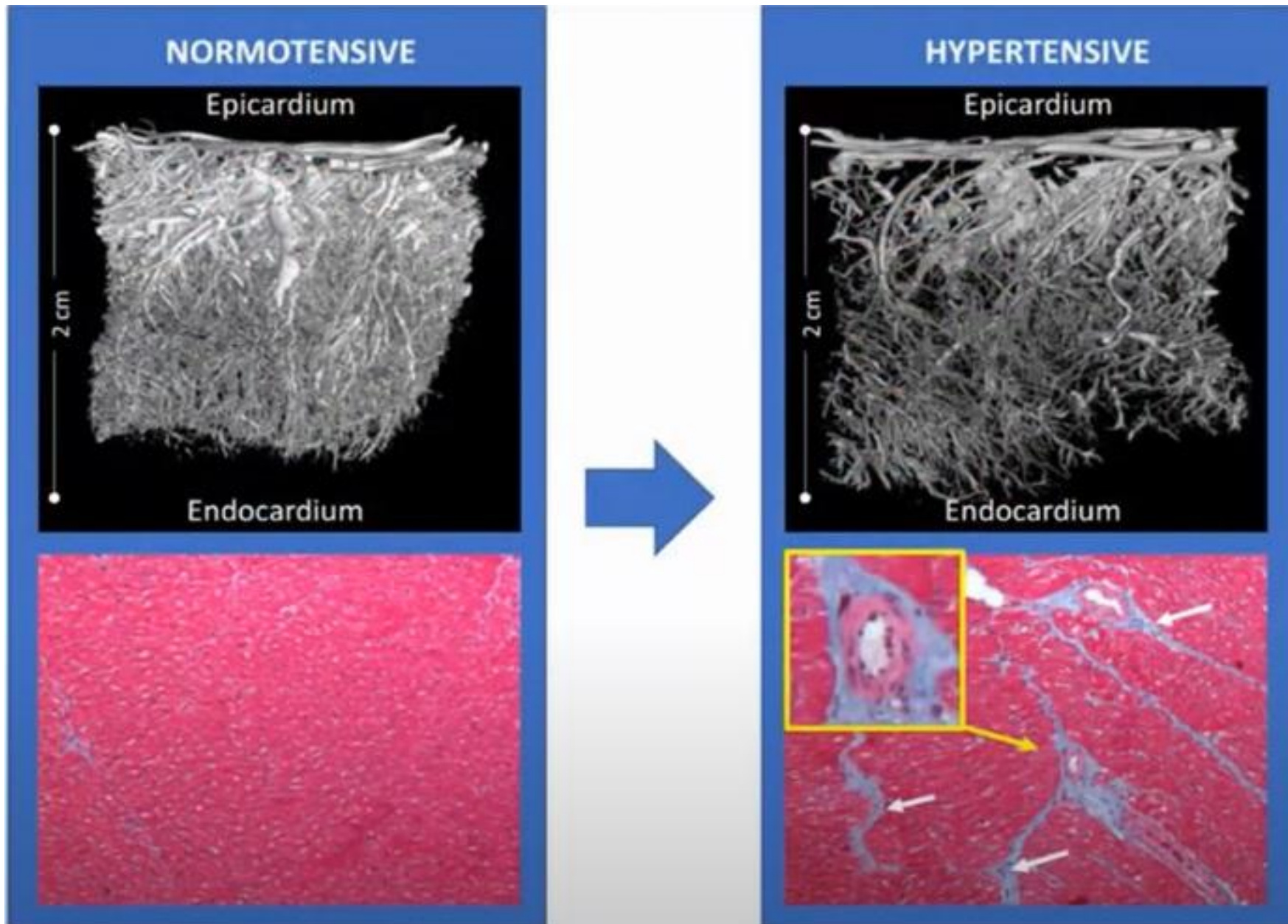
- Mechanisms

- Scar
- Ischemia – hibernated myocardium

- Commonly with risk factors

- HTN
- DM
- Smoking
- Dyslipidemia

→ Epicardial + microvascular disease



2. HTN

LVH

↓ CO (~EF)

Comorbidities

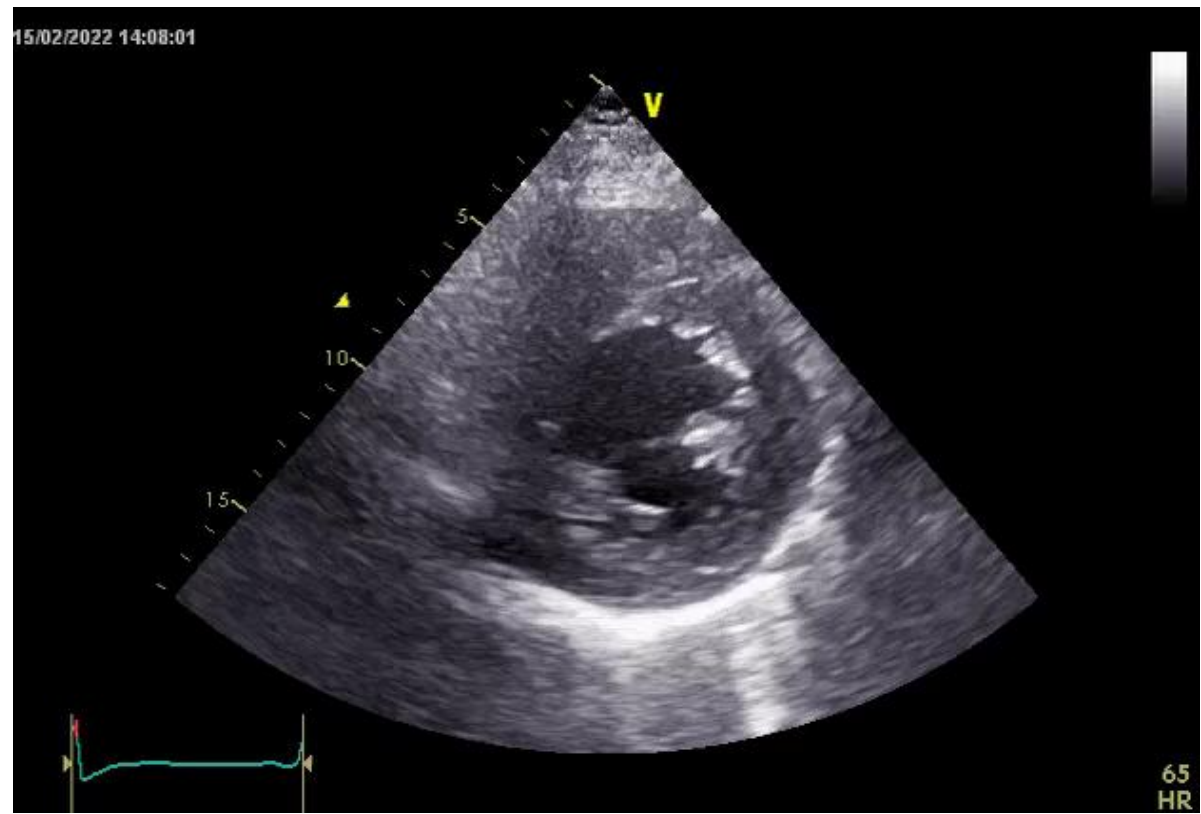
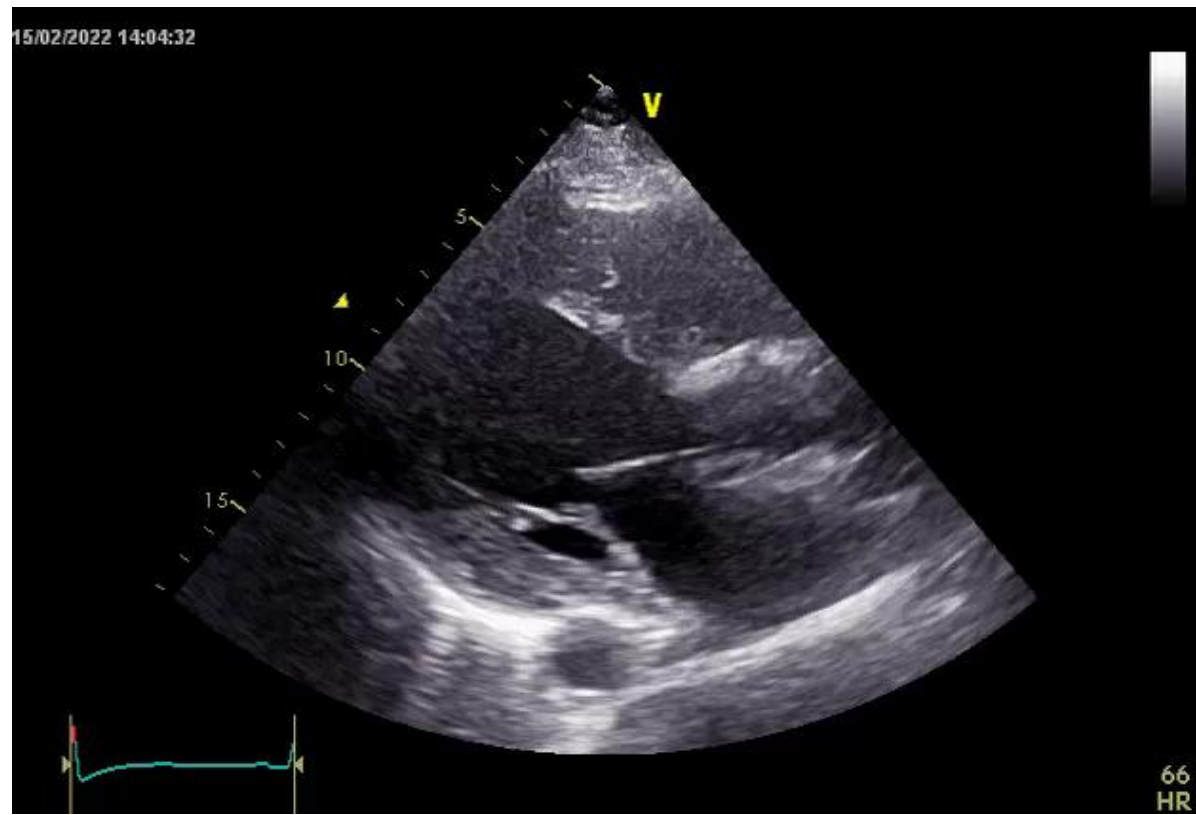
CAD

CKD

DM

AF



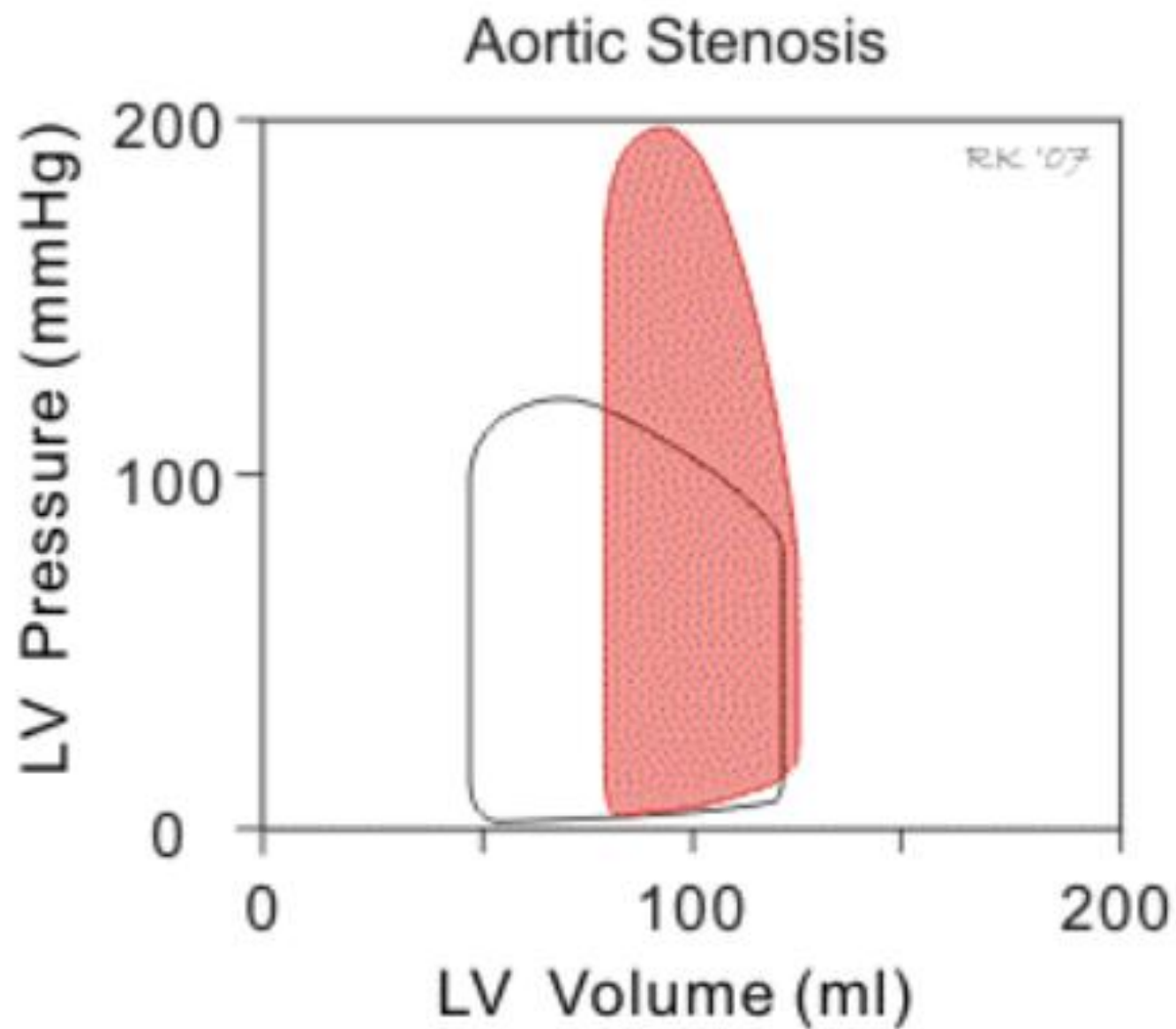
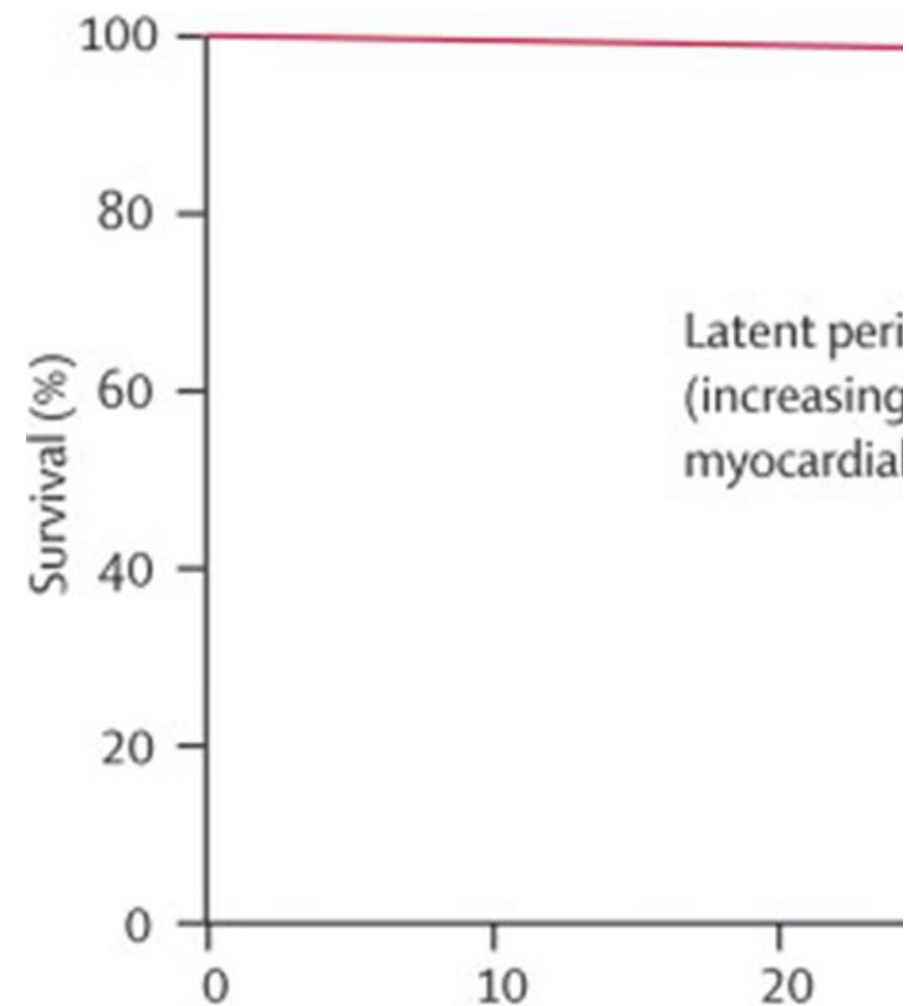


3. Valvular disease - AS

TABLE 1. Etiology of Native Valve Disease in Europe (Euro Heart Survey)

	Aortic Stenosis (n=1197)	Aortic Insufficiency (n=369)	Mitral Stenosis (n=336)	Mitral Insufficiency (n=877)
Degenerative, %	81.9	50.3	12.5	61.3
Rheumatic, %	11.2	15.2	85.4	14.2
Congenital, %	5.4	15.2	0.6	4.8
Others, %	1.5	19.3	1.5	16.2

AS



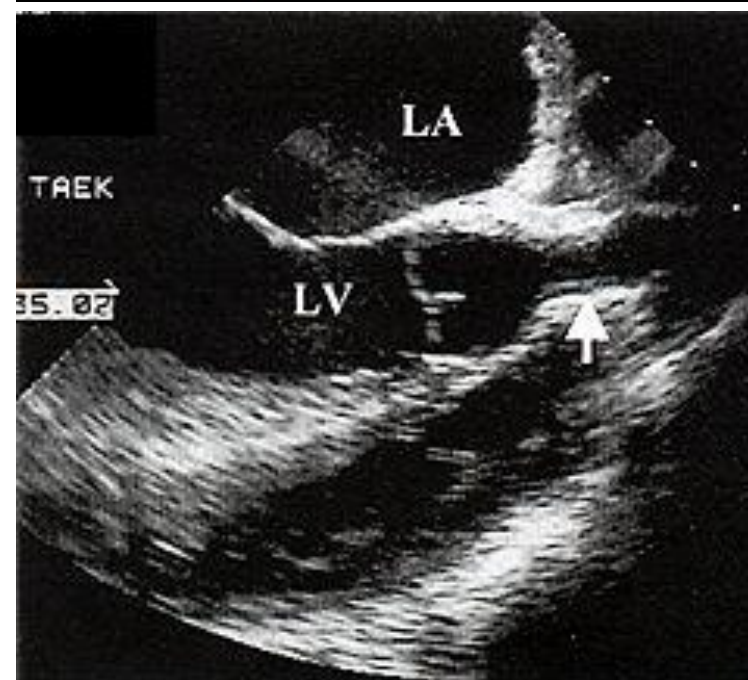
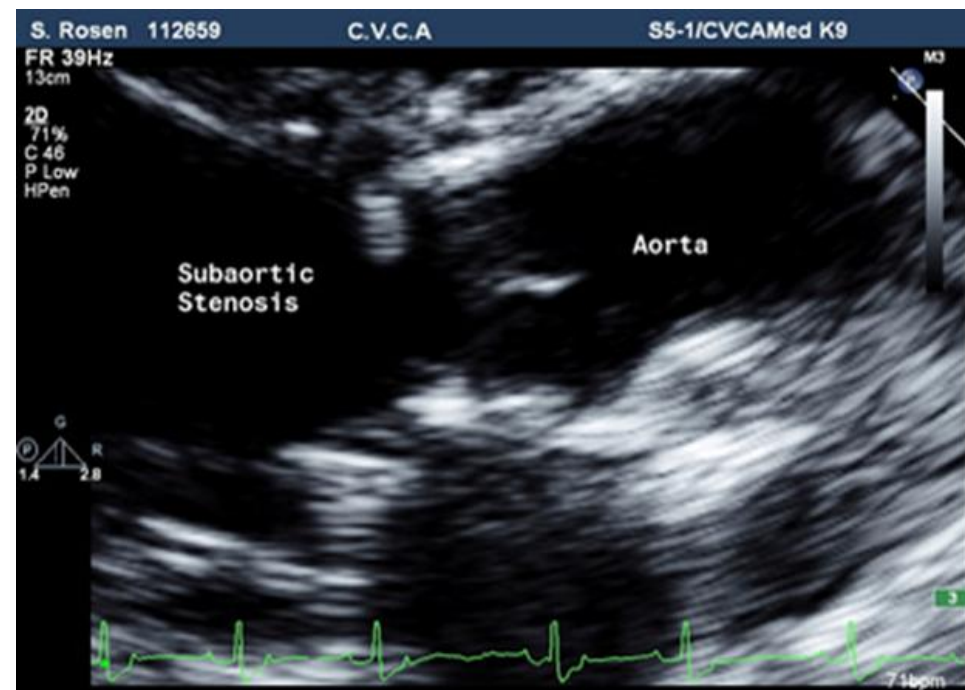
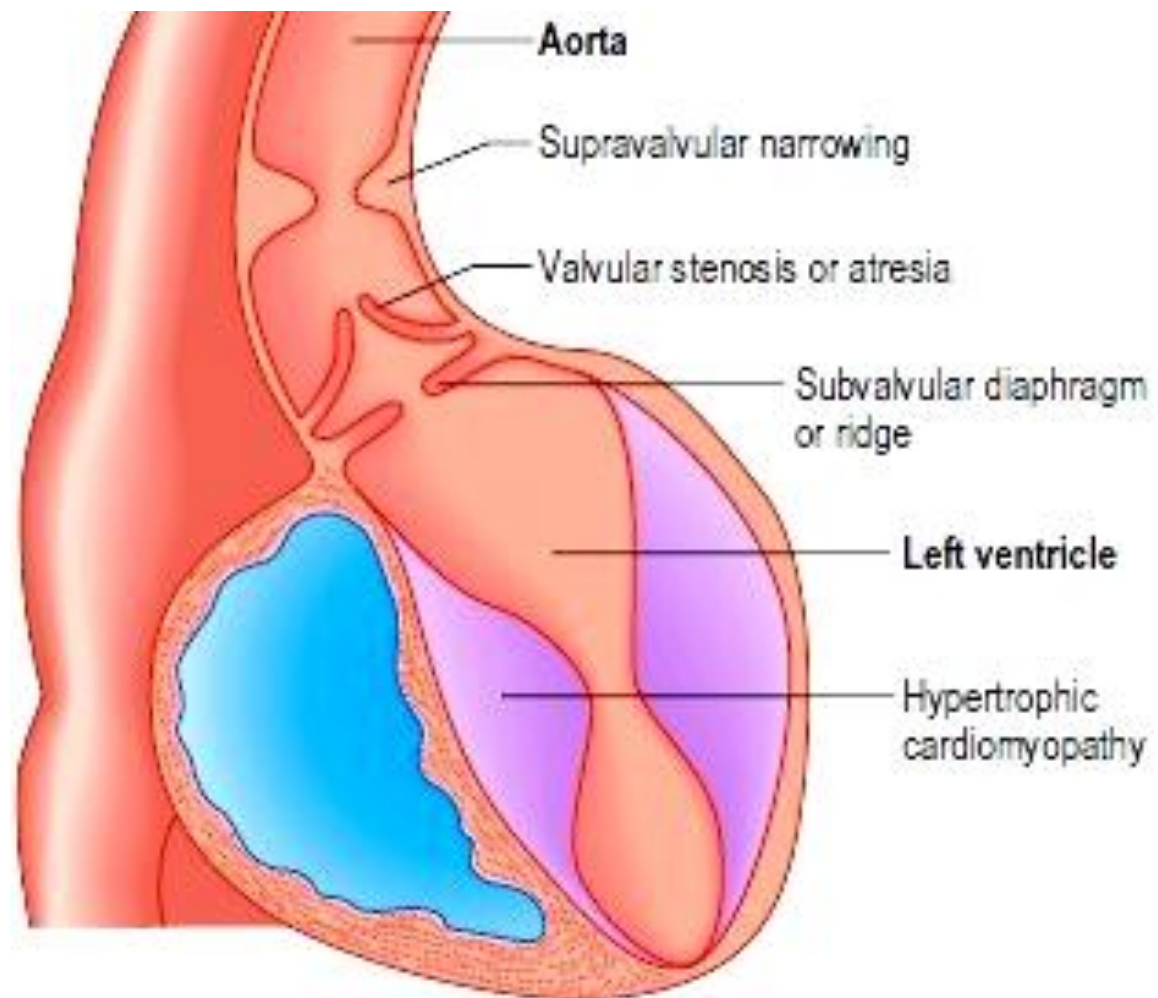
ns

