Azərbaycan
Kardiologiya
Cəmiyyəti

Case-based learning session-3
Ischemic heart

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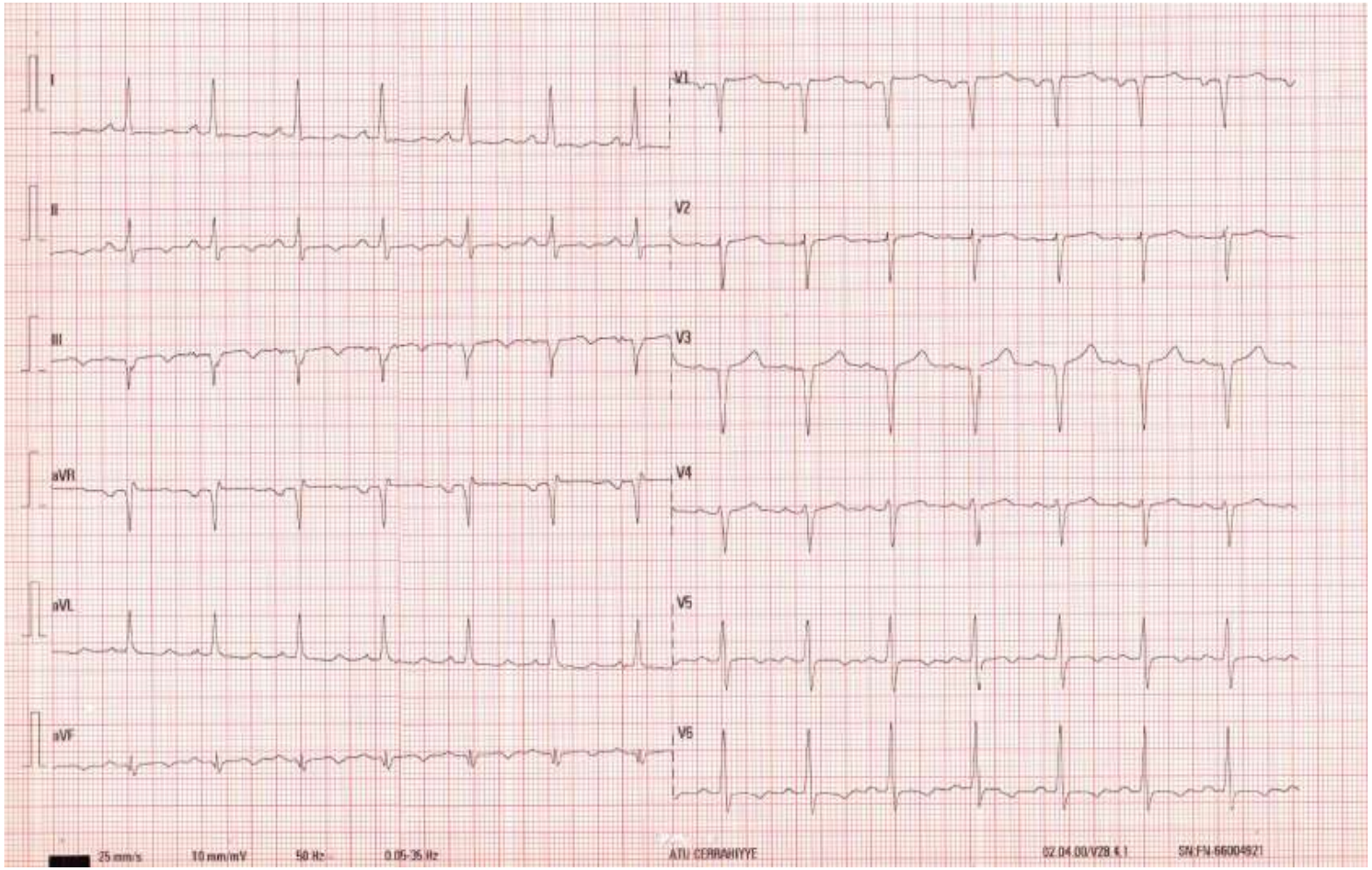
Vice-President of Azerbaijan Society of Cardiology

Case 1

Case 1 Ms.M.