- Angina
- Syncope
- Failure

1 6
al (years)

ith

80



Diastole



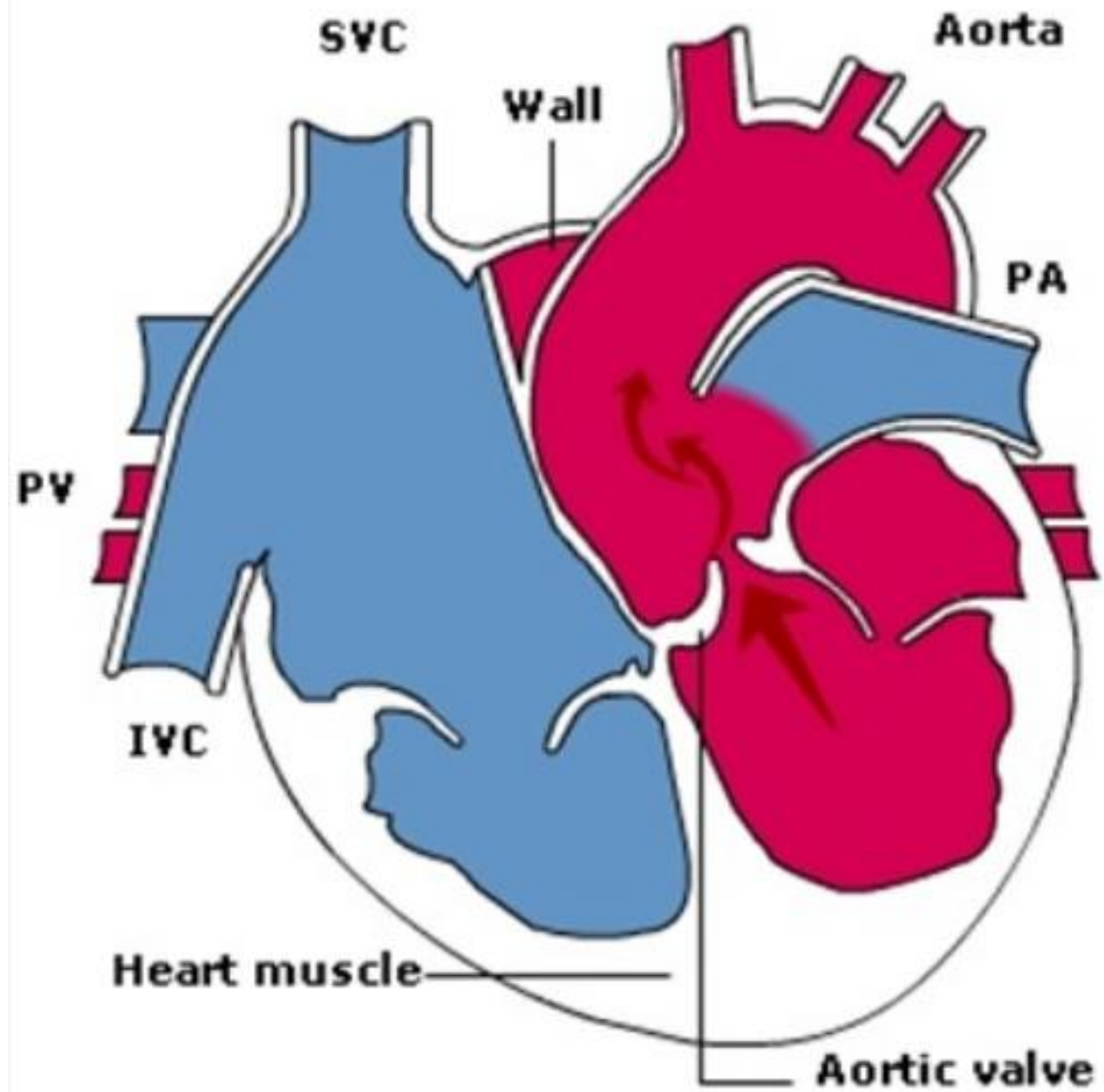
Systole



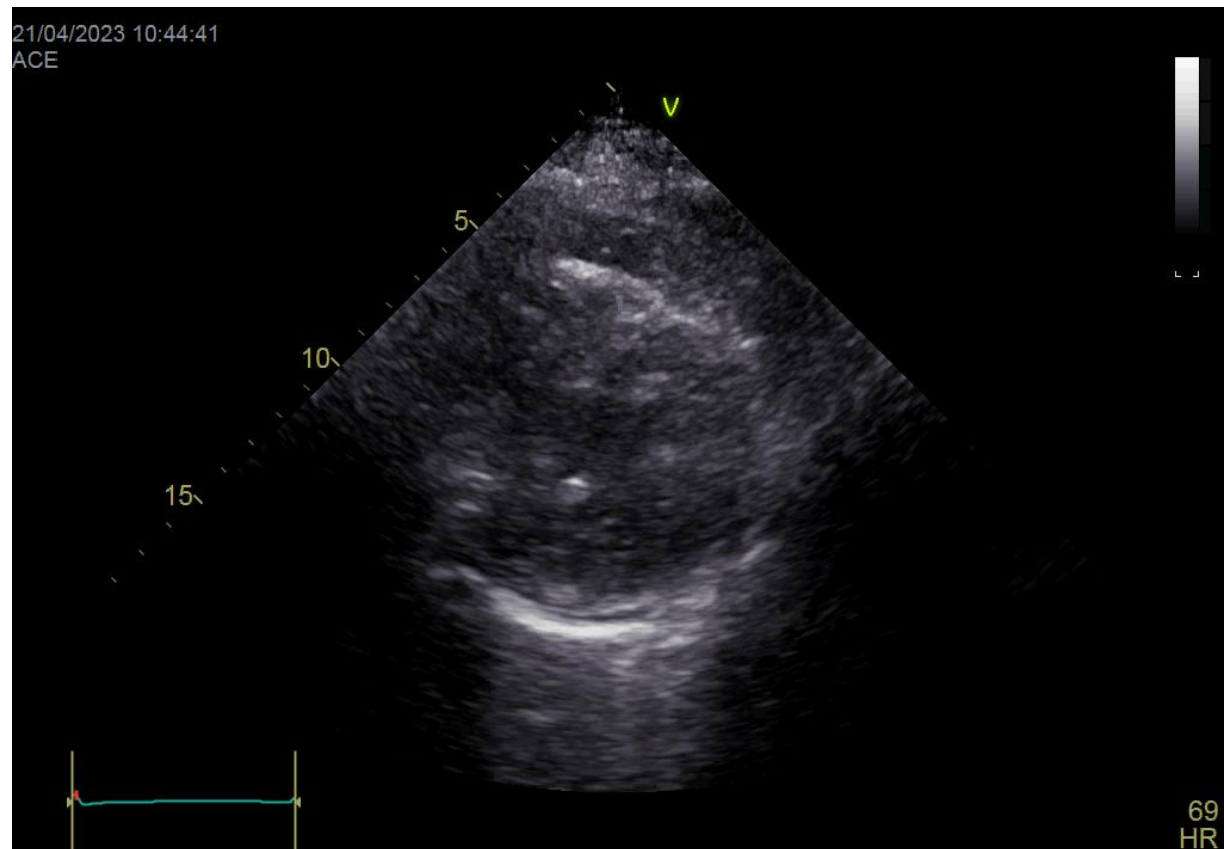
A Rheumatic

B Calcific

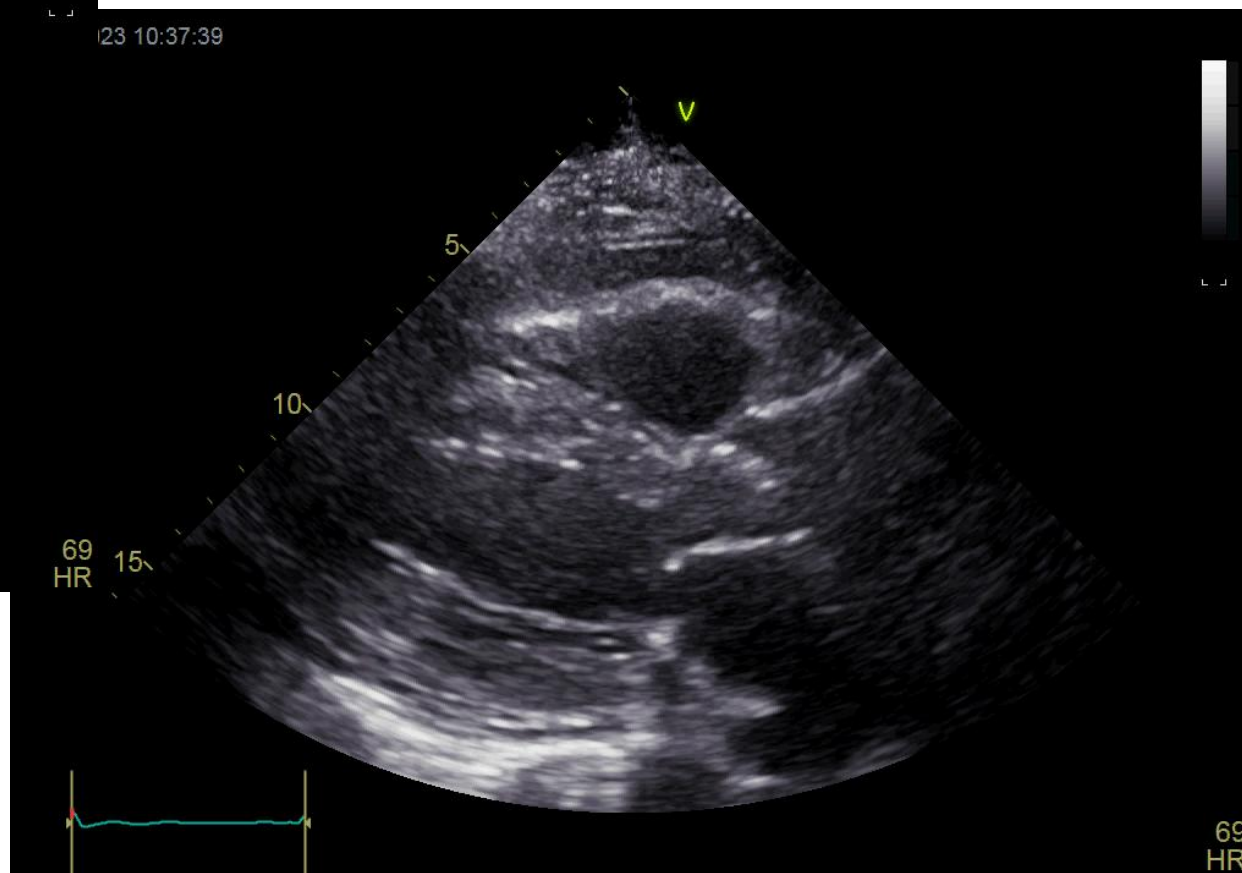
C Bicuspid

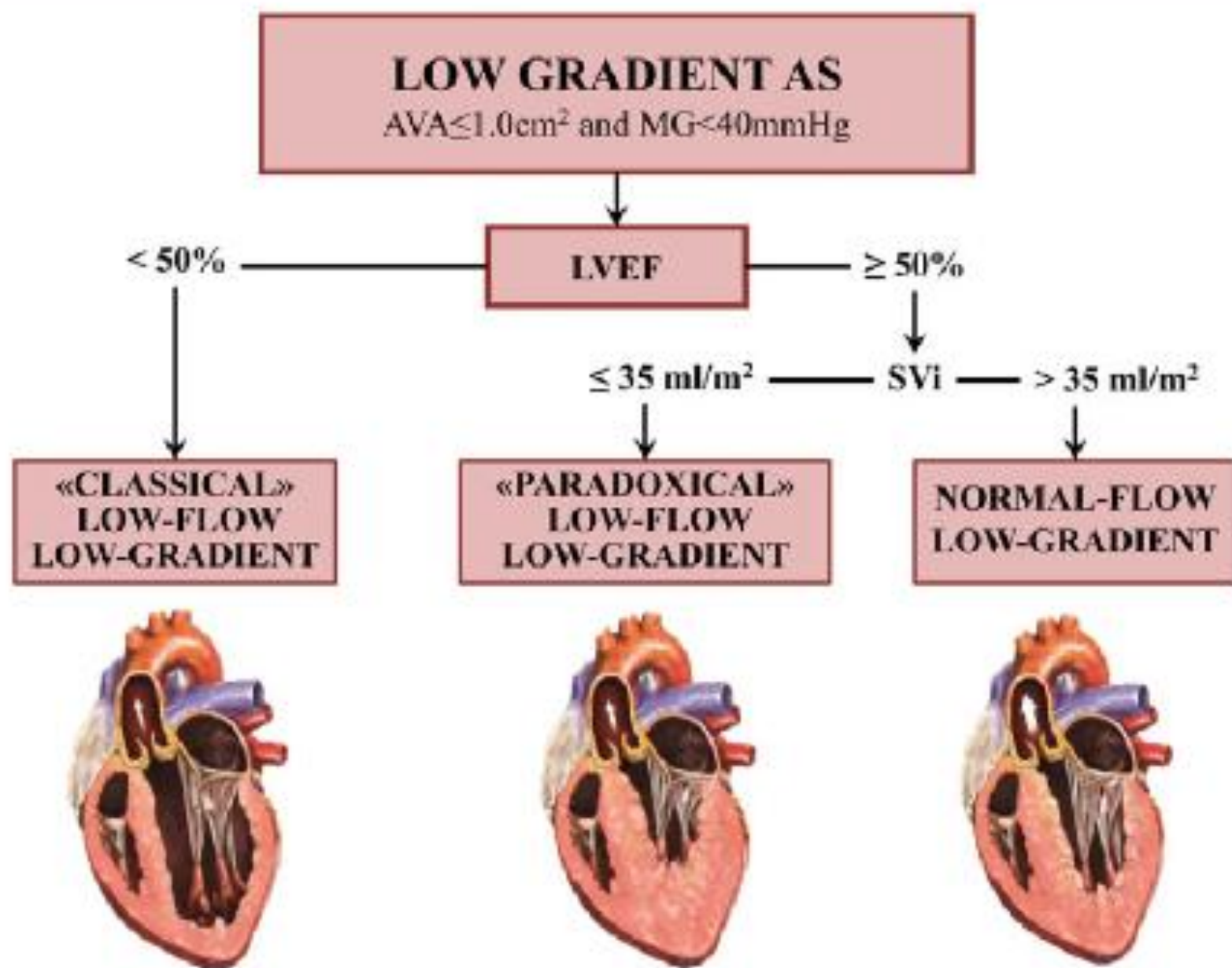


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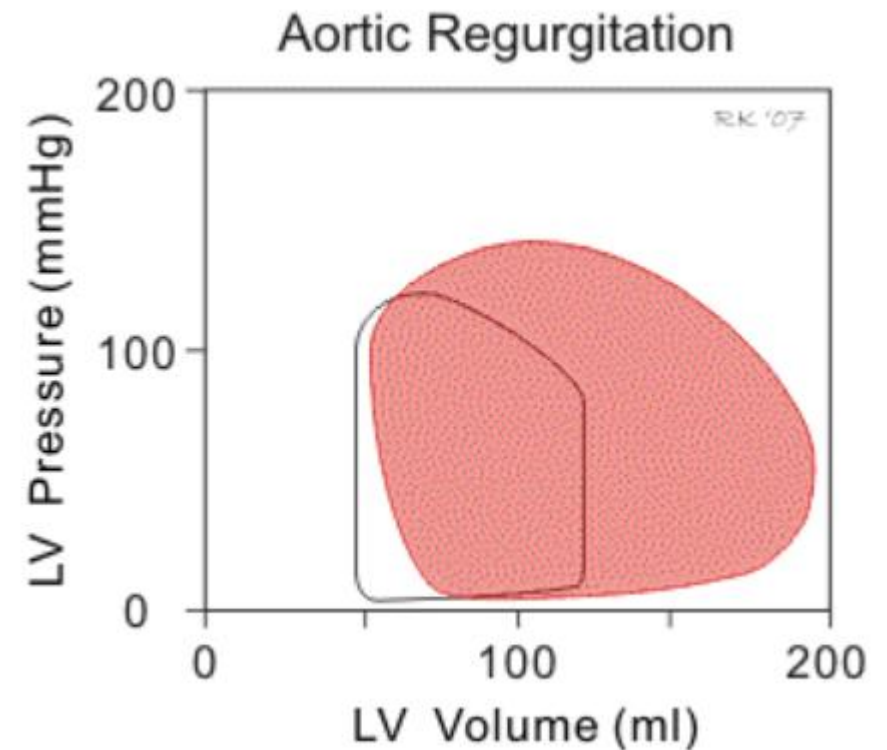


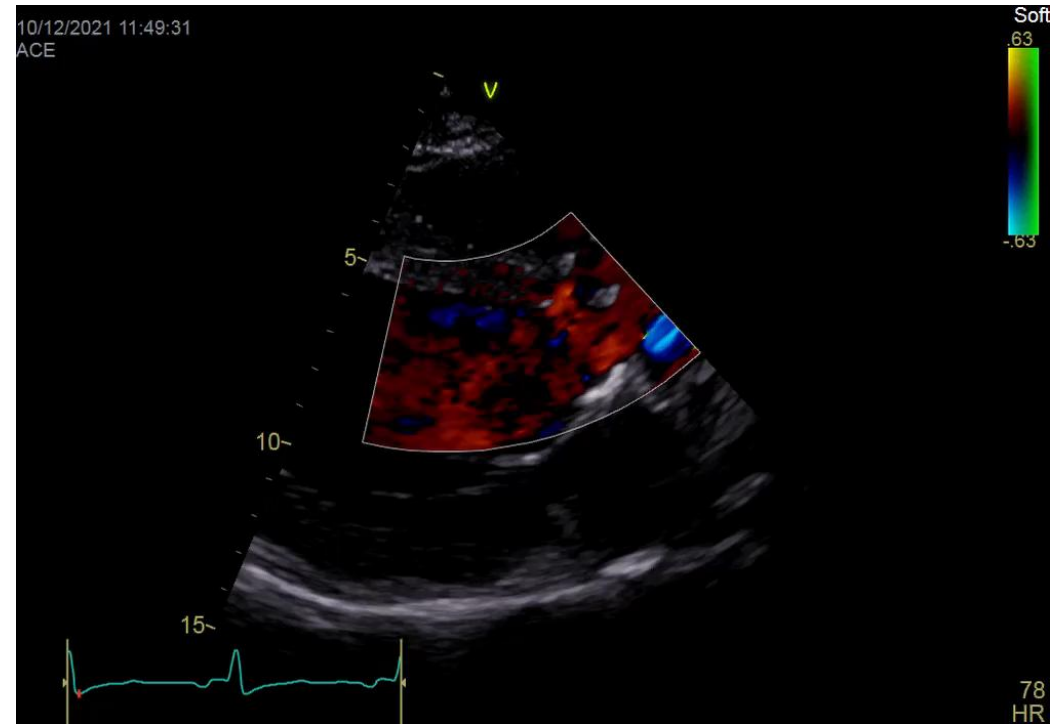
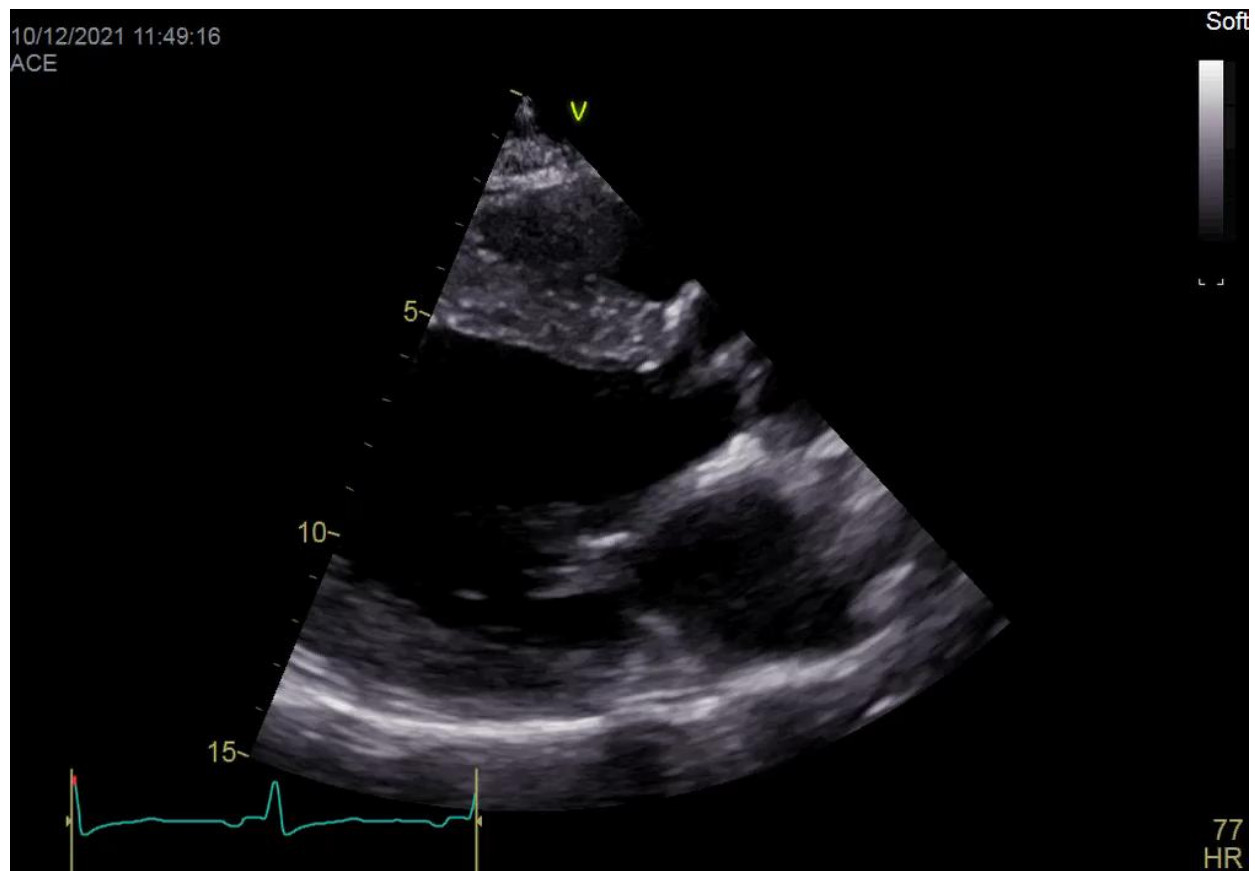


3. Valvular disease - AR

TABLE 1. Etiology of Native Valve Disease (Euro Heart Survey)

	Aortic Stenosis (n=1197)	Aortic Insufficiency (n=369)		
Degenerative, %	81.9	50.3		
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Congenital, %	5.4	15.2	U.D	4.0
Others, %	1.5	19.3	1.5	16.2





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118
HR

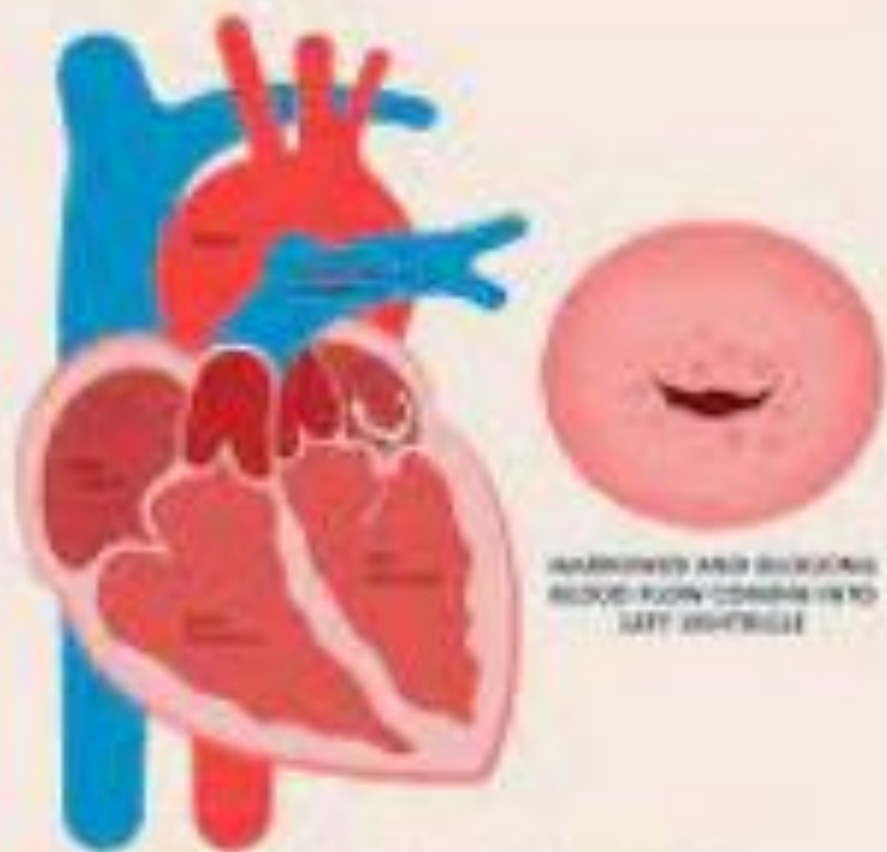
3. Valvular disease - MS

TABLE 1. Etiology of Native Valve Disease in Europe (Euro Heart Survey)

	Aortic Stenosis (n=1197)	Aortic Insufficiency (n=369)	Mitral Stenosis (n=336)	Mitral Insufficiency (n=877)
Degenerative, %	81.9	50.3	12.5	61.3
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Congenital, %	5.4	15.2	0.6	4.8
Others, %	1.5	19.3	1.5	16.2



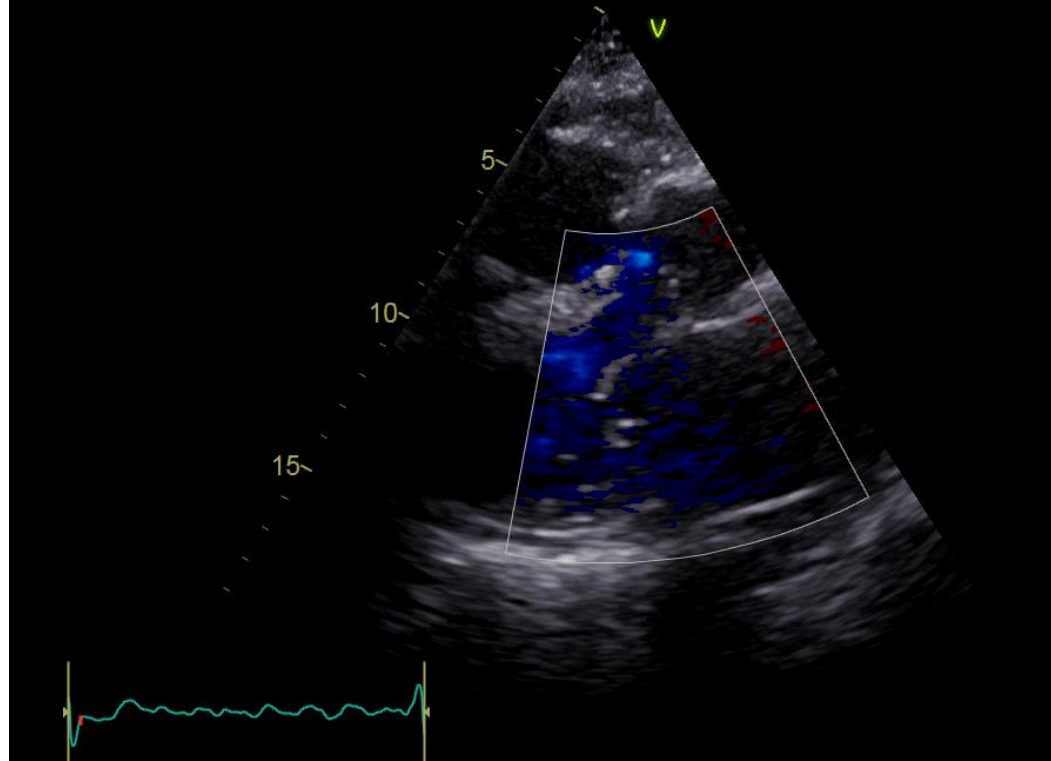
HEALTHY MITRAL VALVE



MITRAL VALVE STENOSIS

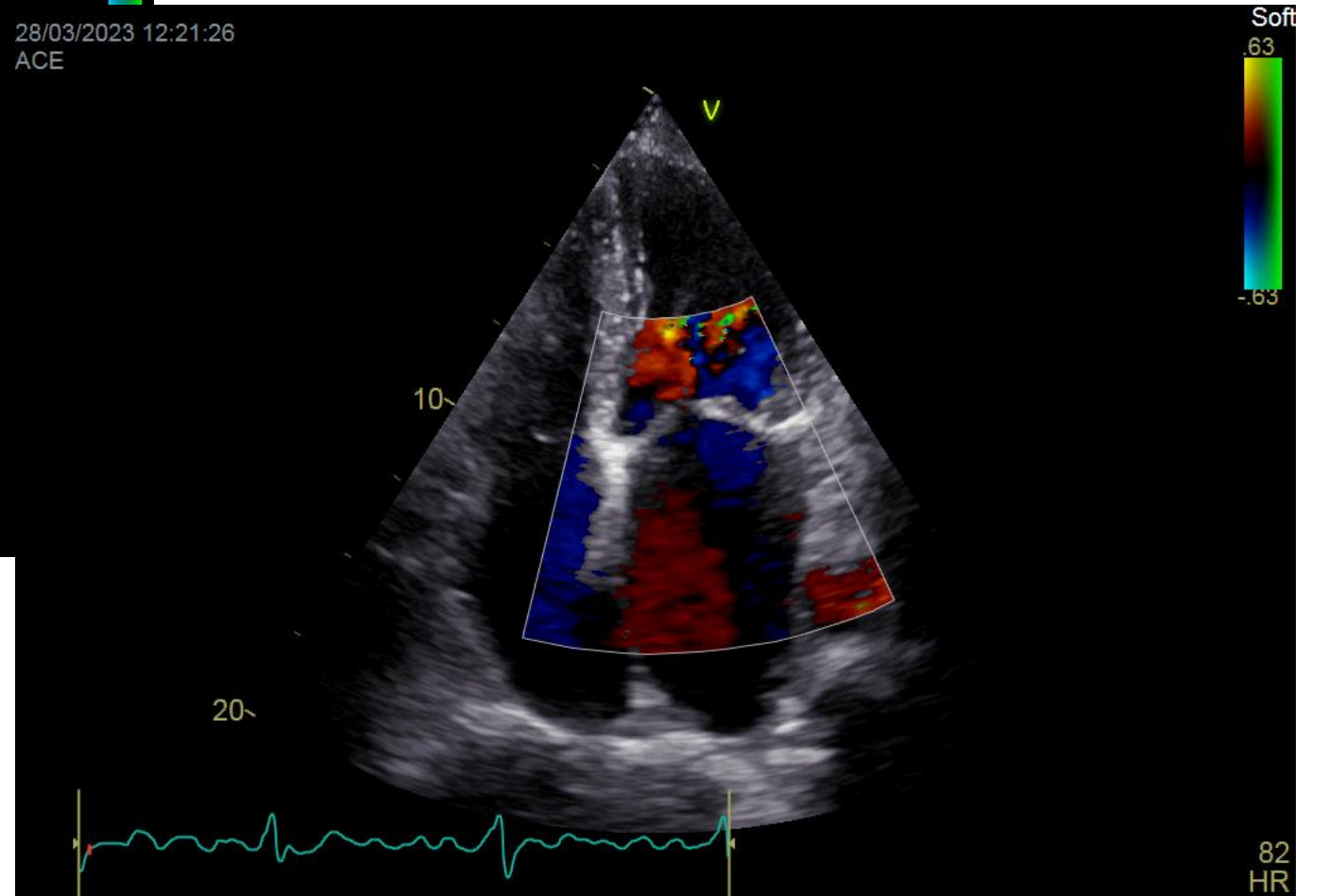
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Soft
.63



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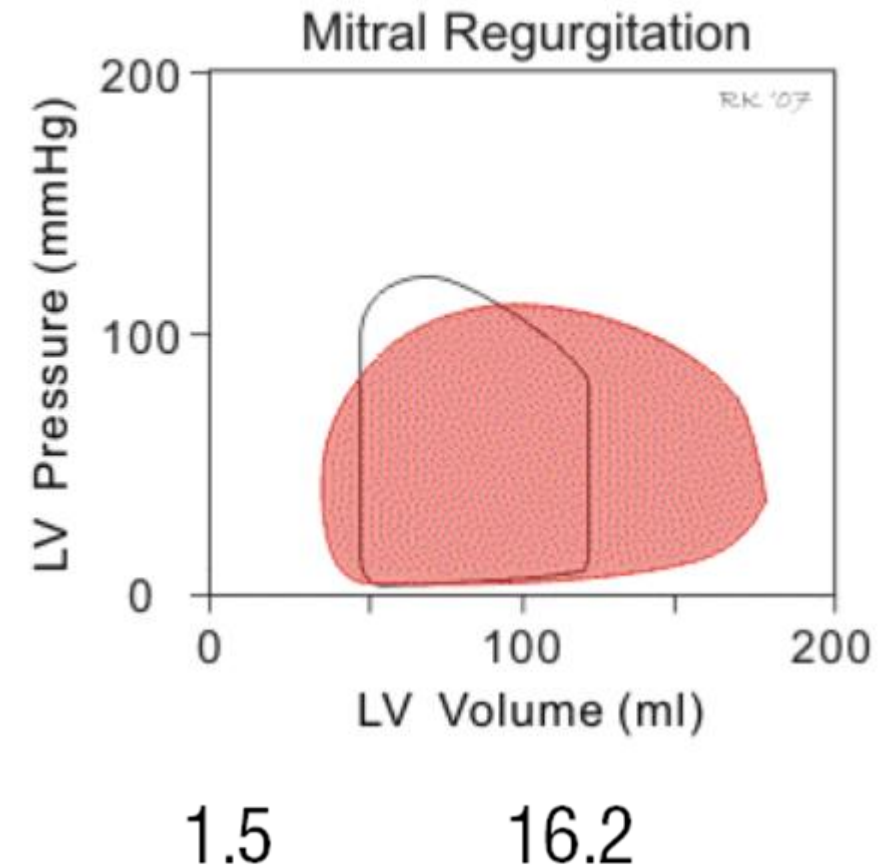
Soft
.63
-.63



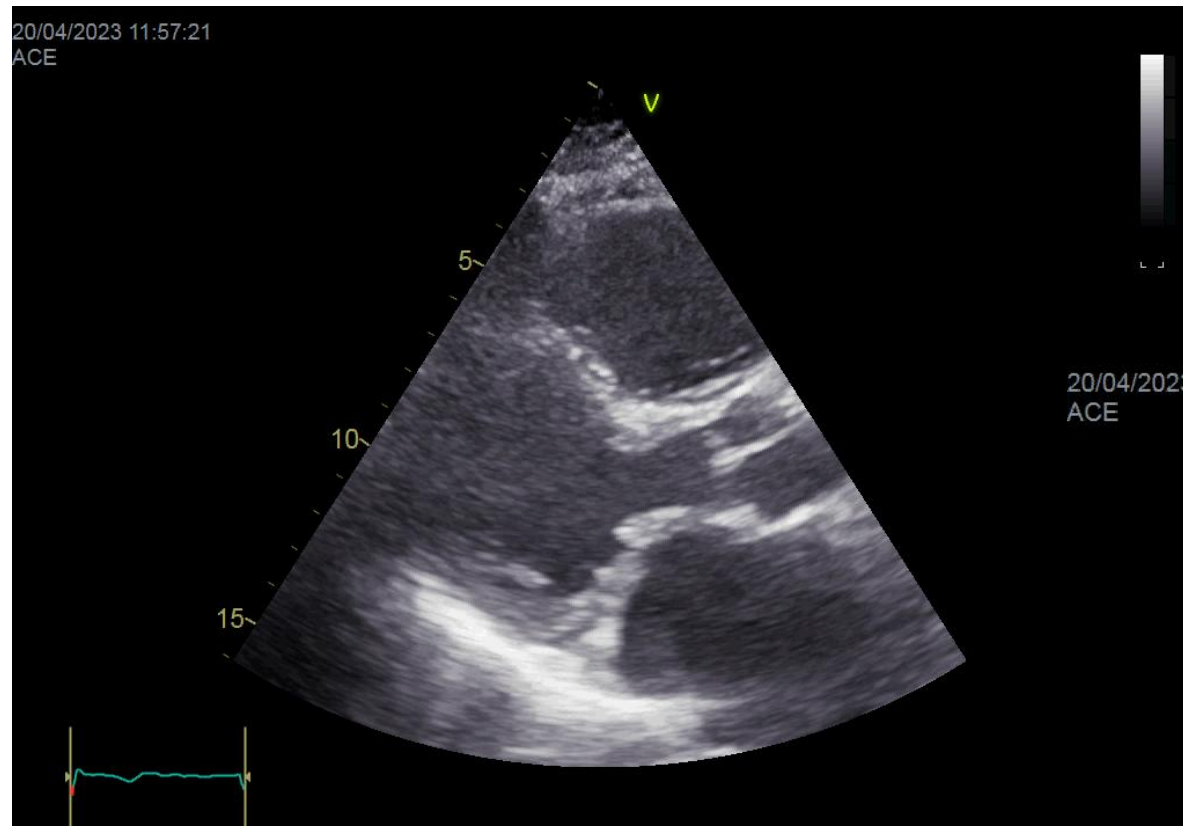
3. Valvular disease - MR

TABLE 1. Etiology of Native Valve Disease in Europe (Euro Heart Survey)

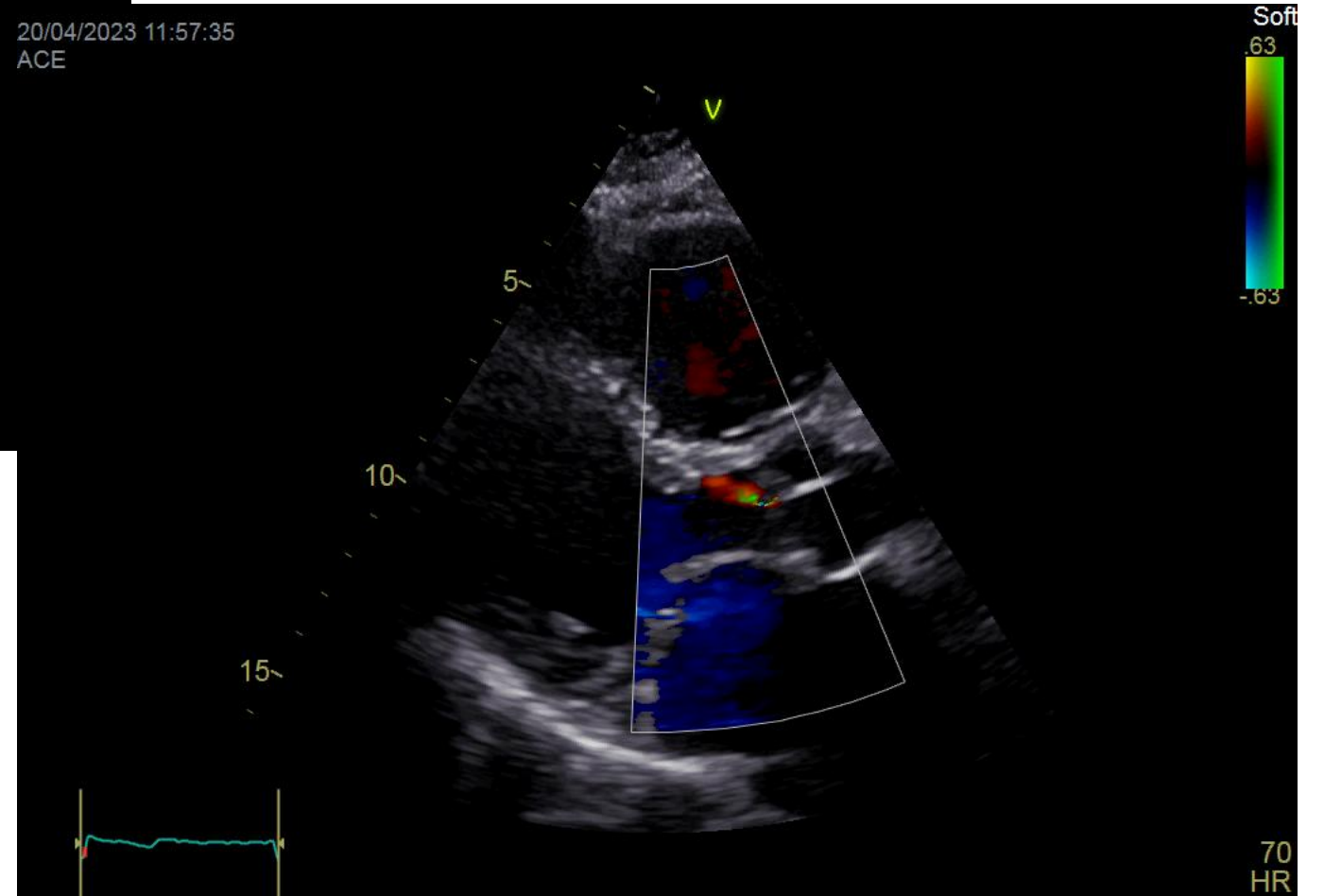
	Aortic Stenosis (n=1197)	Aortic Insufficiency (n=369)
Degenerative, %	81.9	50.3
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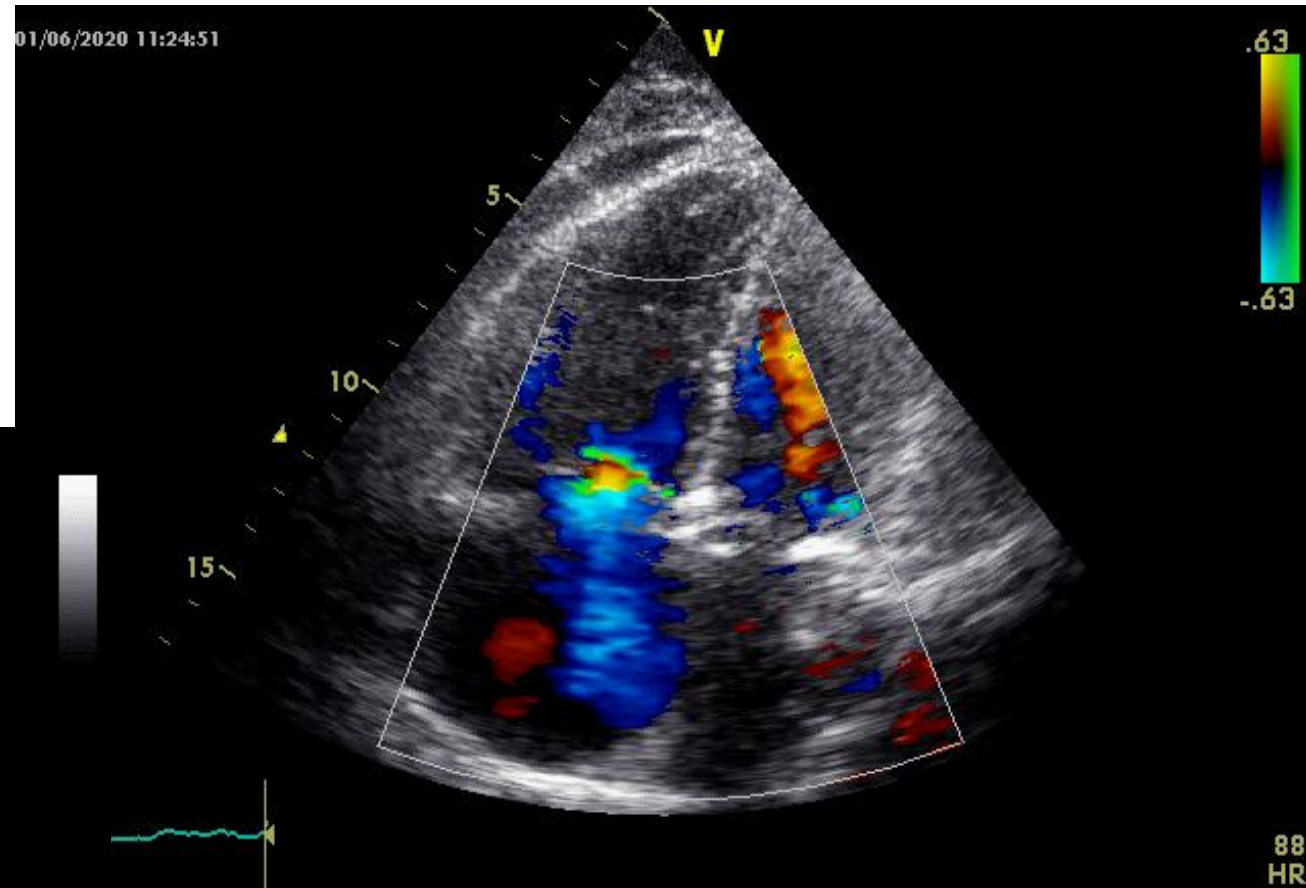
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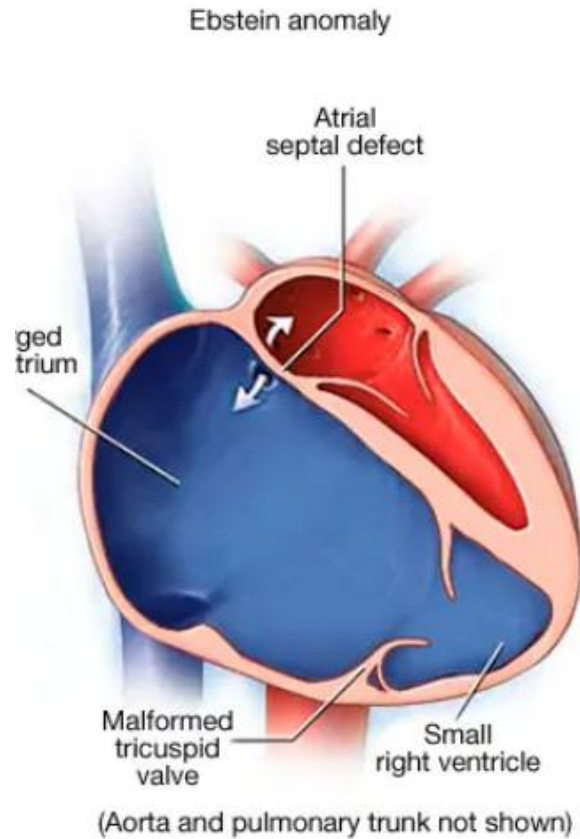
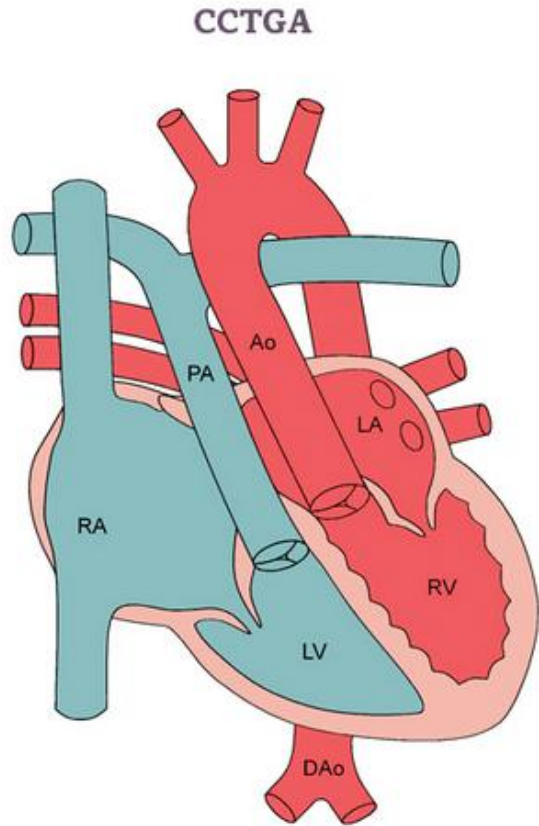
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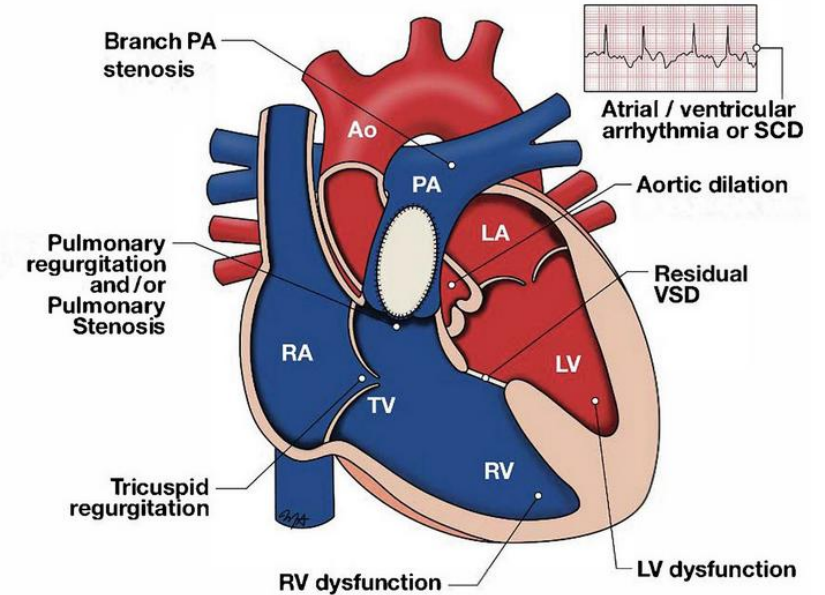
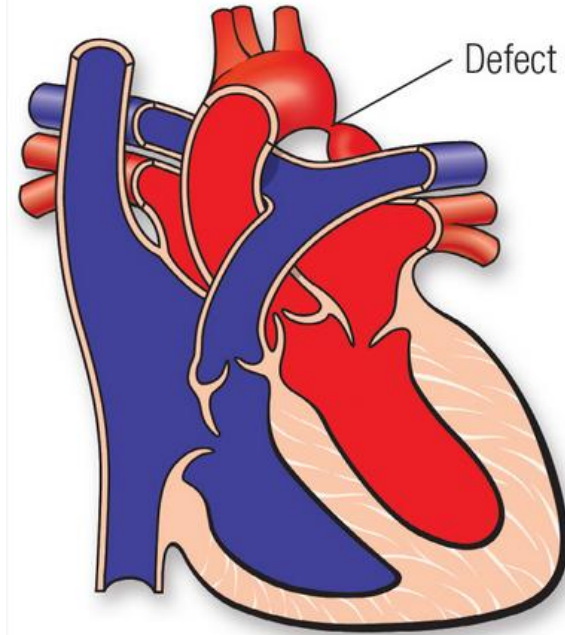
3. Valvular disease - TR