- 61 y.o woman Patient M.Q., with signs&symptoms of HF
- ECG

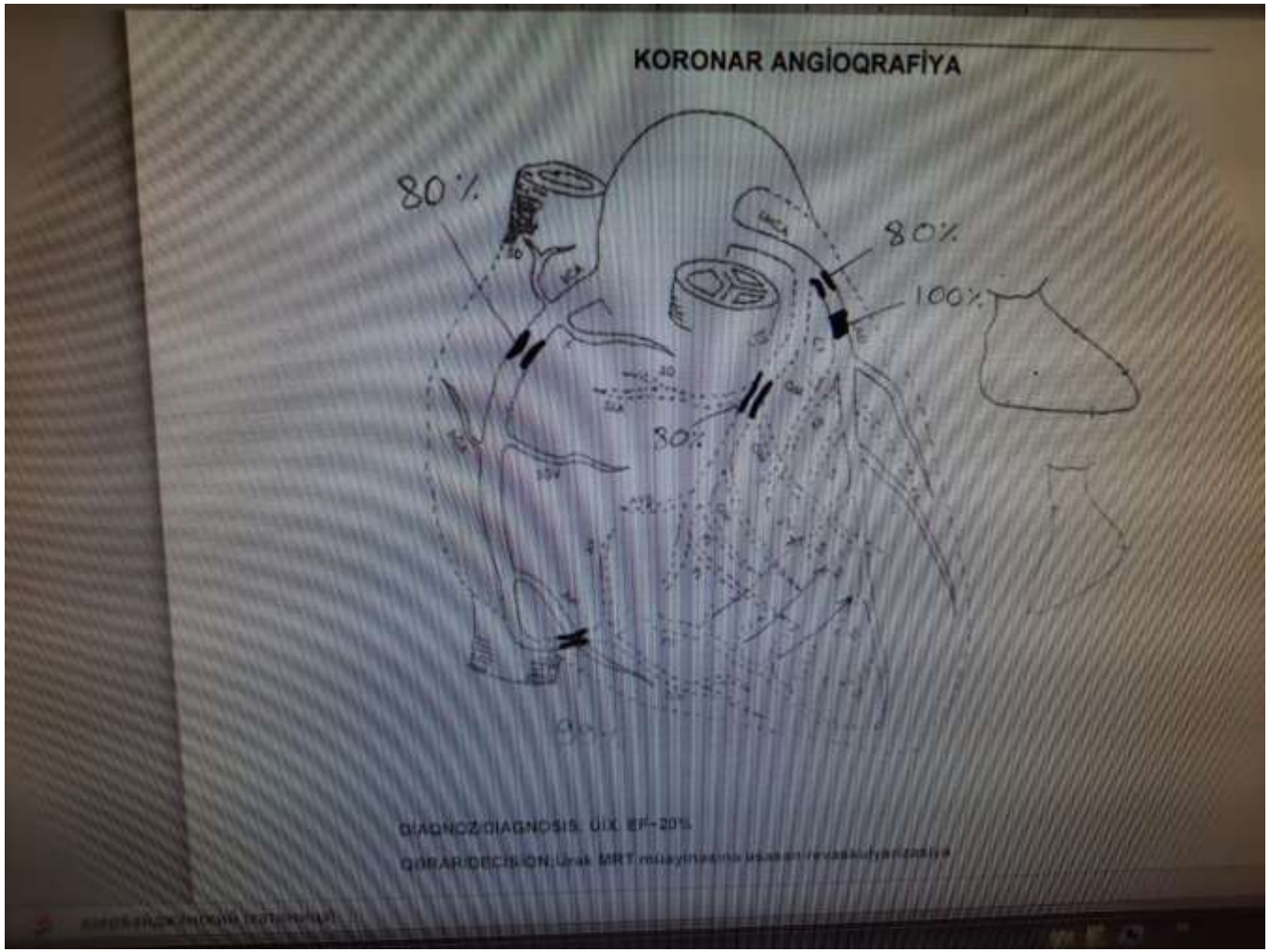
Previous MI, HF III f.s. DM



EchoCG

- LV dilatation
- LVEF 25 %
- WMA: ANT hypo-, İNF,İS,AS bazal, mid,all apical segments&apeks akynetic
- Mild-to-moderate Mitral regurgitation