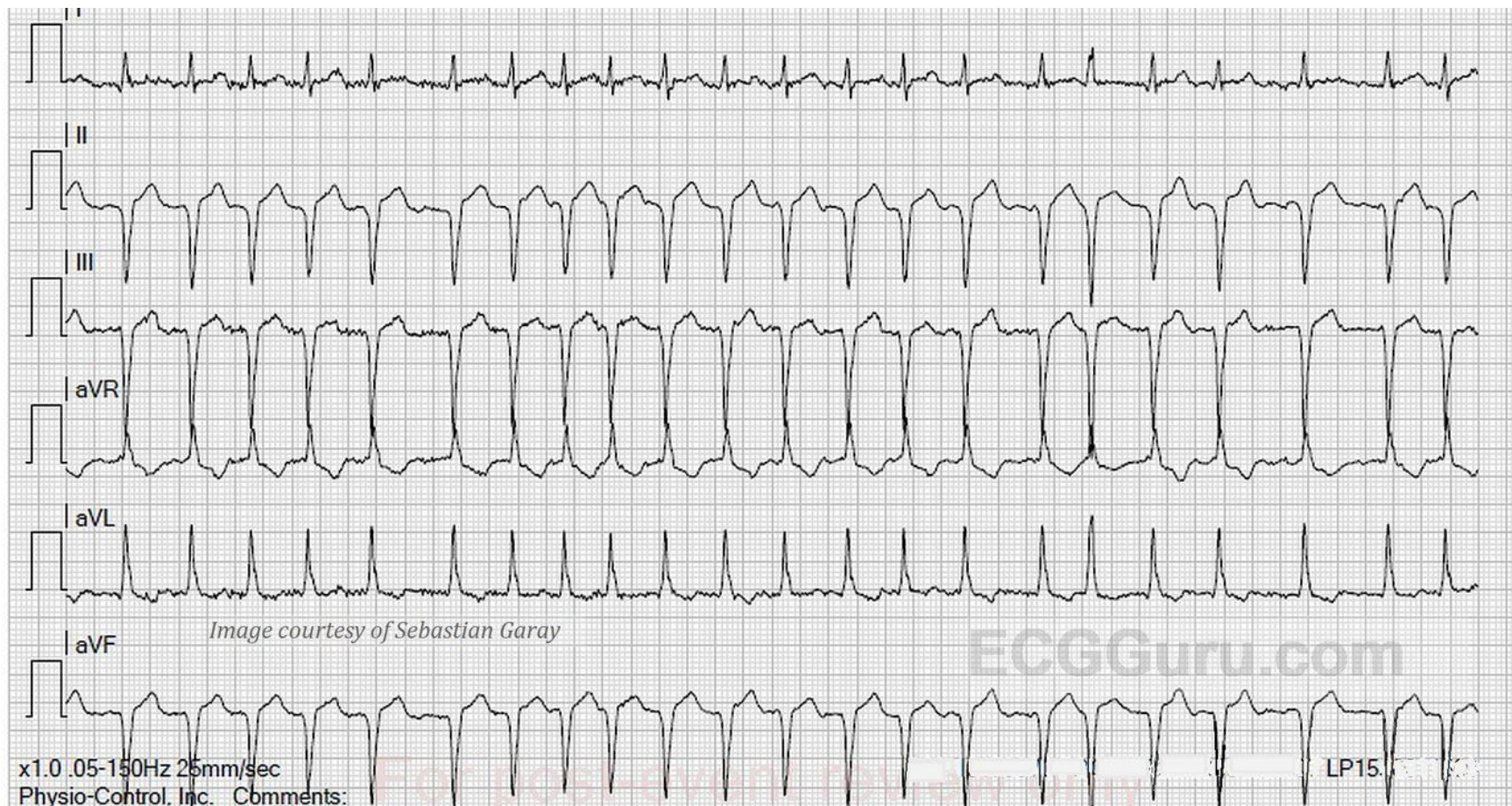
4. Congenital Heart Disease



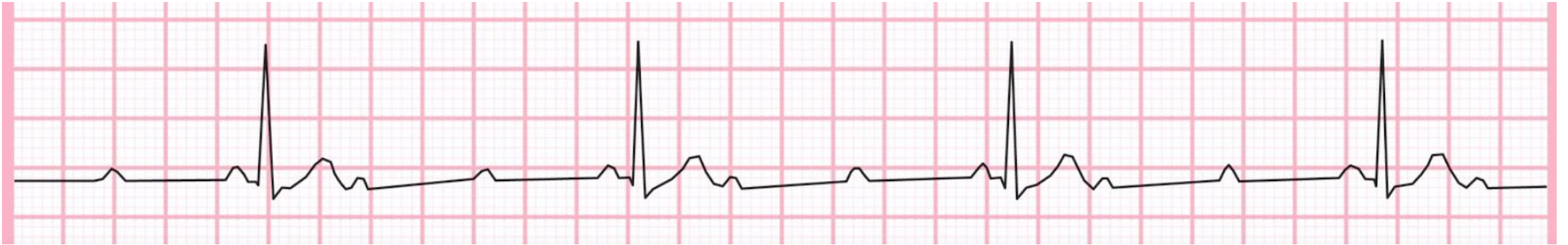
Coarctation of the Aorta



5. Tachyarrhythmias

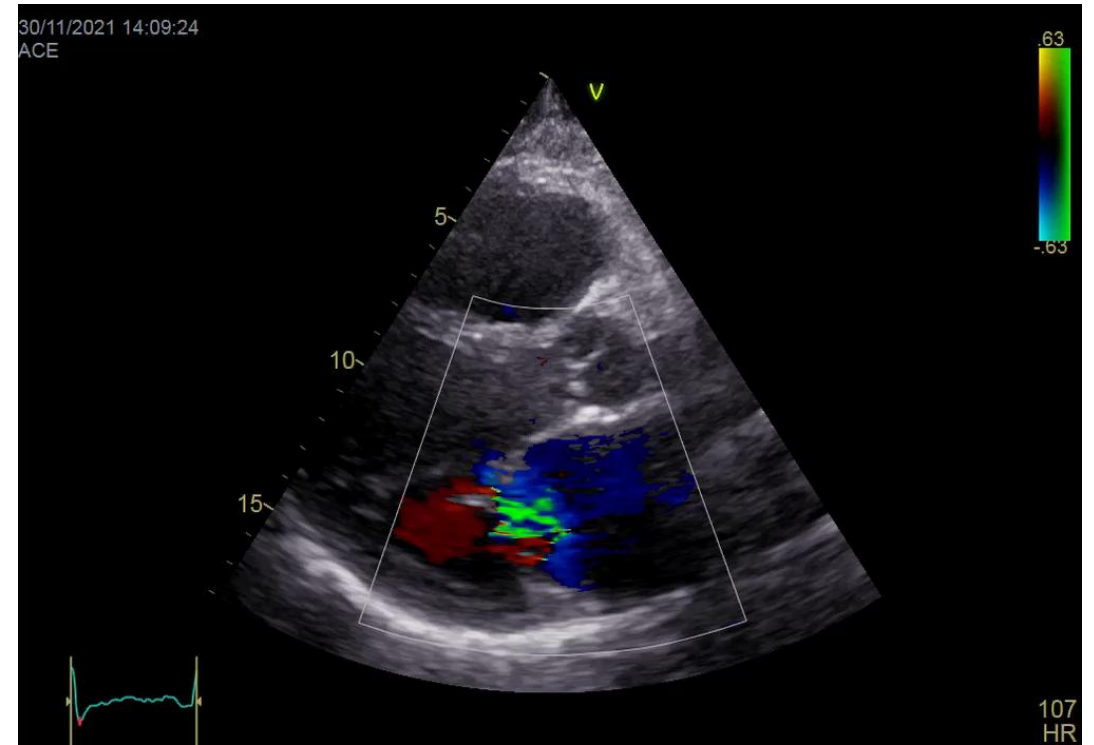
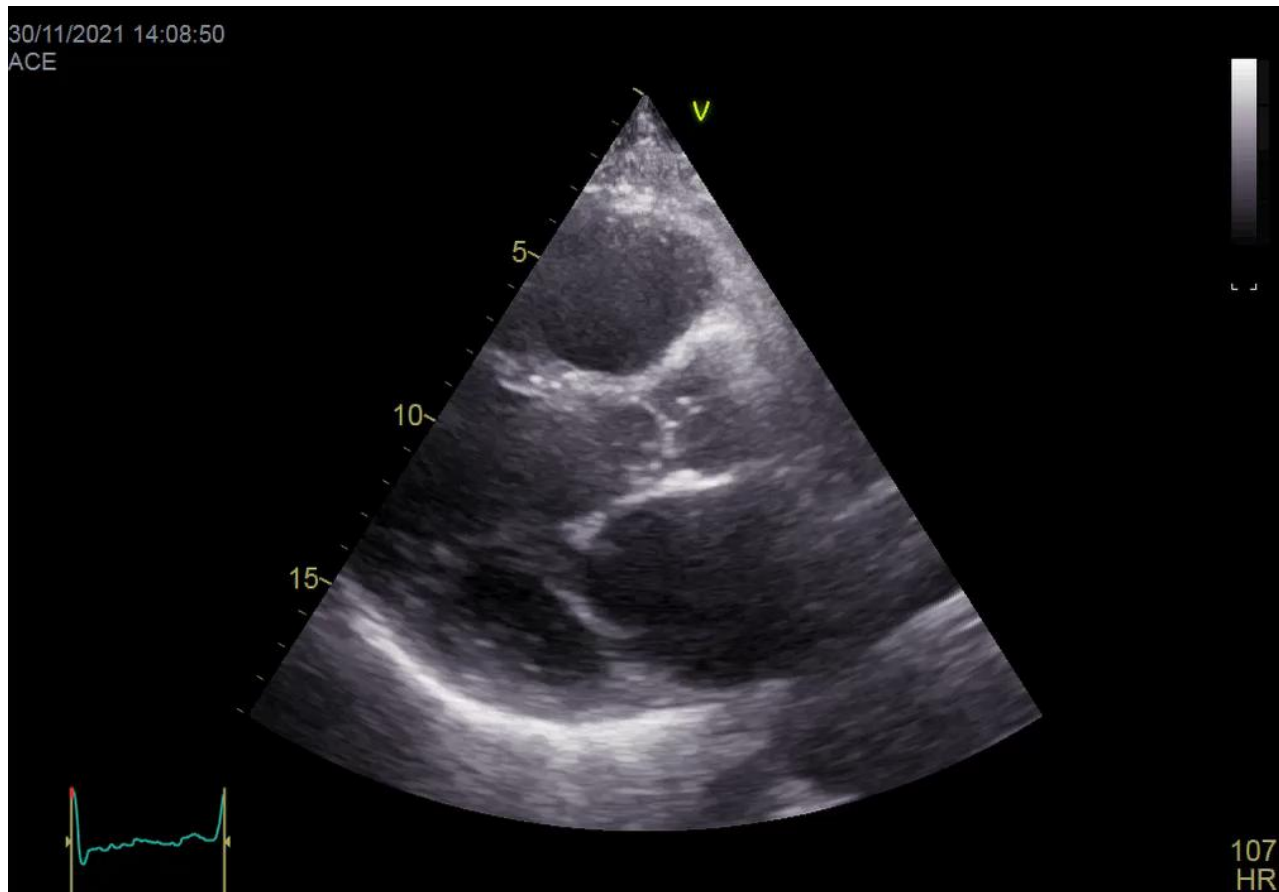


6. Bradycardia

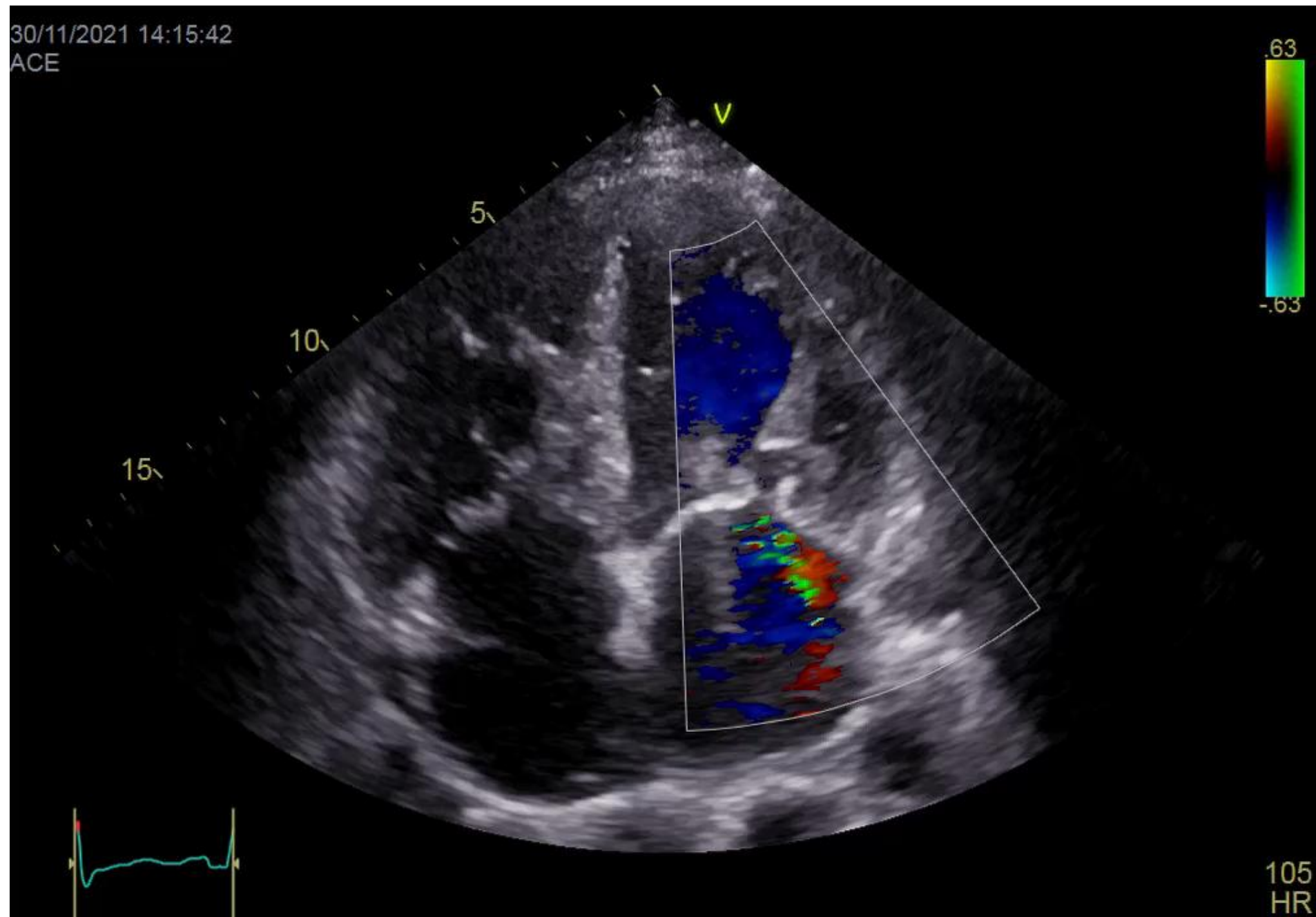


7. Cardiomyopathies

- DCM



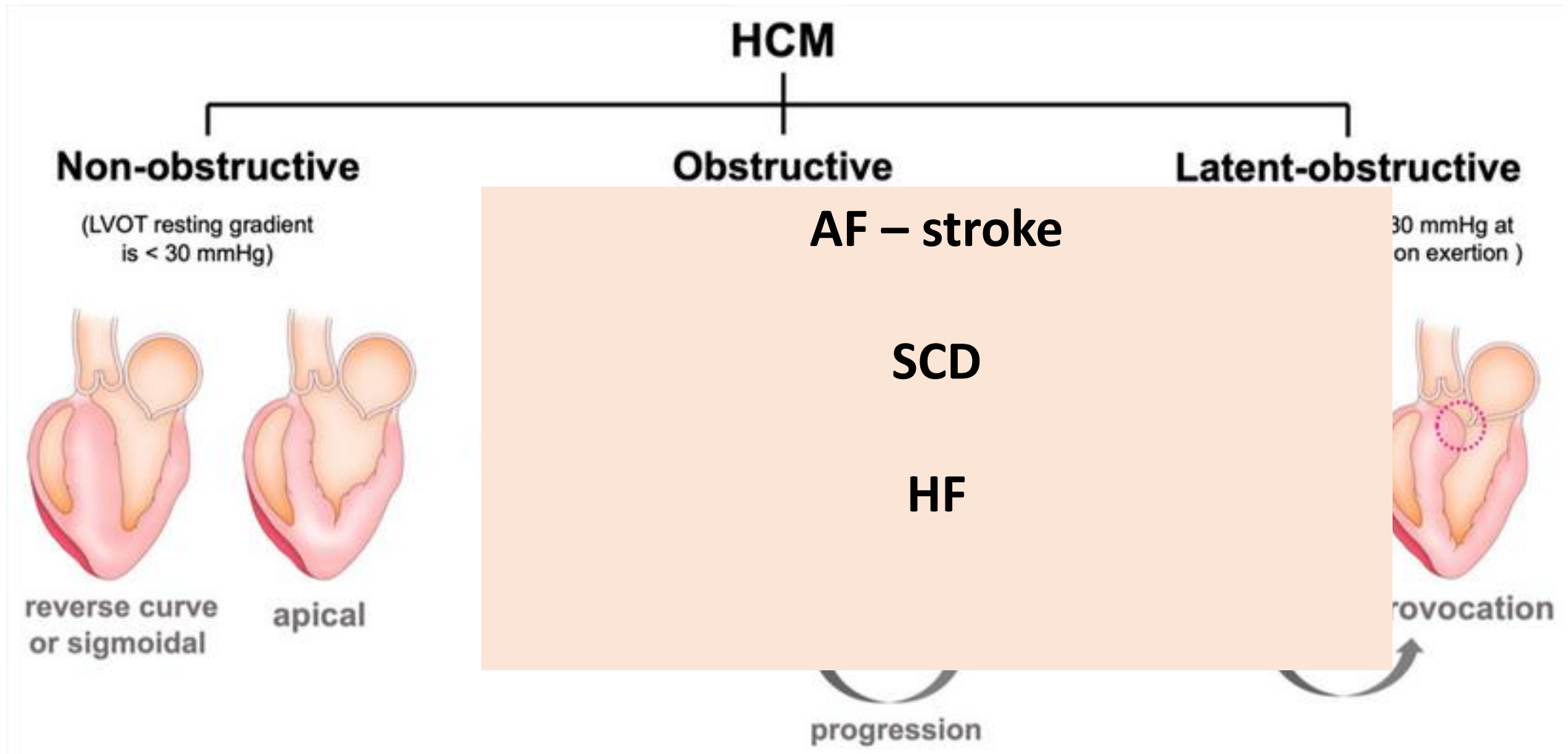
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DCM

- ***Post viral myocarditis***
- ***Idiopathic***
- ***Toxicity (chemotherapy, cocaine, ETOH, radiotherapy...)***
- ***Inherited***
- ***HIV***
- ***Post partum***

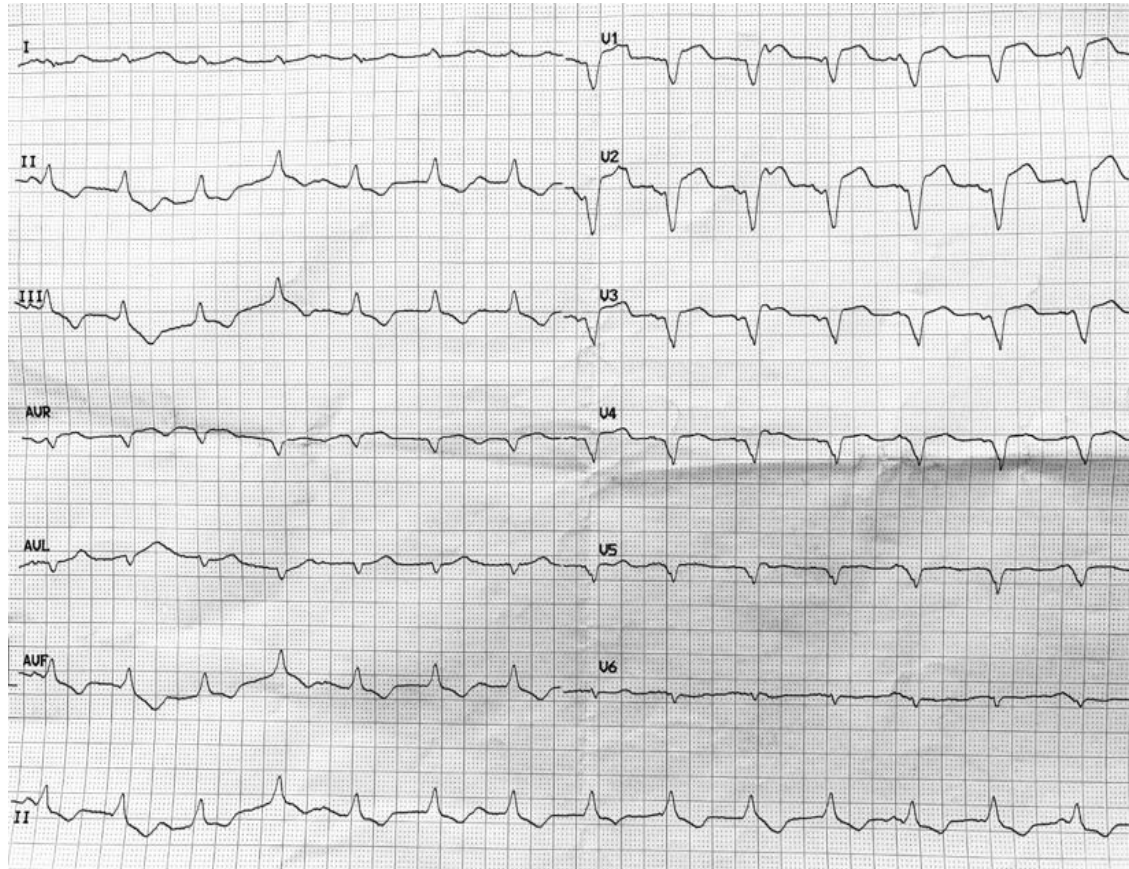
HCM



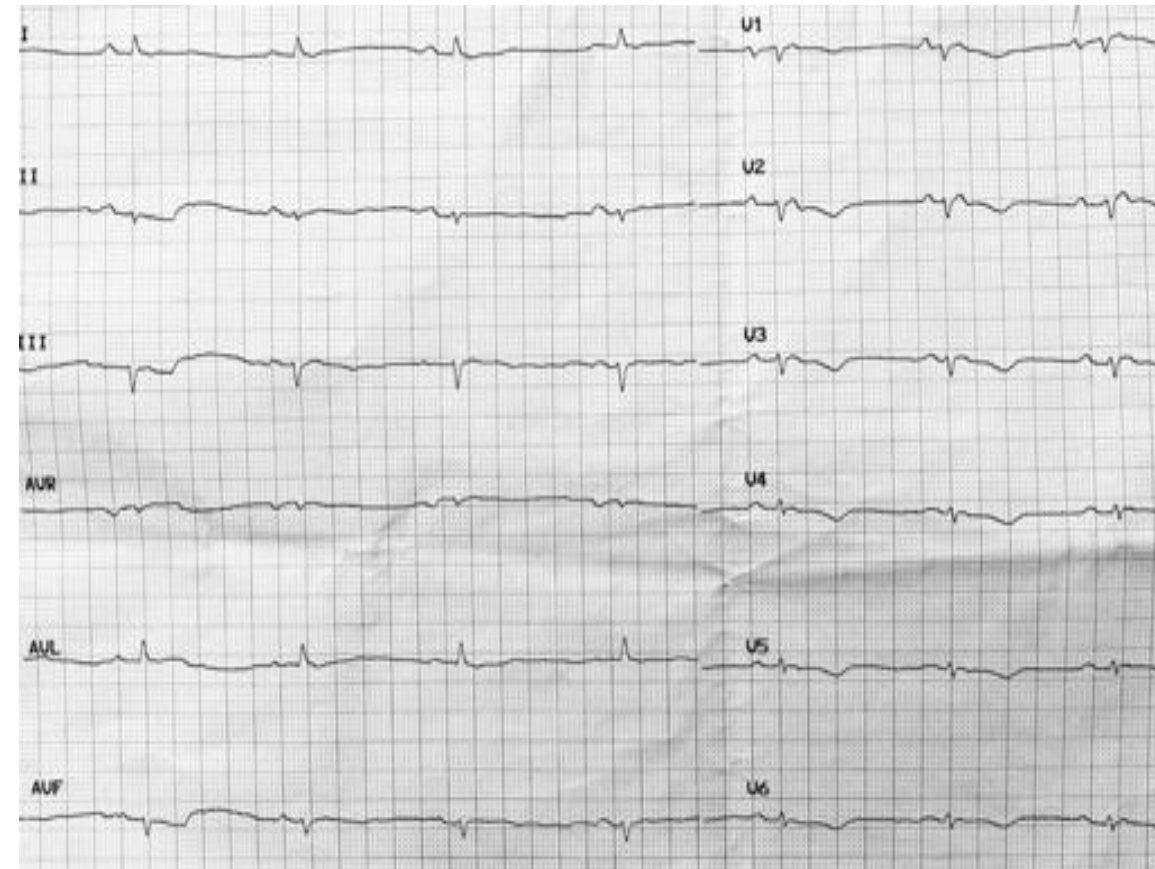
HCM phenocopies – storage diseases

- Fabry disease
- Hemochromatosis
- Glycogen storage disease

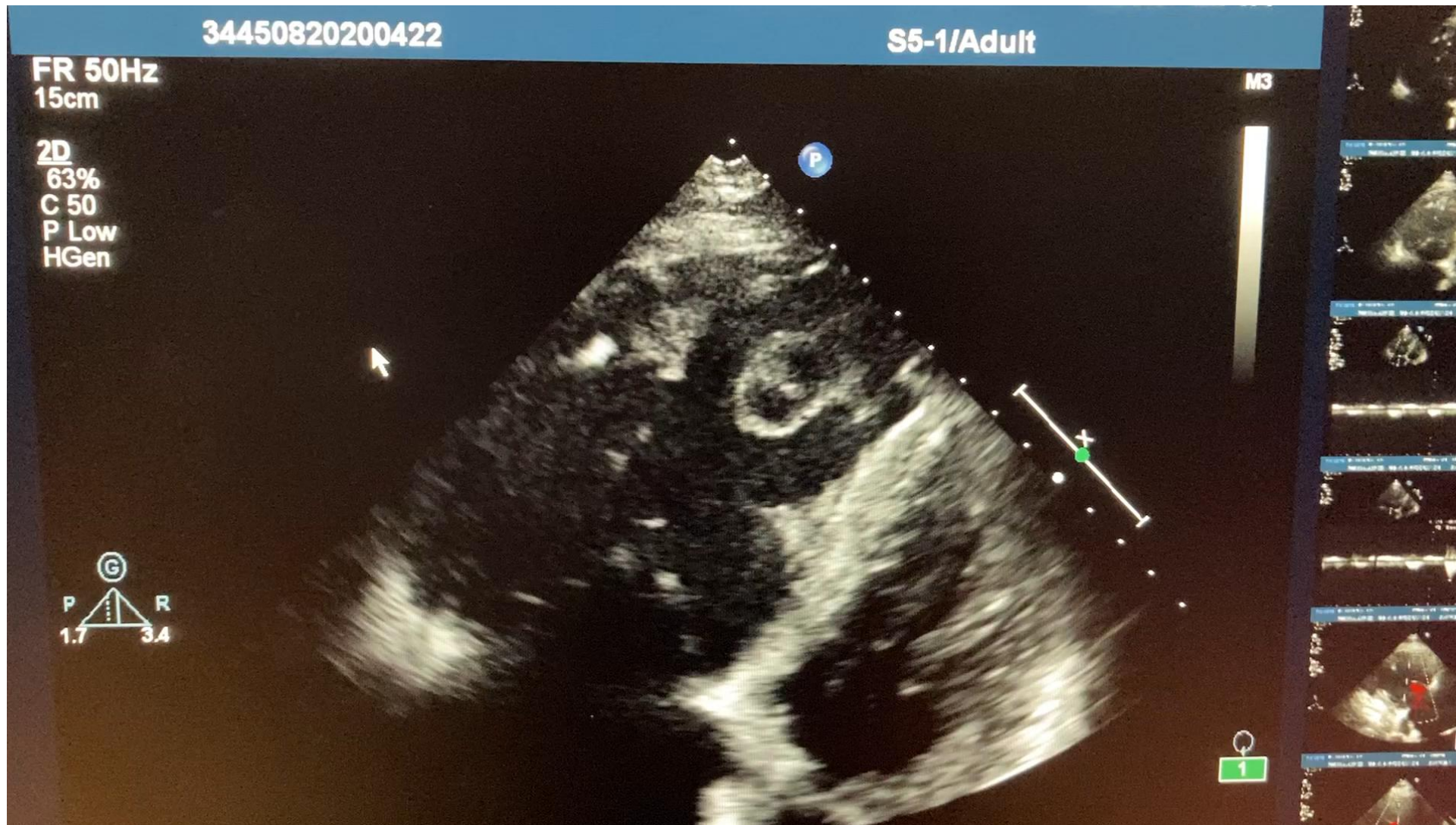
ECG : ARVC-VT (atrioventricular dissociation)



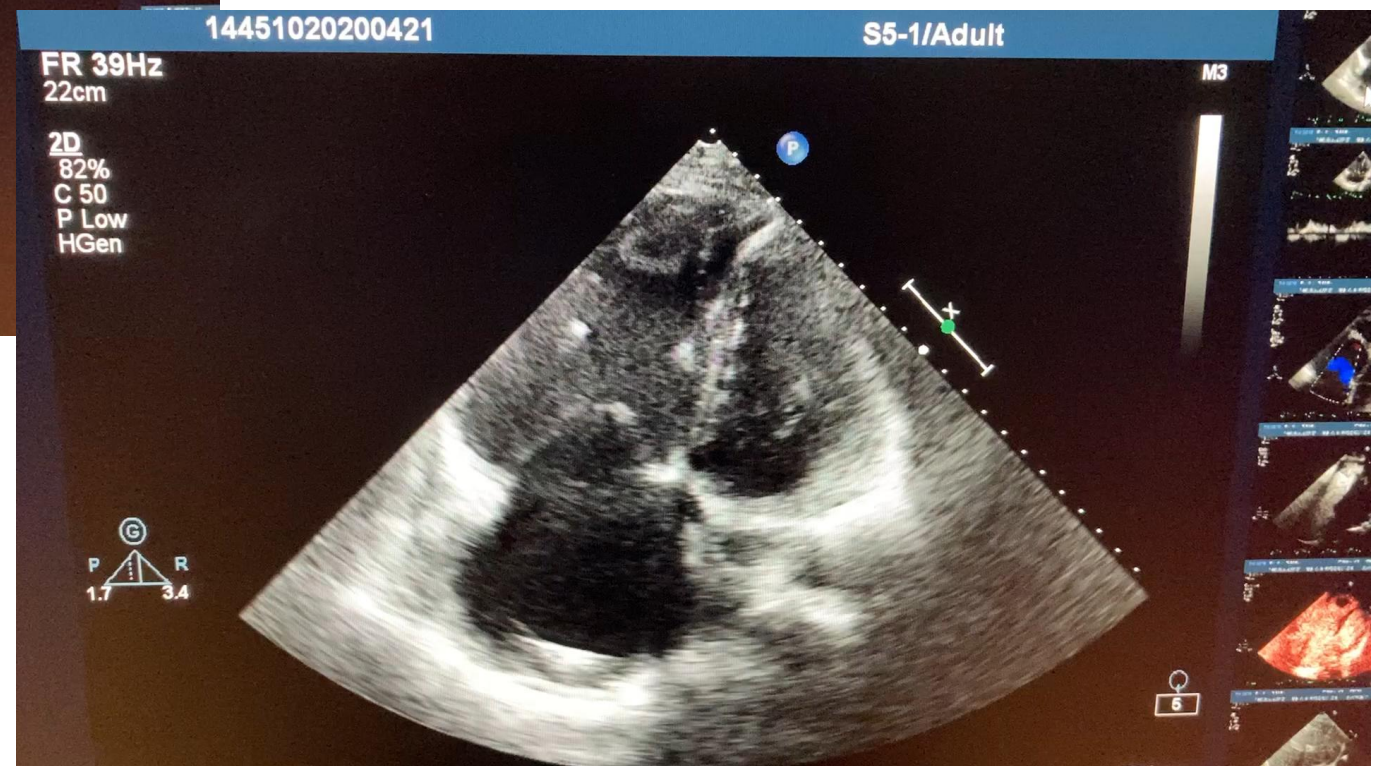
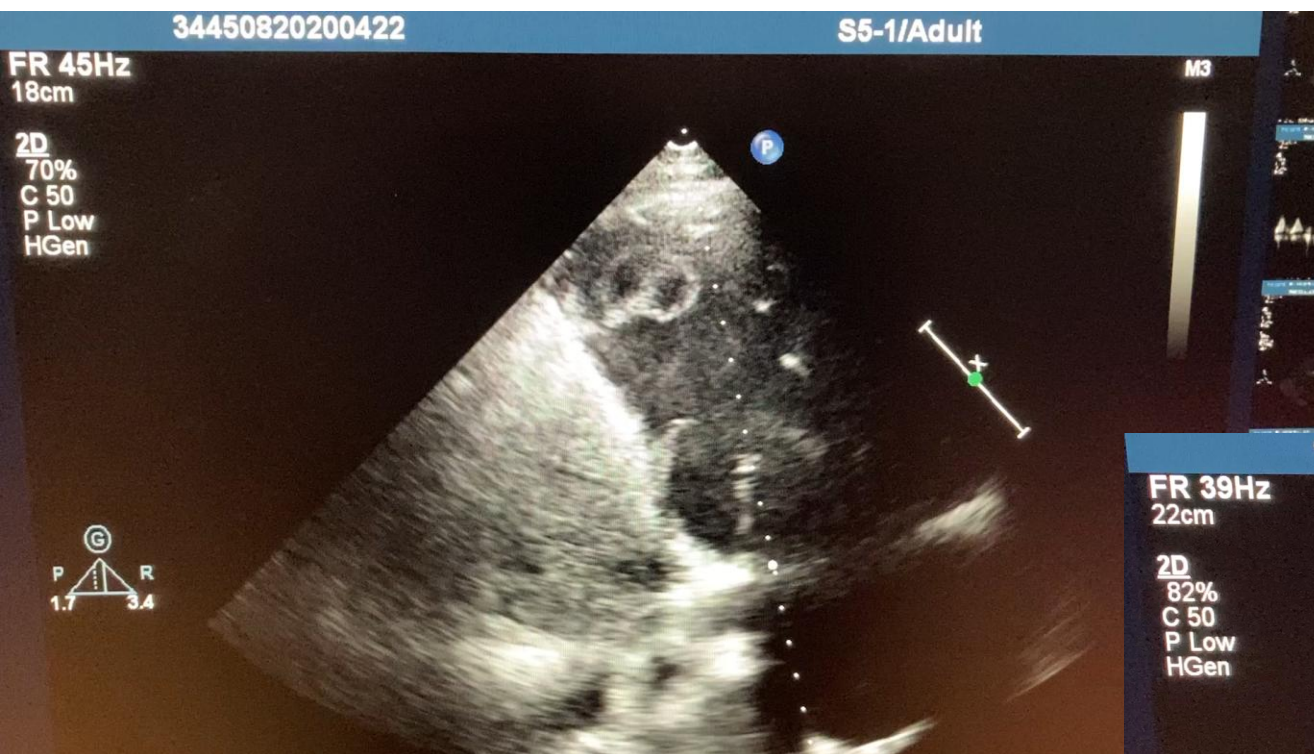
SR (negative T waves in right precordial leads)



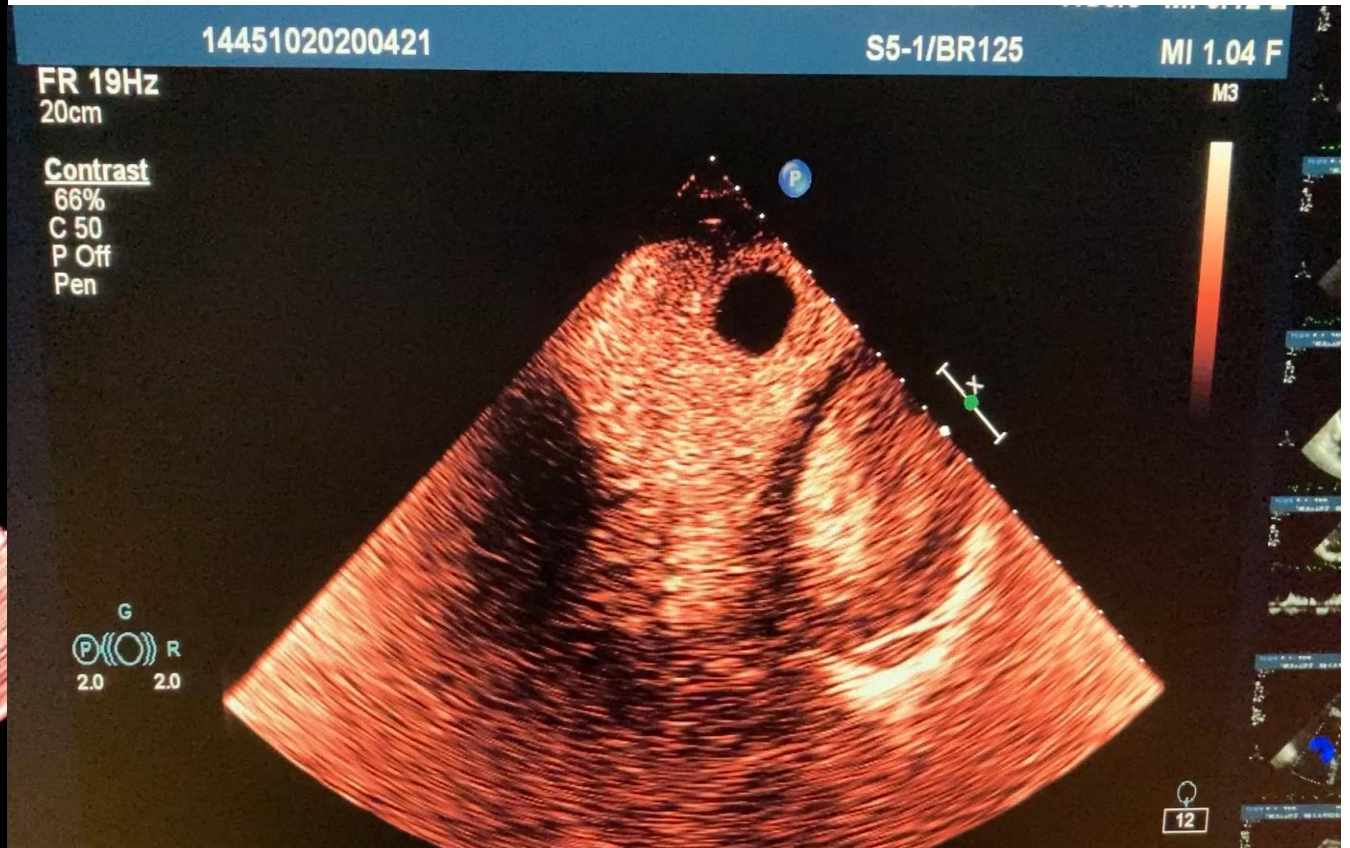
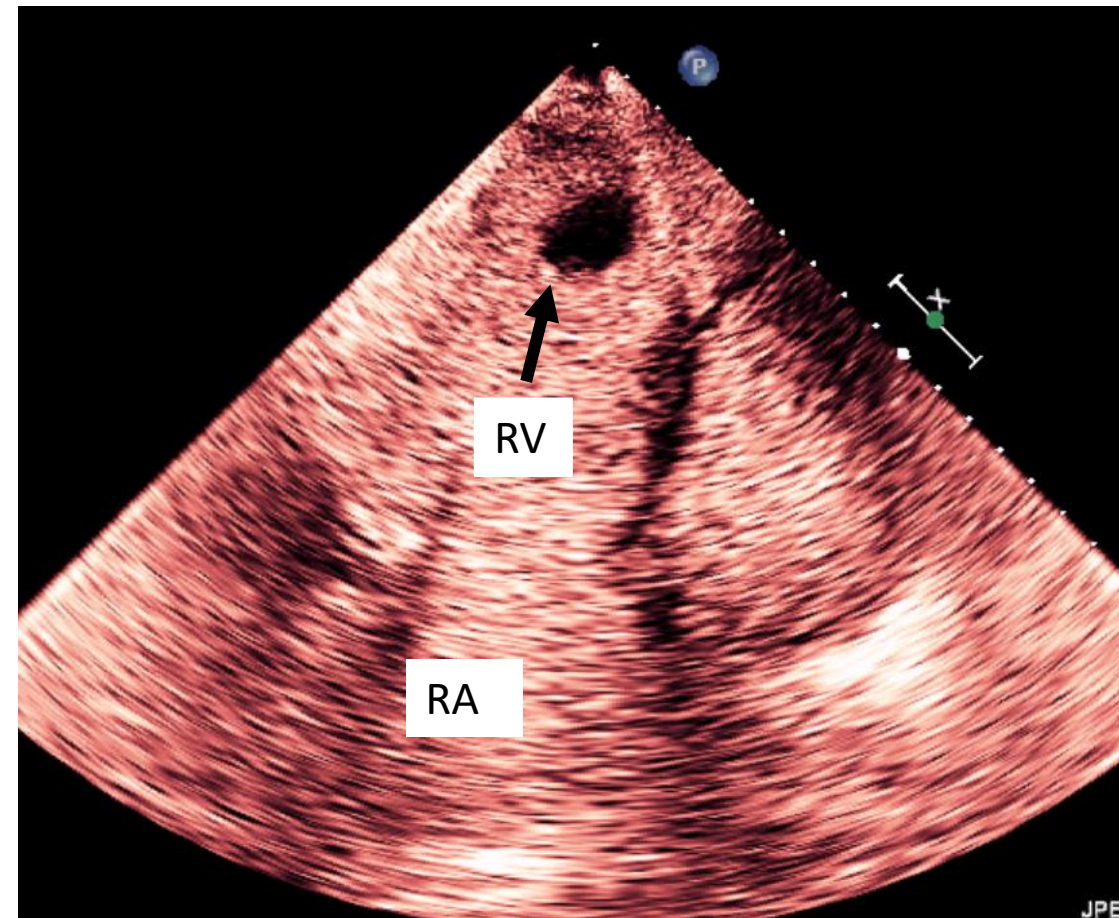
RV apex thrombus and basal free RV wall thrombus