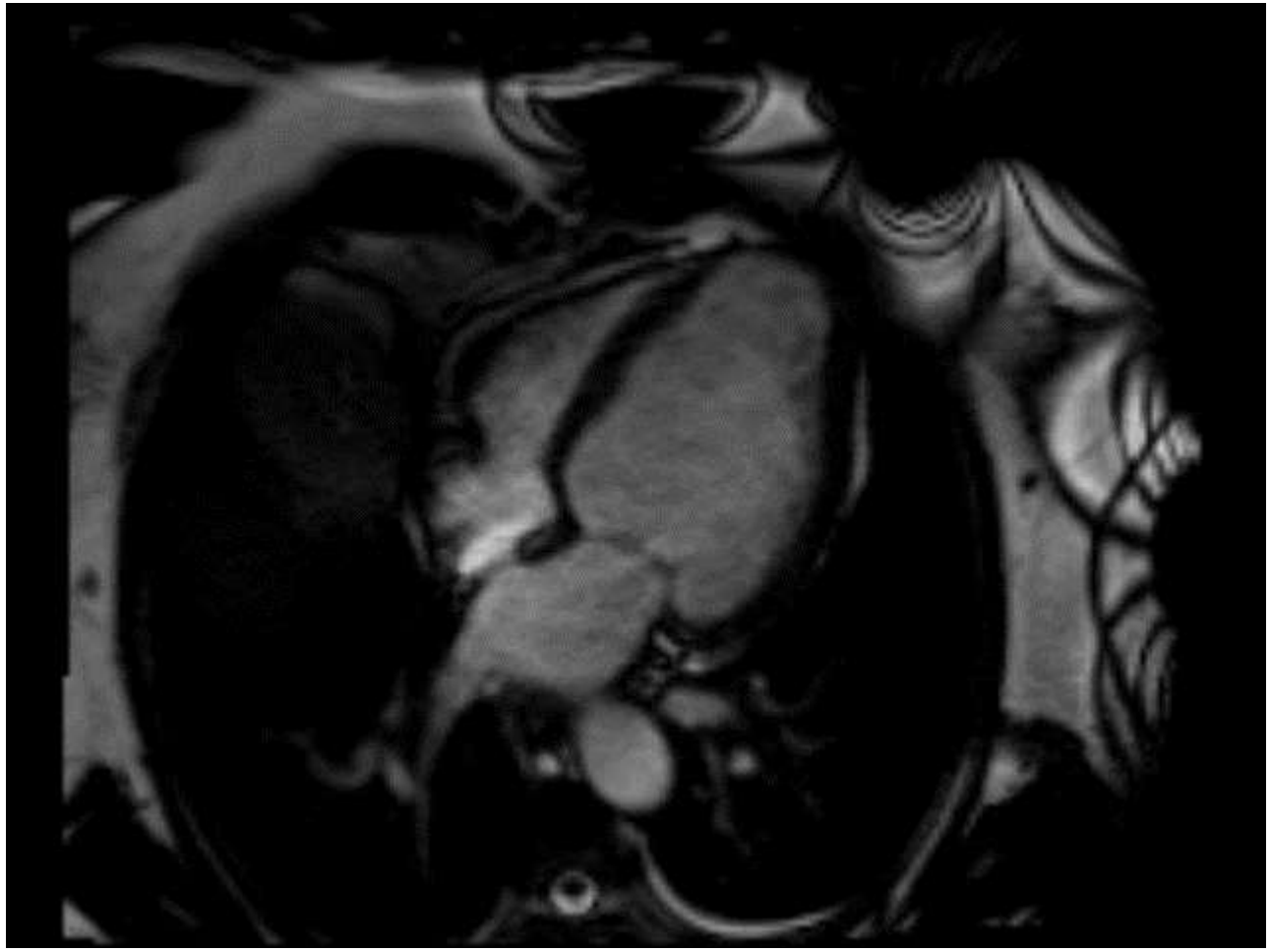
Coronary angiography Syntax Score: 27



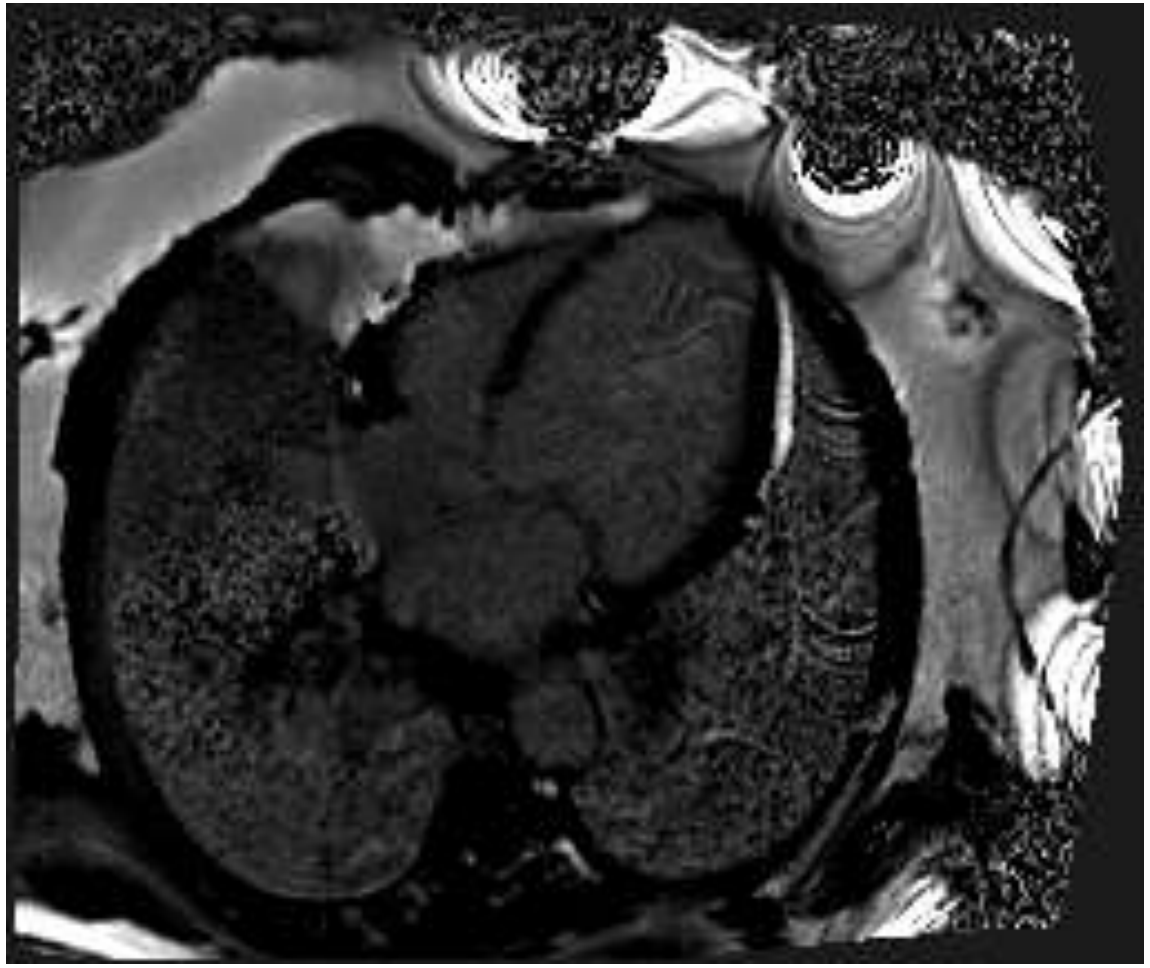
Revasc strategy

FAVOURS PCI	FAVOURS CABG
Clinical characteristics	**Clinical characteristics**
Presence of severe co-morbidity (not adequately reflected by scores)	Diabetes
Advanced age/frailty/reduced life expectancy	Reduced LV function (EF ≤35%)
Restricted mobility and conditions that affect the rehabilitation process	Contraindication to DAPT
	Recurrent diffuse in-stent restenosis
Anatomical and technical aspects	**Anatomical and technical aspects**
MVD with SYNTAX score 0–22	MVD with SYNTAX score ≥23
Anatomy likely resulting in incomplete revascularization with CABG due to poor quality or missing conduits	Anatomy likely resulting in incomplete revascularization with PCI
Severe chest deformation or scoliosis	Severely calcified coronary artery lesions limiting lesion expansion
Sequelae of chest radiation	**Need for concomitant interventions**
Porcelain aorta[a]	Ascending aortic pathology with indication for surgery
	Concomitant cardiac surgery