Mobile apex thrombus (4x3.2cm)



4CH view: The two thrombus (areas without contrast enhancement) were depicted at different sites (RV apex and tricuspid valve annulus) using contrast echo



8. Infiltrative diseases

- Amyloid
- Sarcoidosis
- Neoplastic

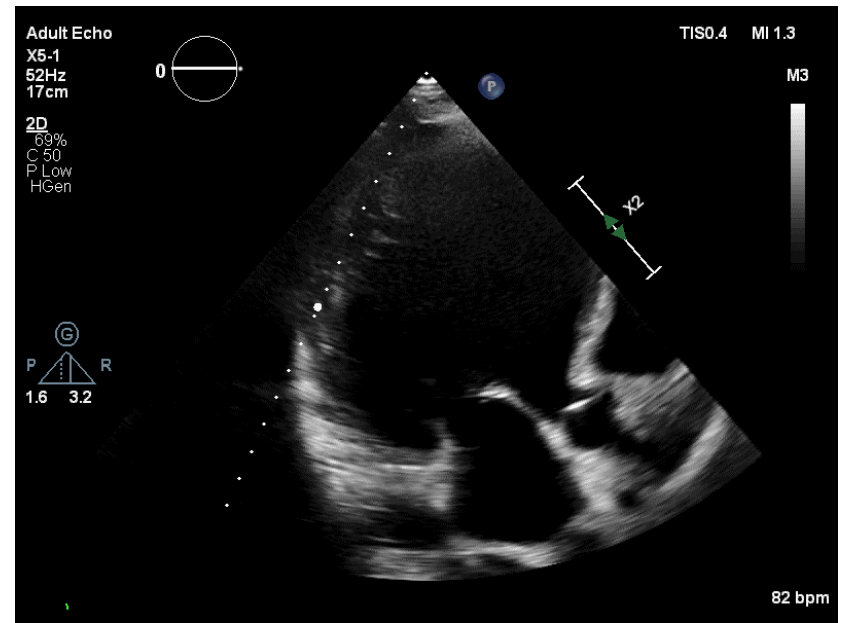
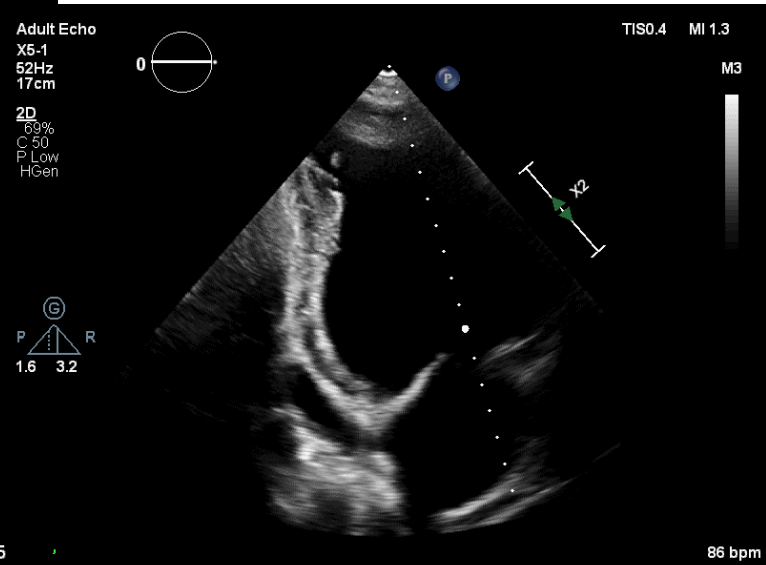
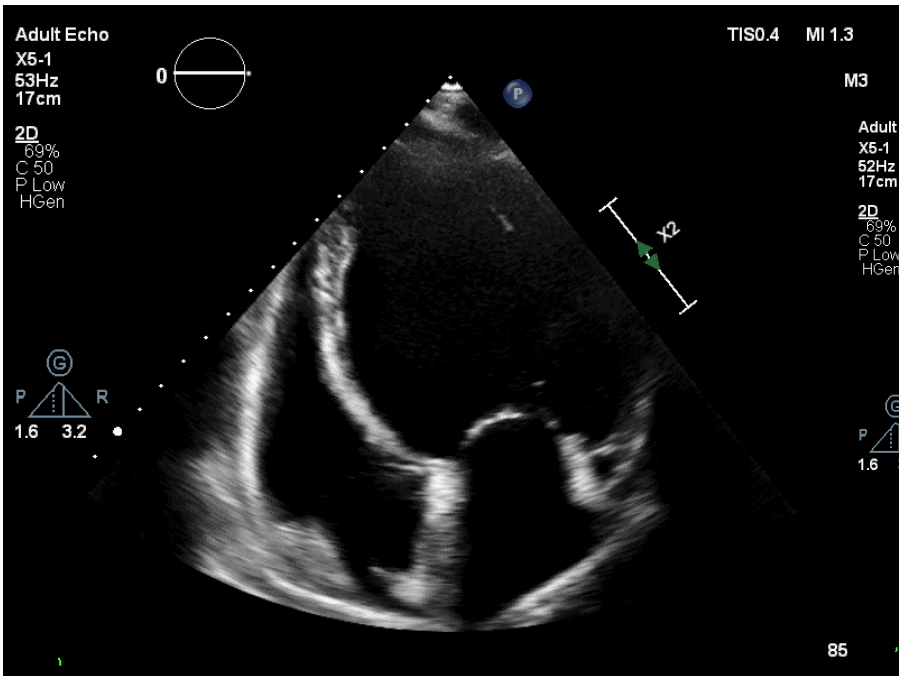
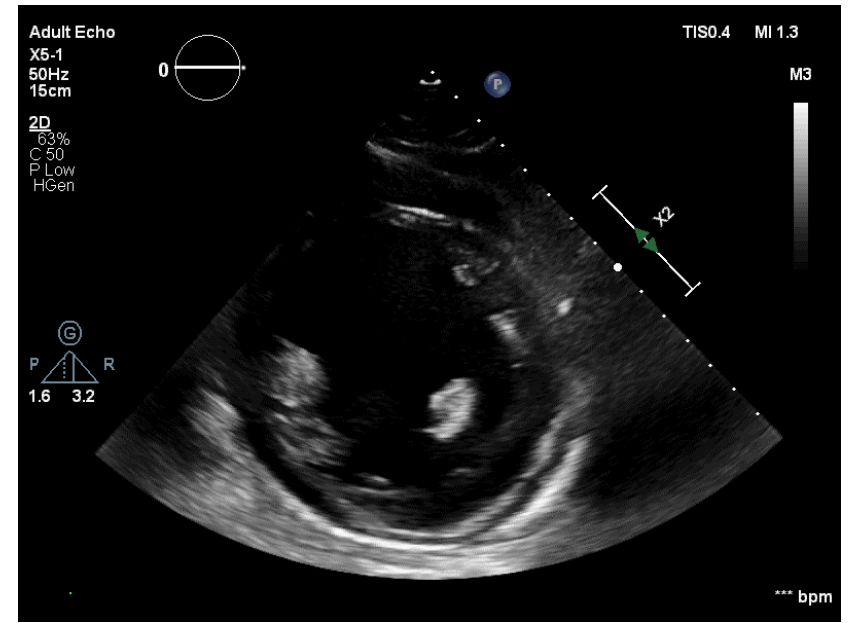
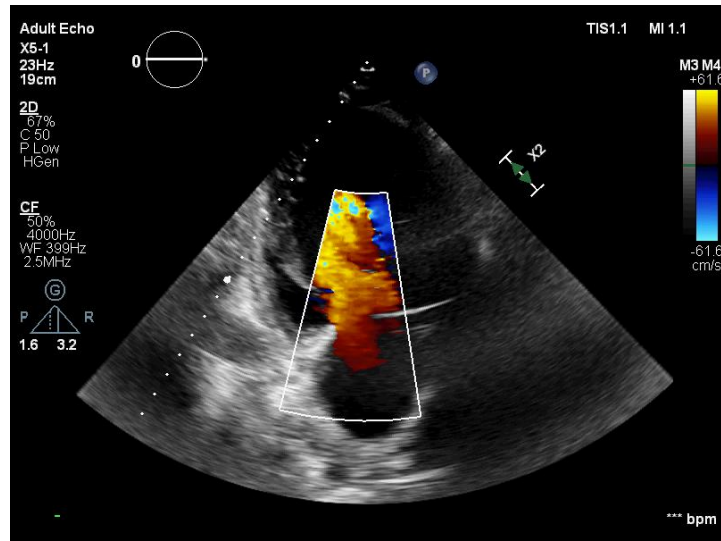
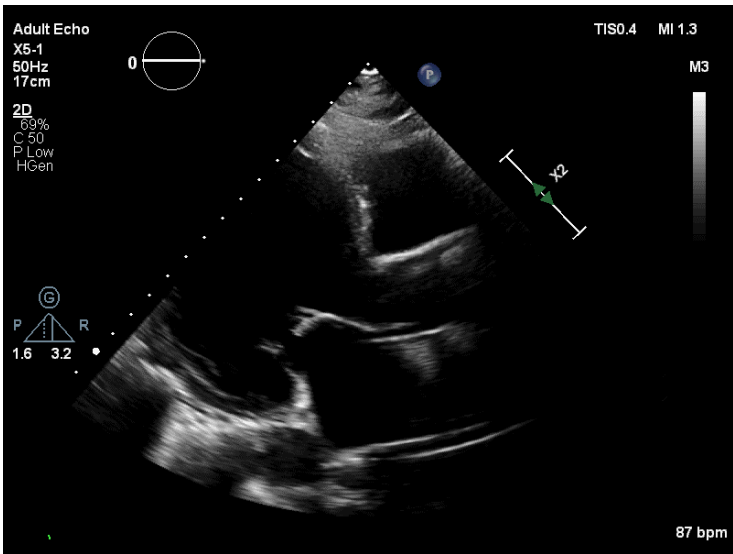
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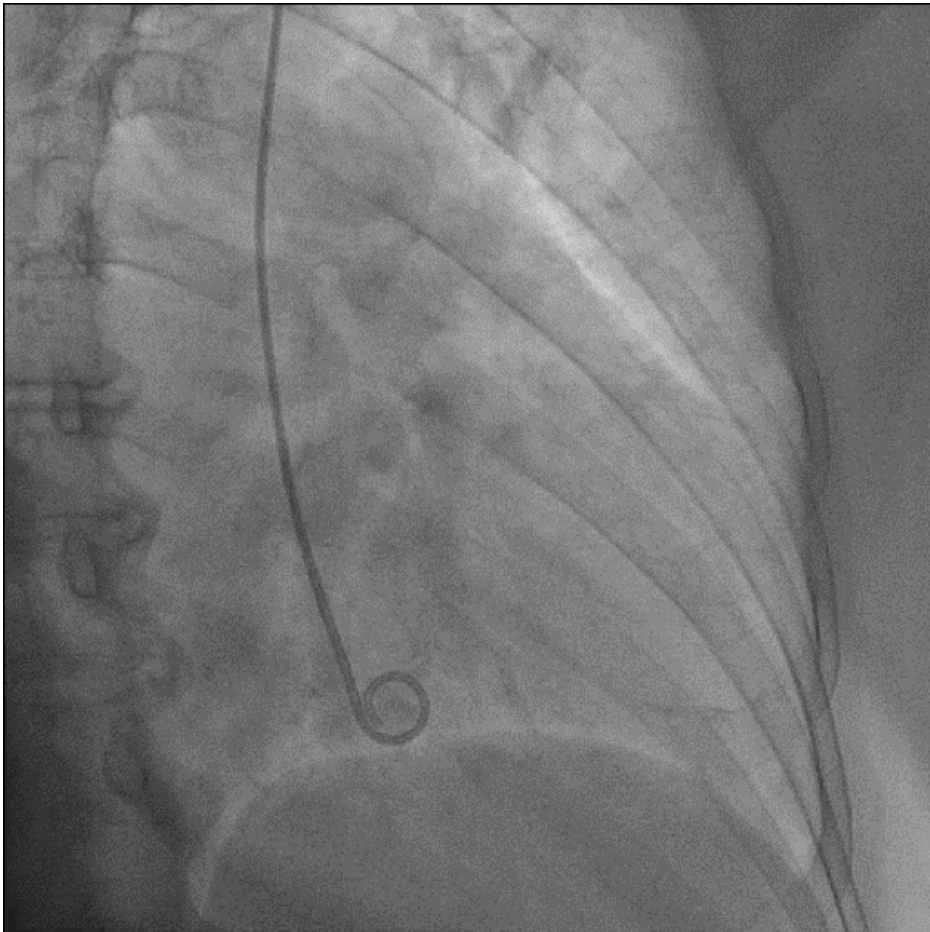
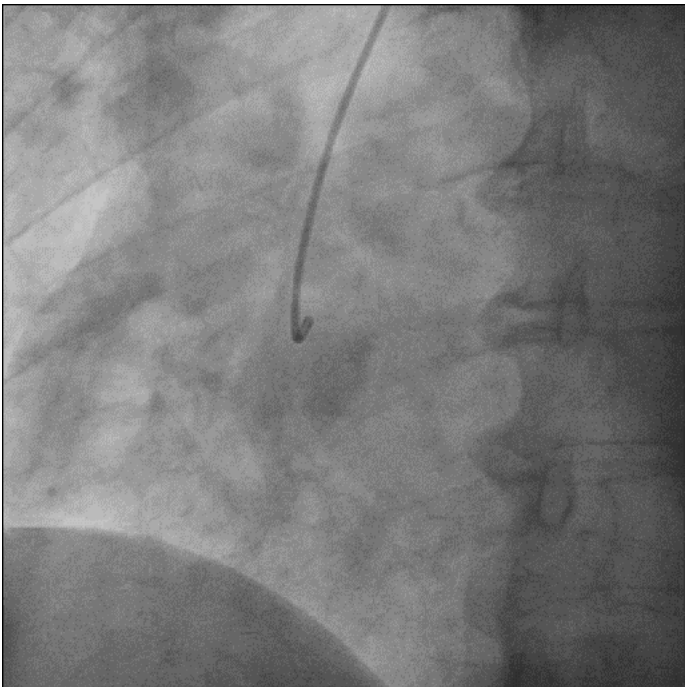
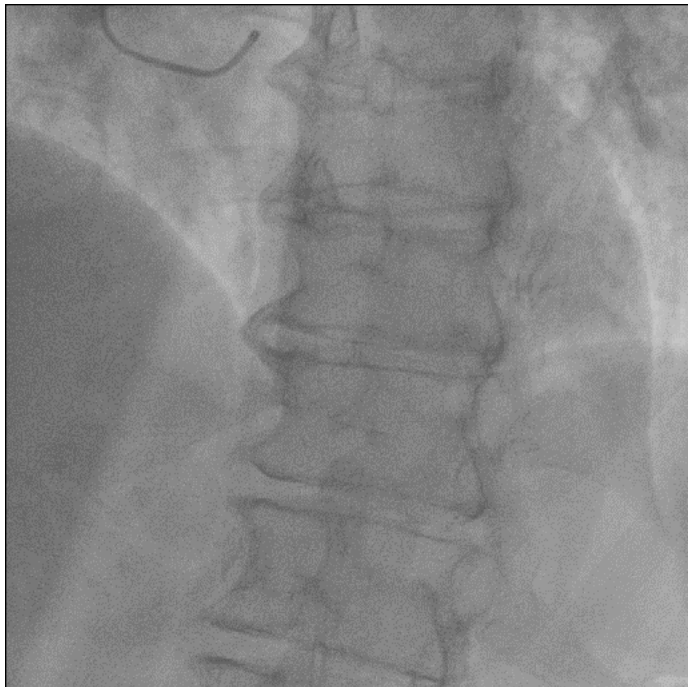
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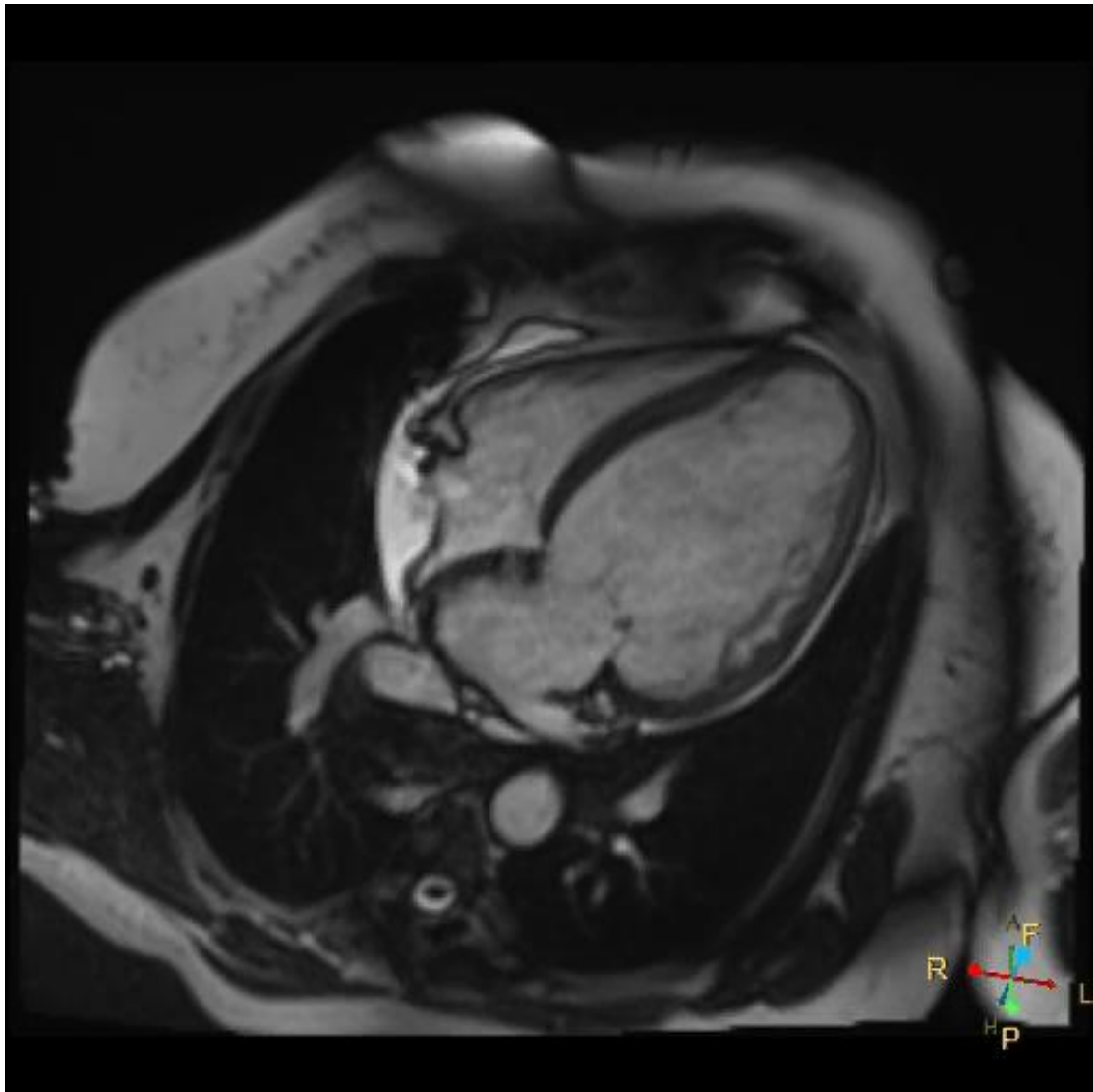
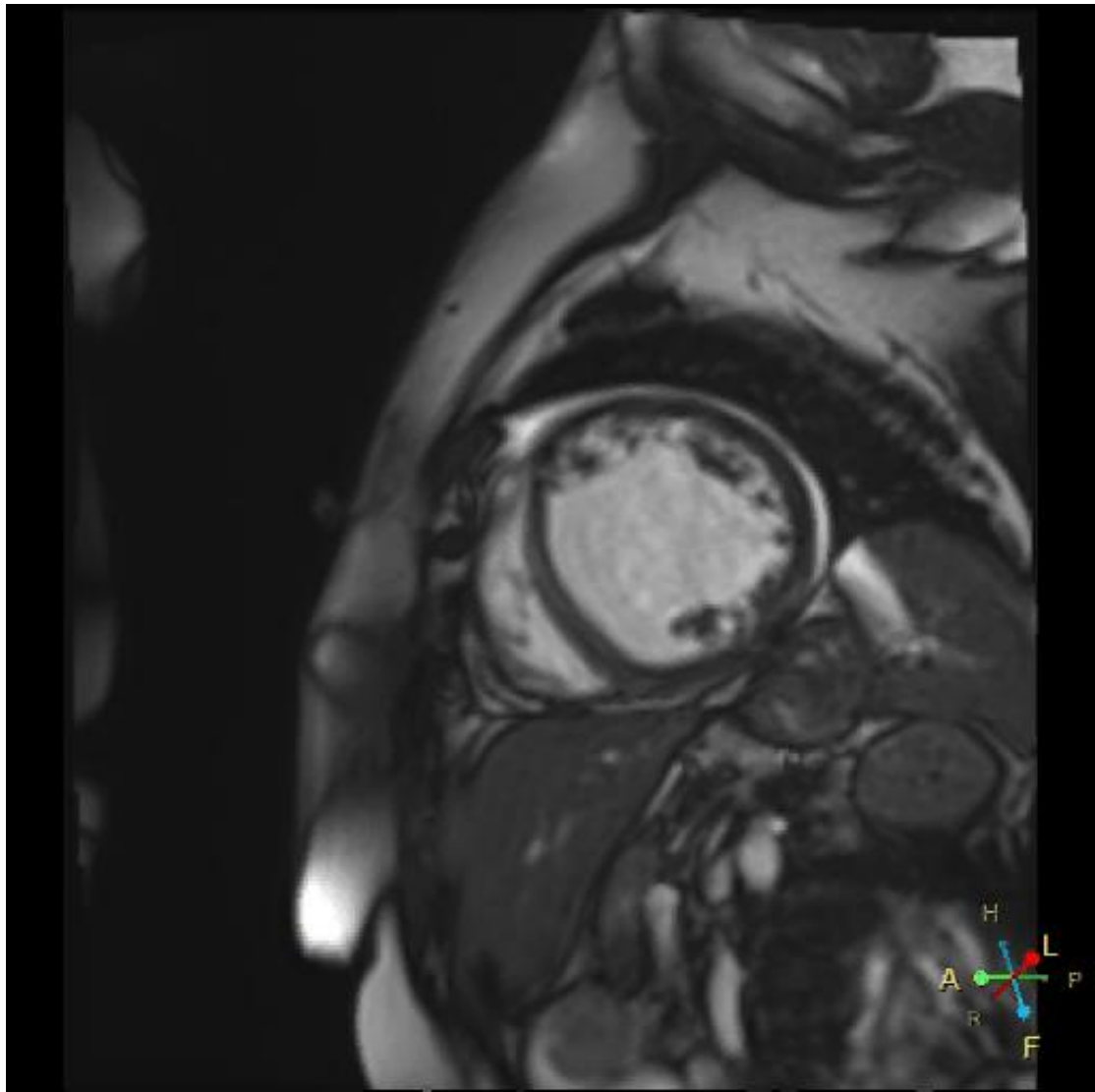
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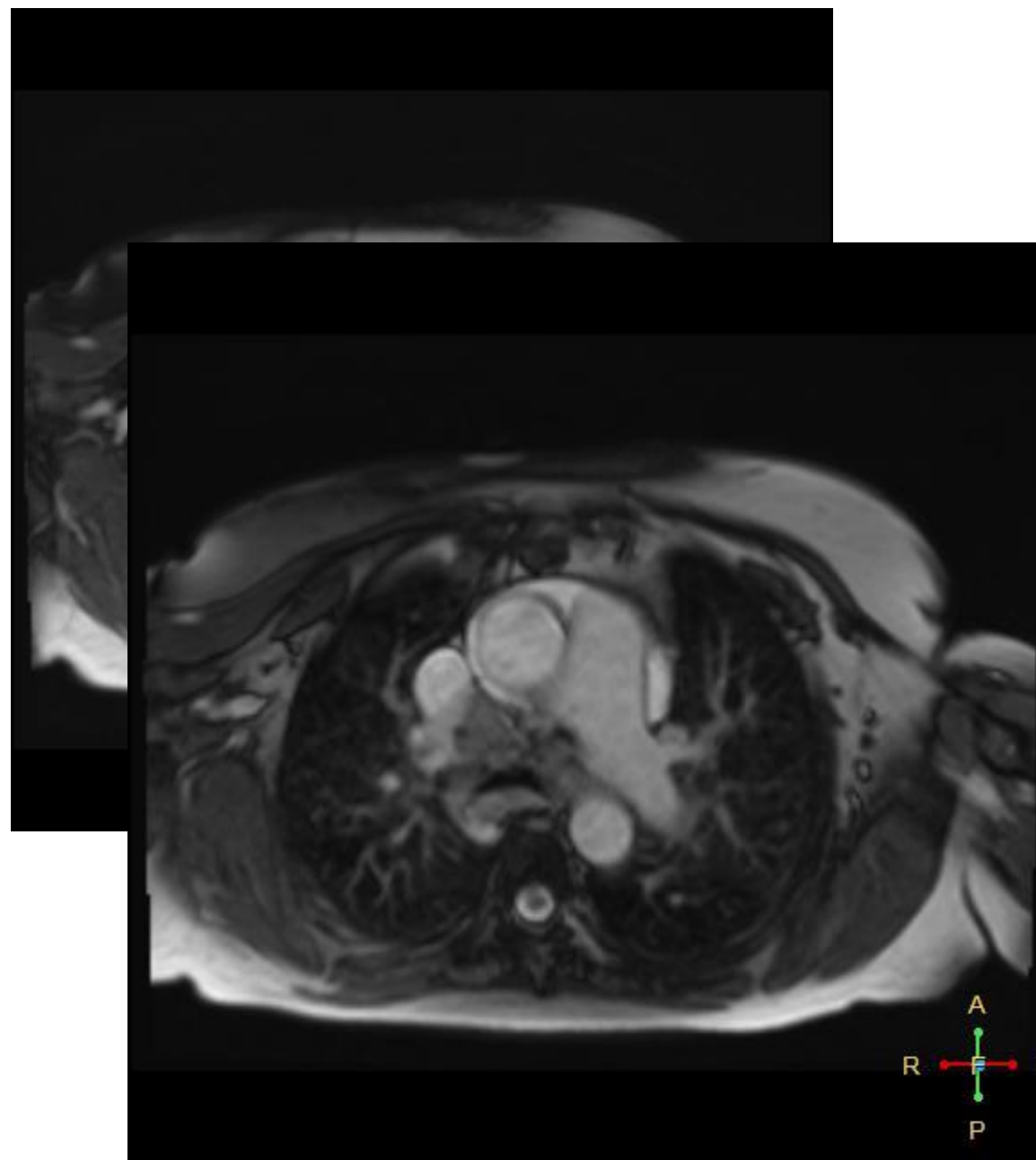
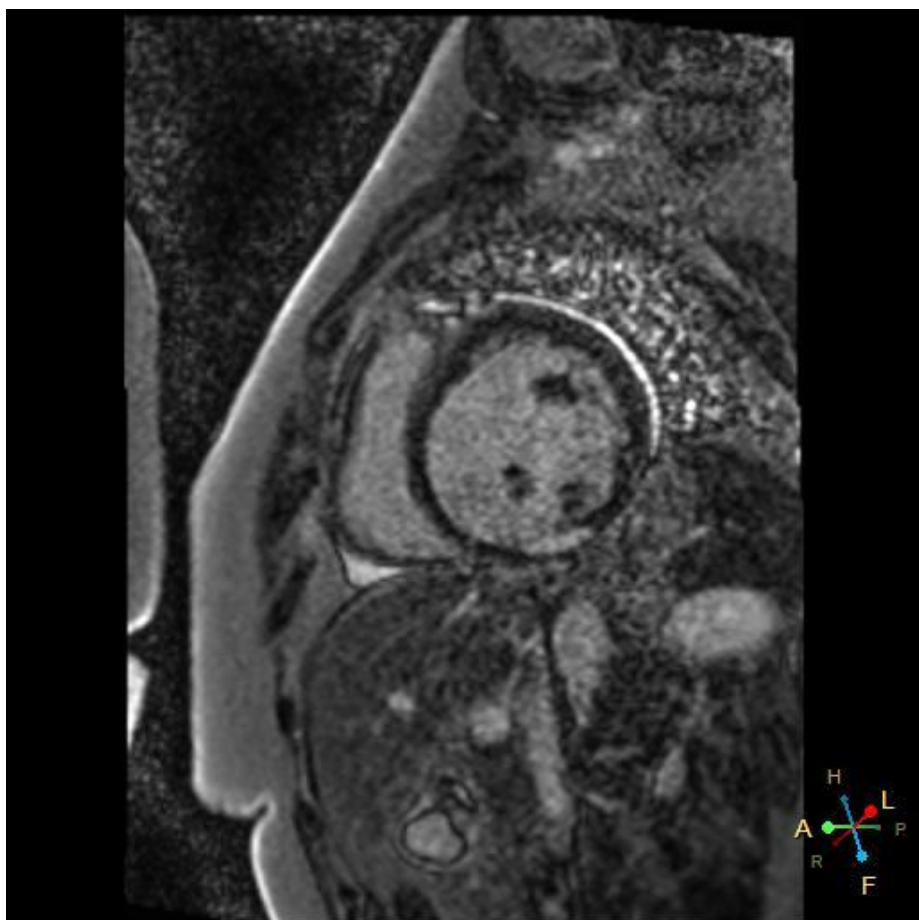
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HR

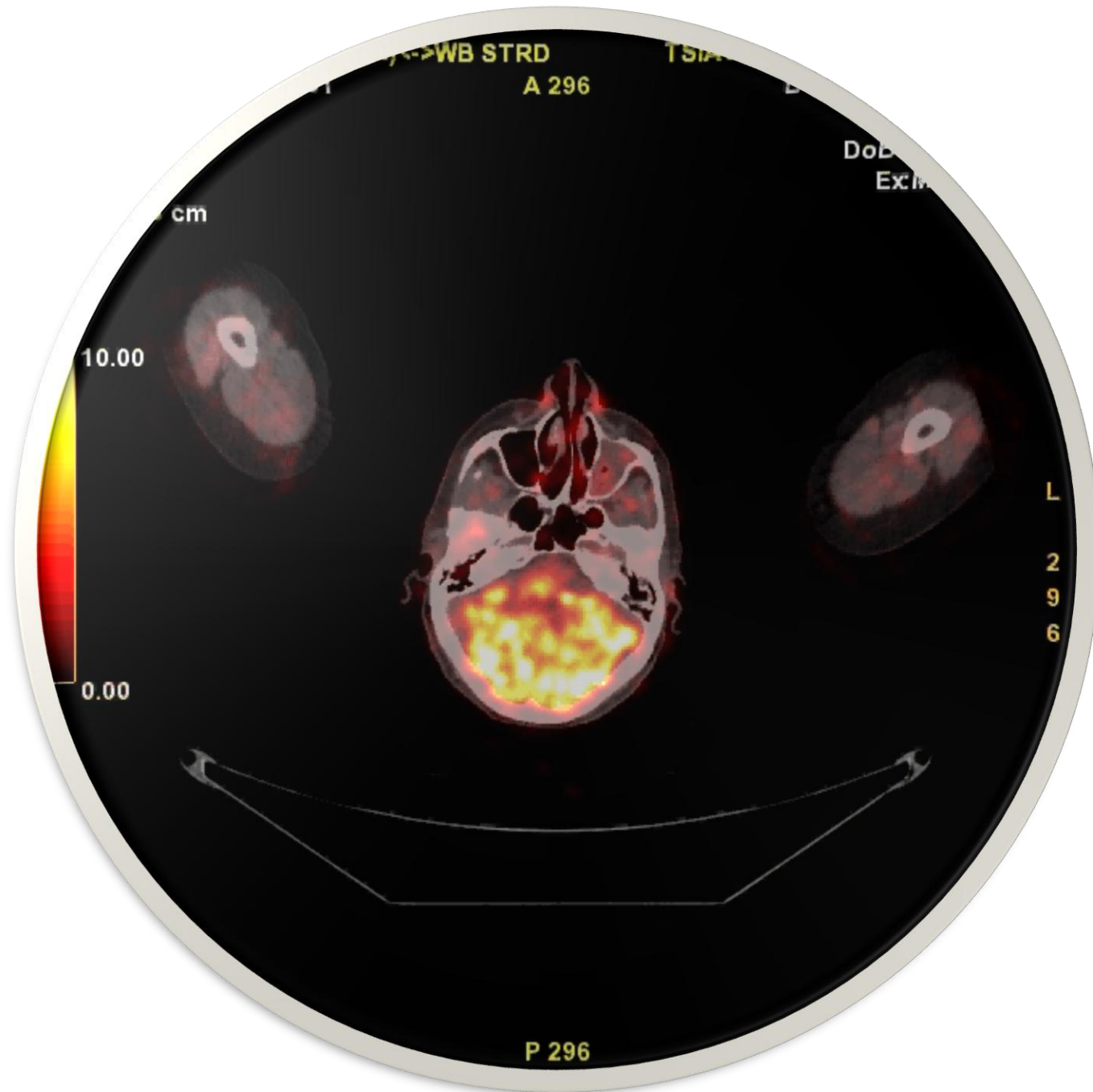












Cardiac sarcoidosis

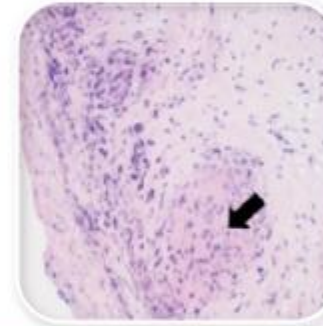
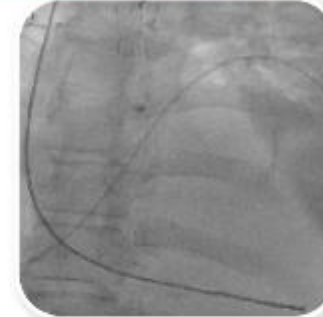
Pathogenesis

- Unknown environmental triggers
- Genetic predisposition
- Granulomas → fibrotic scarring

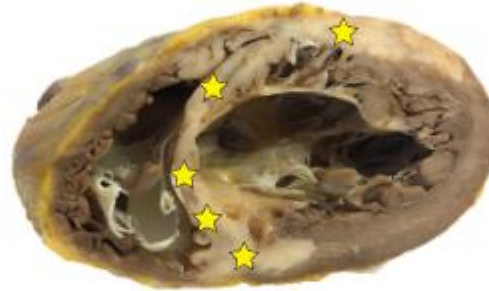
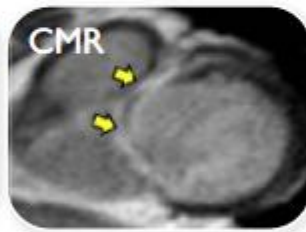
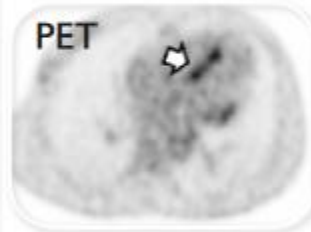
Main manifestations

- Subclinical cardiomyopathy
- Atrio-ventricular block
- Ventricular tachycardia (VT)
- Heart failure

Diagnostic biopsy

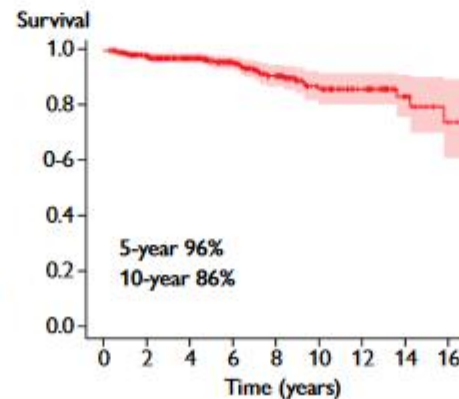


Diagnostic imaging



Therapy

- Tiered immunosuppression
- Treatment of arrhythmias and heart failure
- Consideration of an ICD to prevent SCD



Factors predictive of worse outcome

- Extent of myocardial involvement (several indices)
- Presentation with VT or heart failure
- *De novo* or *clinically isolated* cardiac involvement
- Definite vs. probable diagnosis

Other

9. Pericardial disease

- Calcification

- Infiltrative

10. Endomyocardial disease

- Radiotherapy

- Endomyocardial fibrosis

- Carcinoid

11. Neuromuscular disease

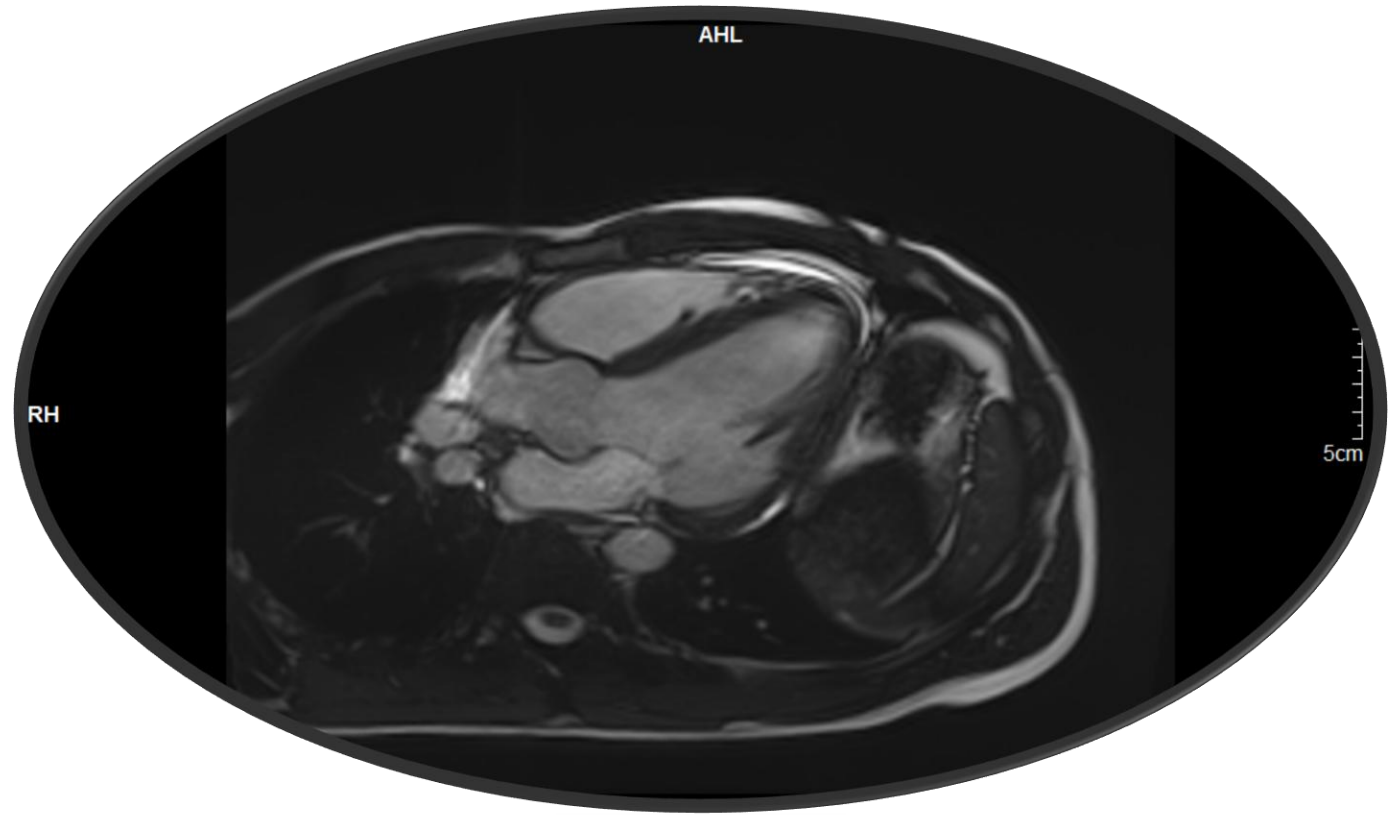
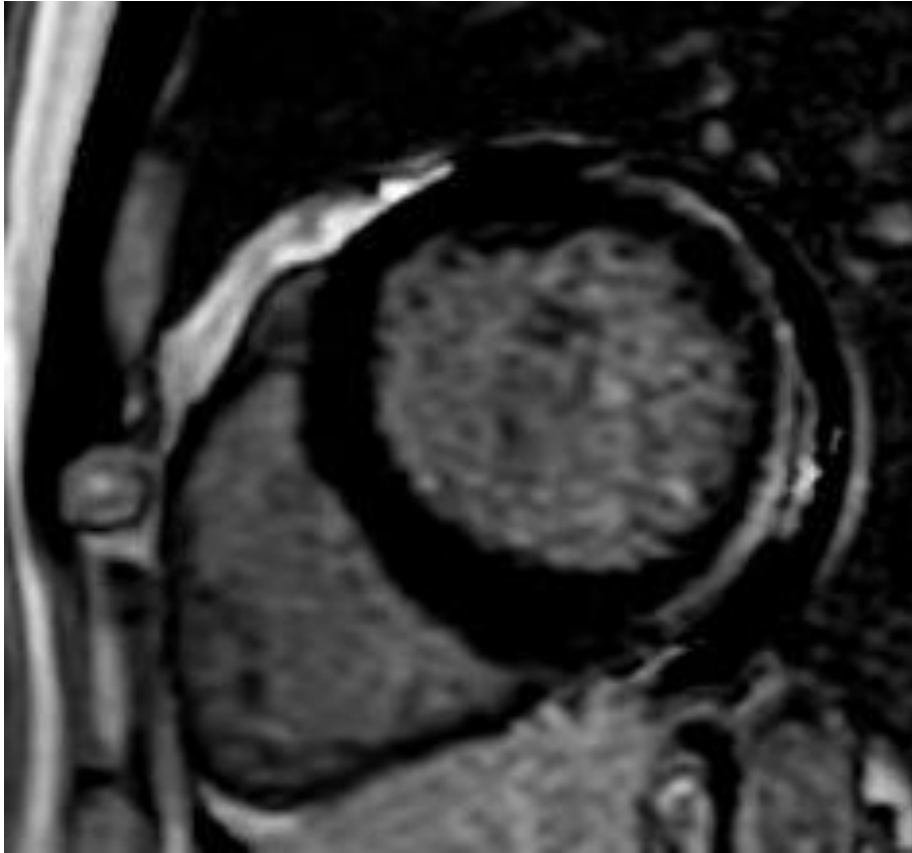
- Friedreich's ataxia

- Muscular dystrophy

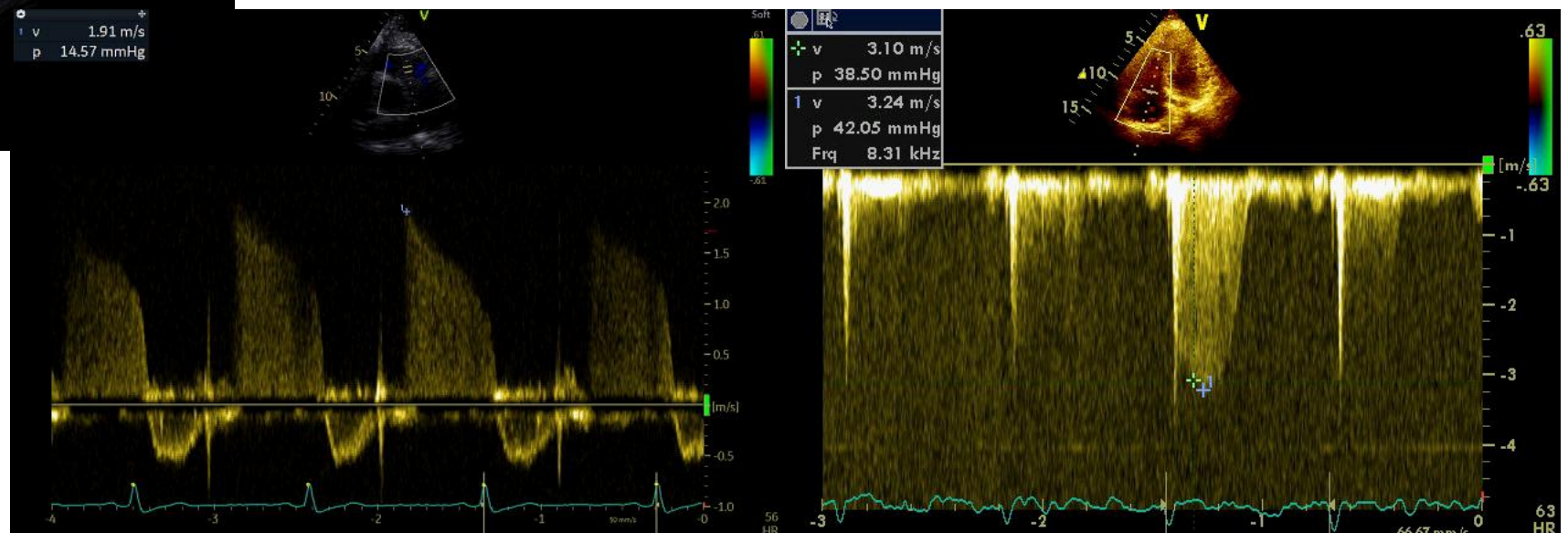
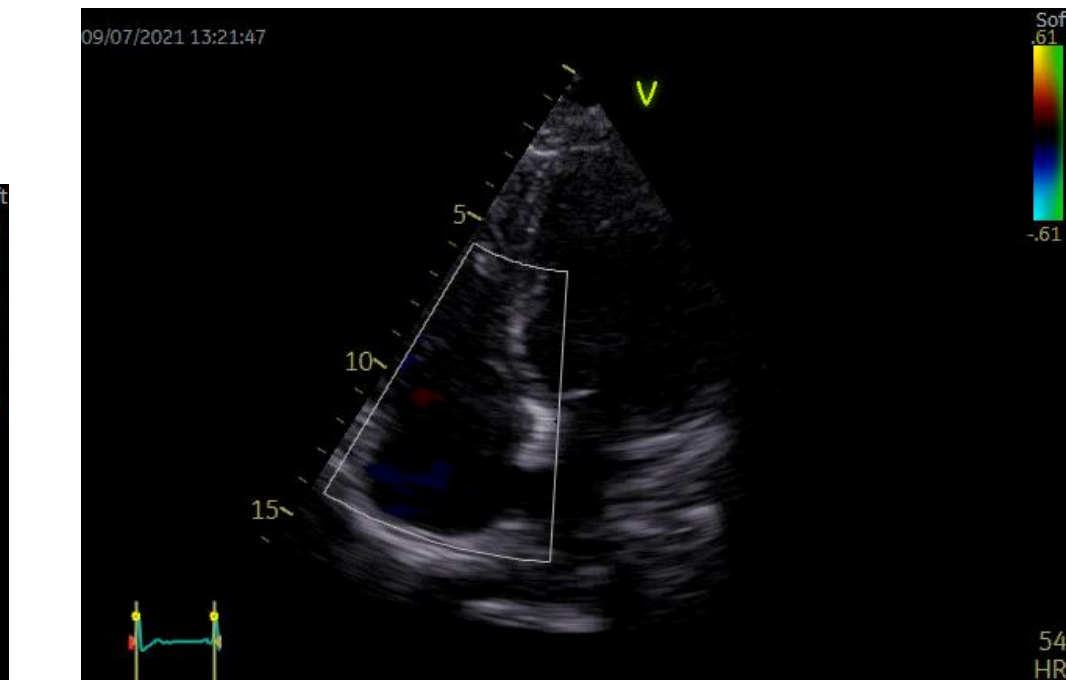
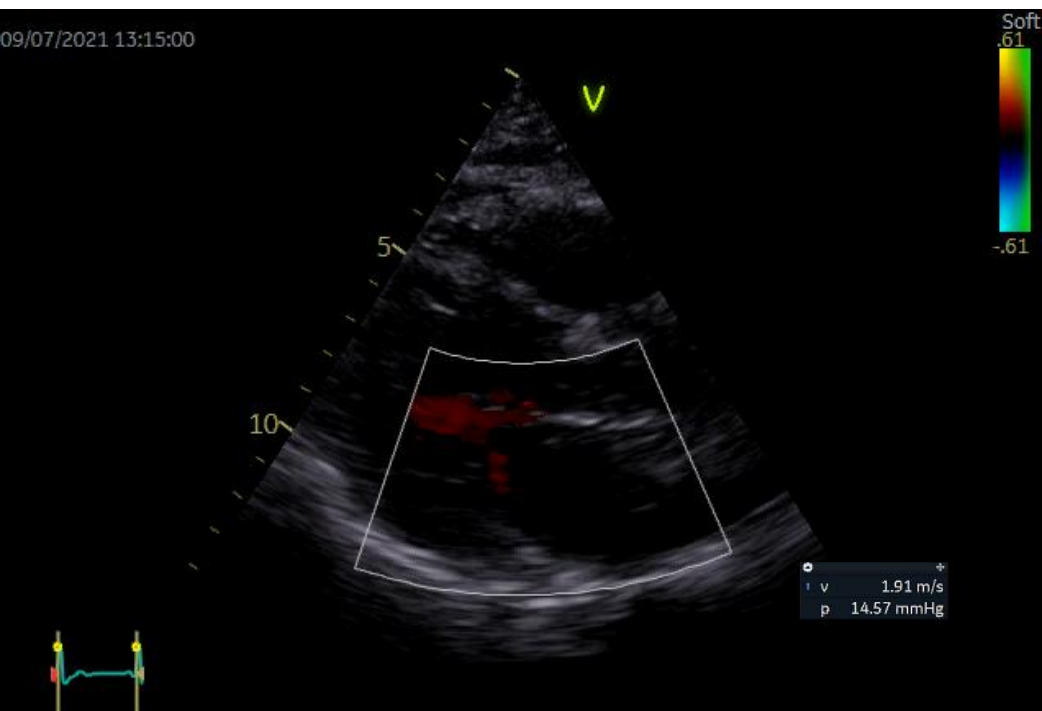
12. Metabolic diseases