CMR

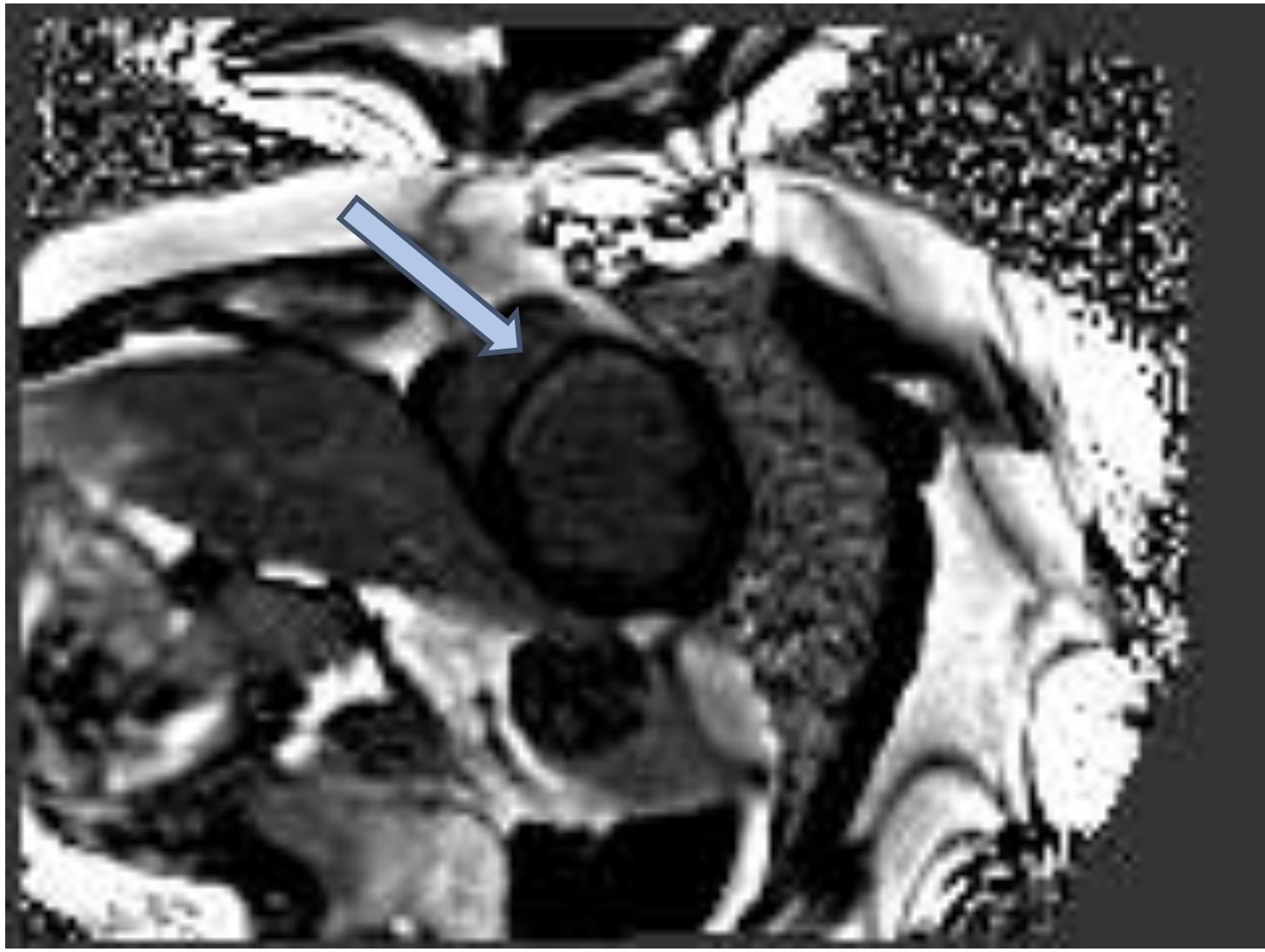


4CH görüntüsü
CİNE images



4CH LGE

CMR (LGE)



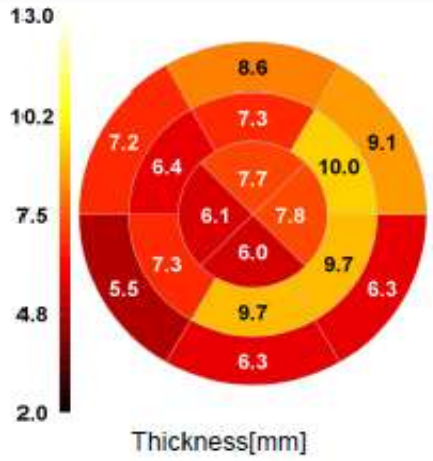
CMR

NeoSoft, LLC
suiteHEART 4.0.6

N27 W23910A Paul Rd