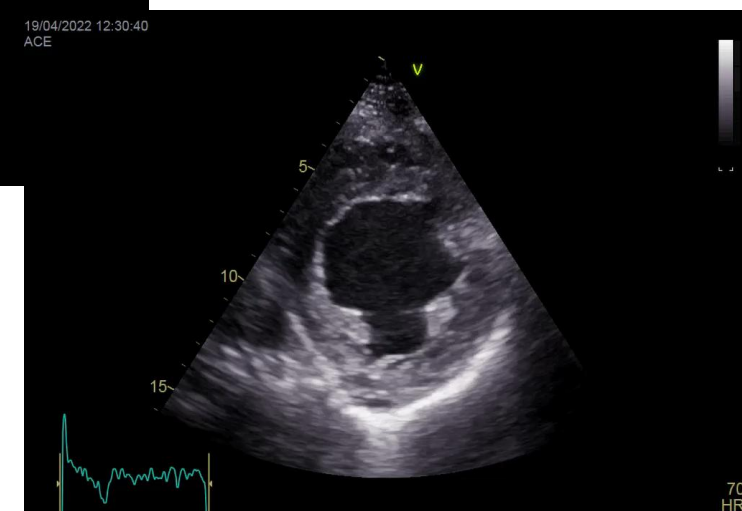
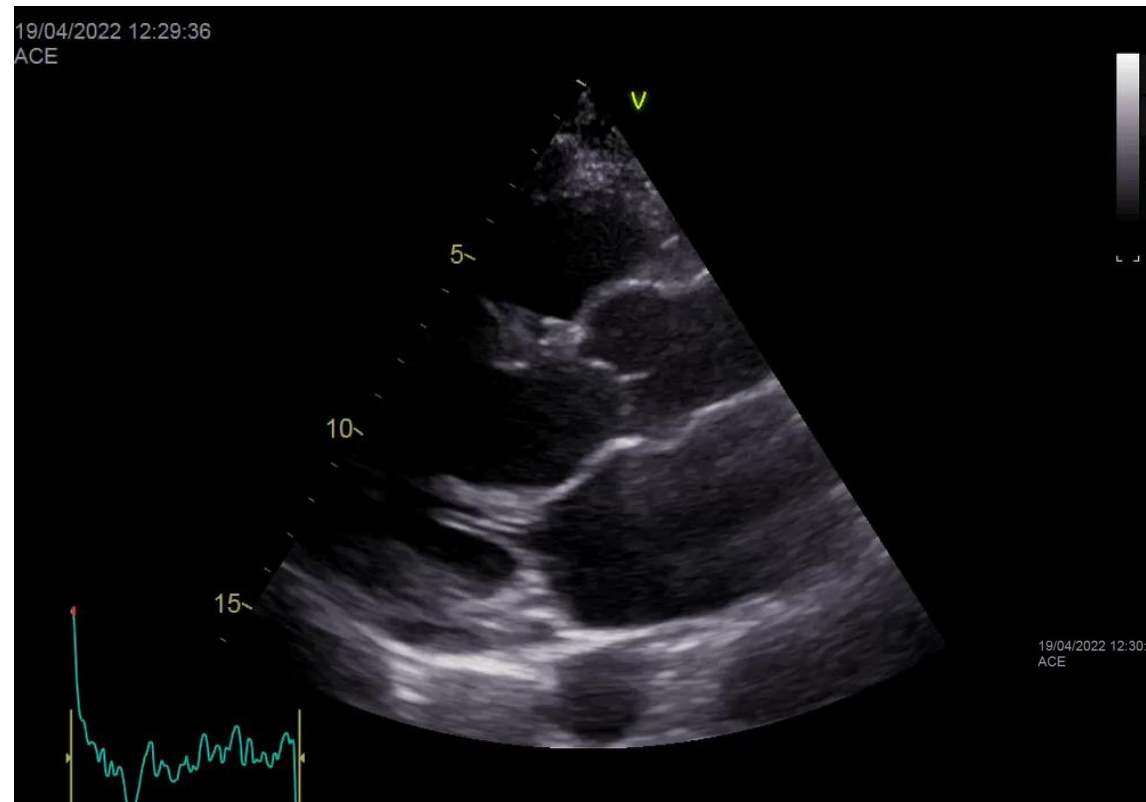
- Thyroid disease
- Autoimmune diseases

SLE

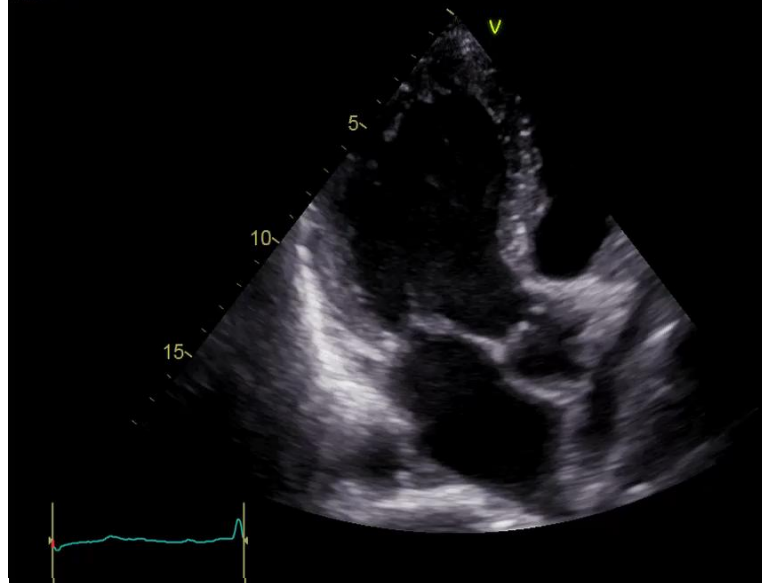


Hyperthyroidism

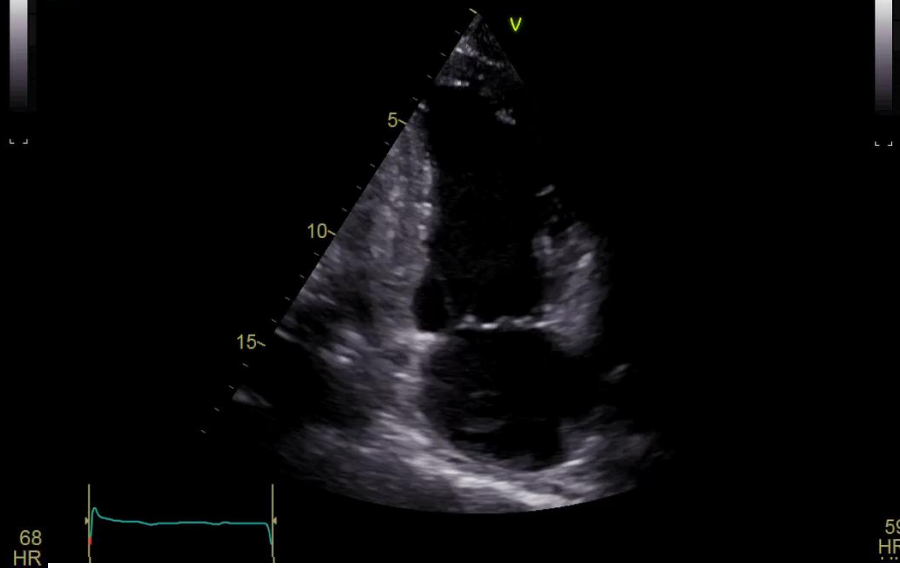




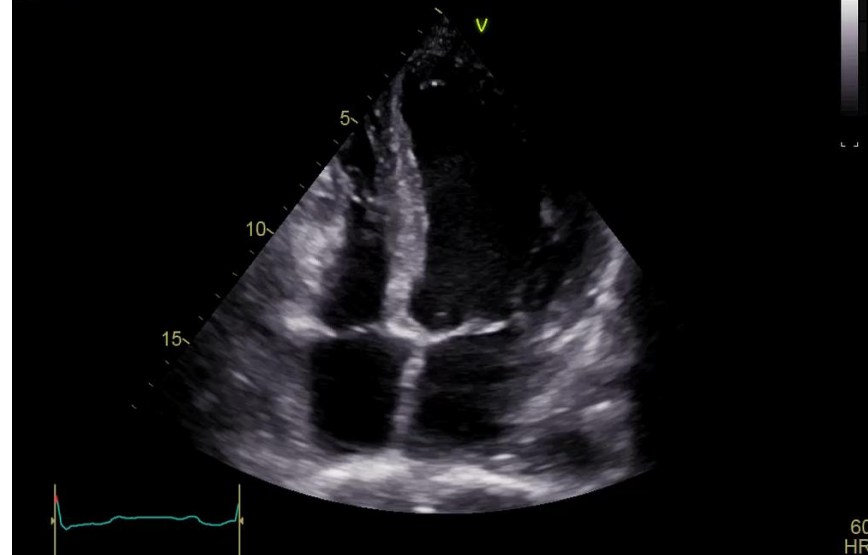
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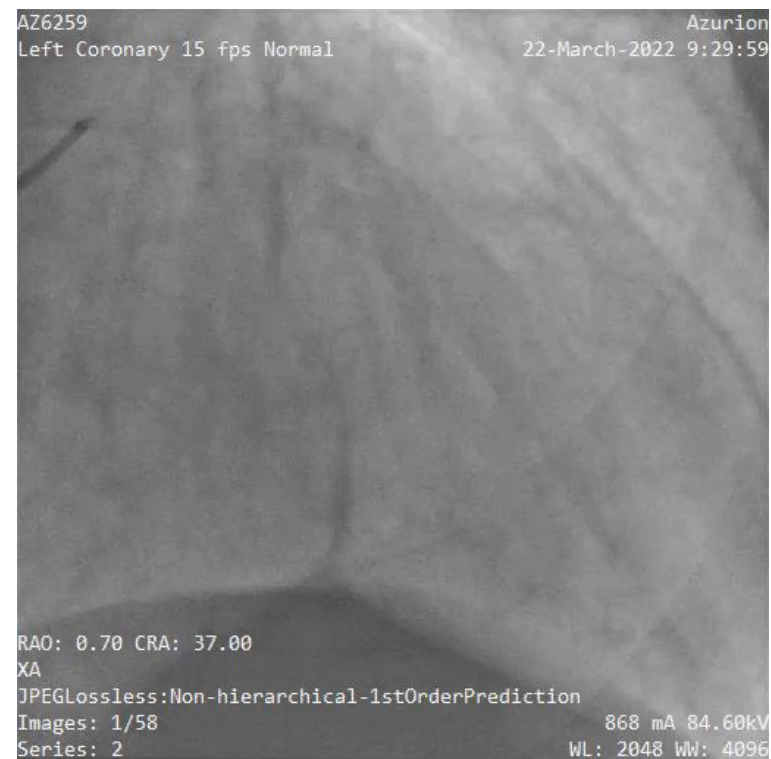
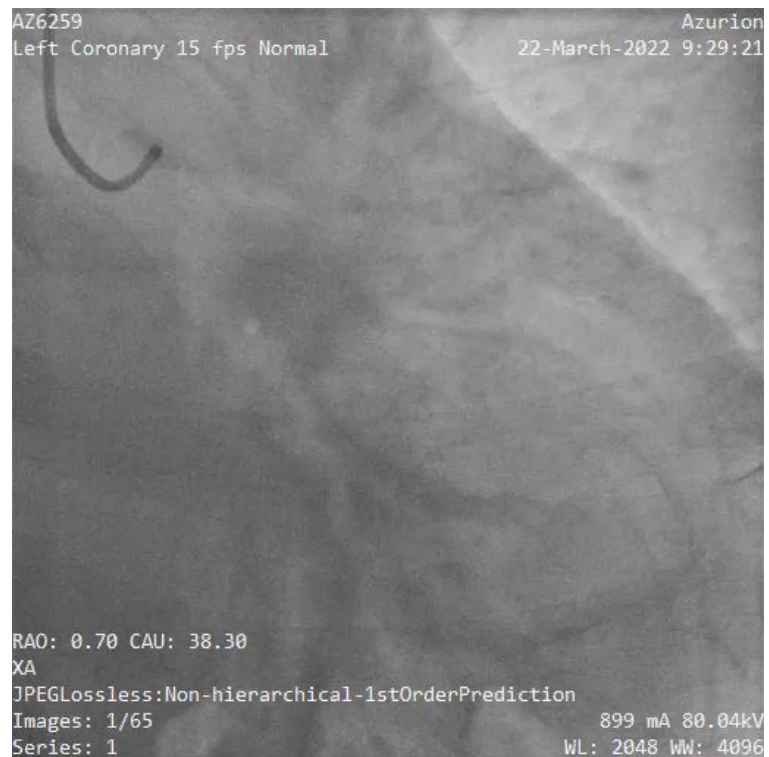


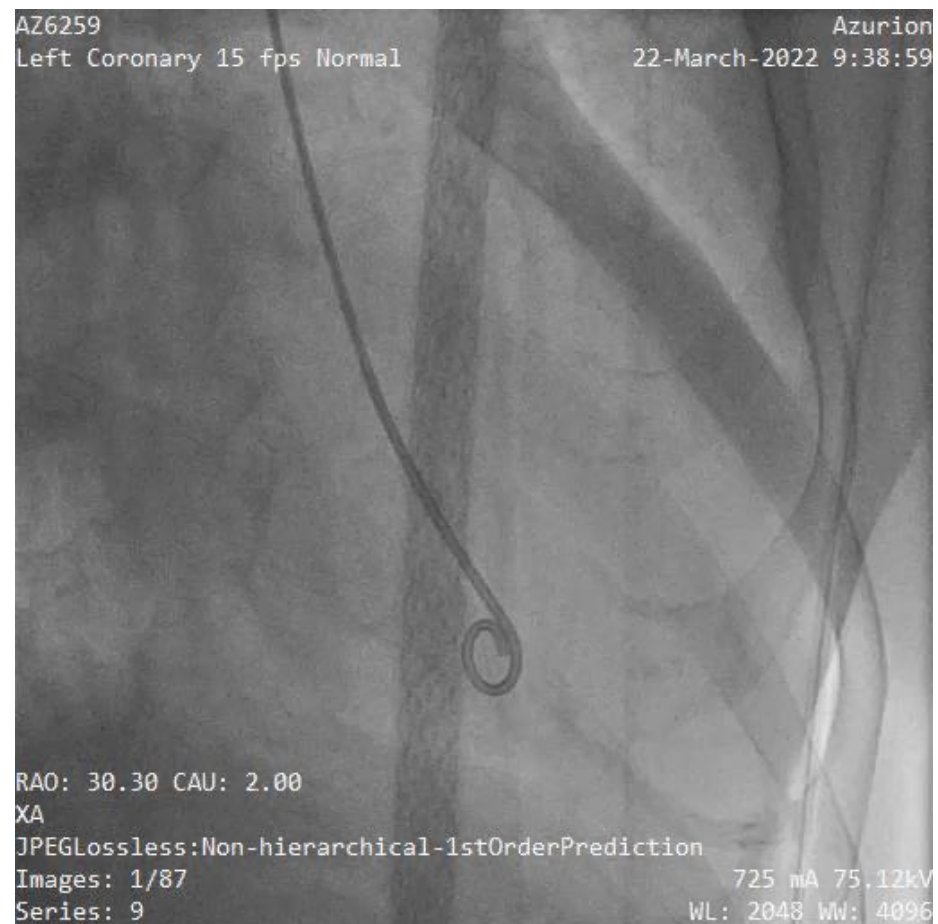
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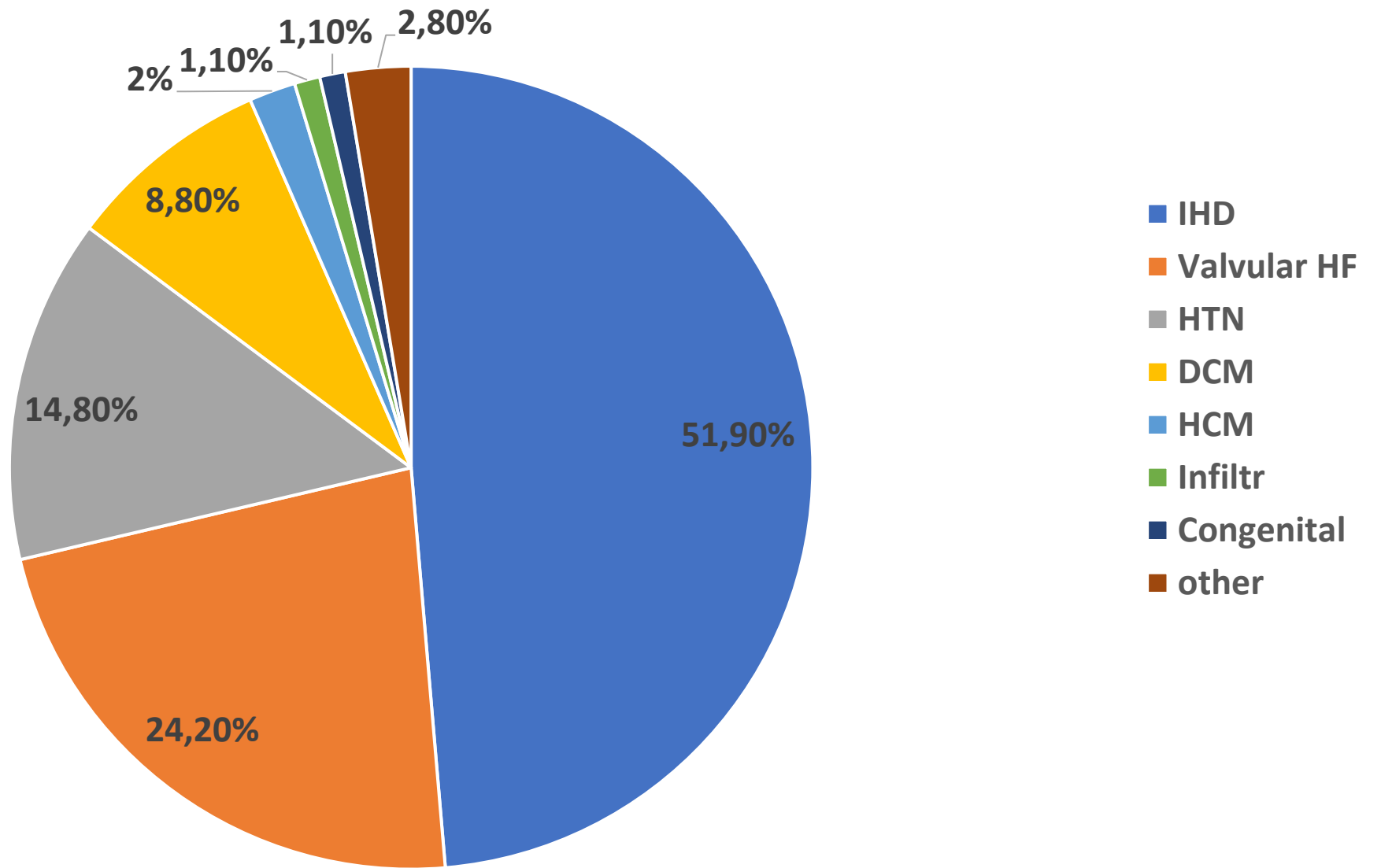
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Chronic HF HECMOS N=351



HF - causes

- Clinical syndrome
- Variety of reasons
- Variety of mechanisms – some unknown
 - Recognizable structural/functional patterns
 - Hemodynamic changes
 - Personalized understanding and treatment

Q1

- Η συχνότερη αιτία Καρδιακής ανεπάρκειας στην Ελλάδα είναι

A. στεφανιαία νόσος

B. Υπέρταση

Γ. συγγενείς καρδιοπάθειες

Δ. άλλο

Q2

- Στο σύνδρομο καρδιακής ανεπάρκειας προϋπόθεση είναι η ύπαρξη:

A. υπερτροφίας της αριστερής κοιλίας

B. διάταση του αριστερού κόλπου

Γ. αυξημένη πίεση αριστερού κόλπου

Δ. τίποτα από τα παραπάνω

Ε. όλα τα παραπάνω

Q3

Η βαλβιδική νόσος που συχνότερα απαντάται ως αιτία καρδιακής ανεπάρκειας στην Ευρώπη είναι

- A. στένωση αορτικής βαλβίδας
- B. στένωση μιτροειδούς βαλβίδας
- Γ. ανεπάρκεια μιτροειδούς βαλβίδας
- Δ. στένωση πνευμονικής βαλβίδας

Q4

Ποιο από τα παρακάτω νοσήματα μπορεί να σχετίζονται με την εμφάνιση καρδιακής ανεπάρκειας

A. Συστηματικός ερυθηματώδης λύκος

B. Σακχαρώδης διαβήτης

Γ. Σαρκοείδωση

Δ. όλα τα παραπάνω