Pewaukee, WI 53072

[redacted]

Study Date	Sep 26, 2017
ID	17.09.26-16:49:55-DST-
Age	66 year(s)
Sex	Female
Weight	75 kg
Height	160 cm
BSA	1.78 m²
Referred By	Rustemova Y.



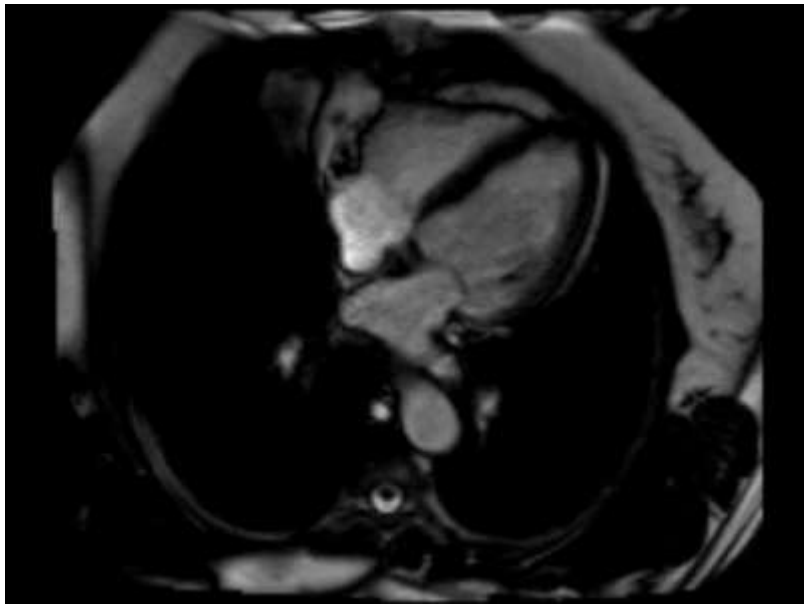
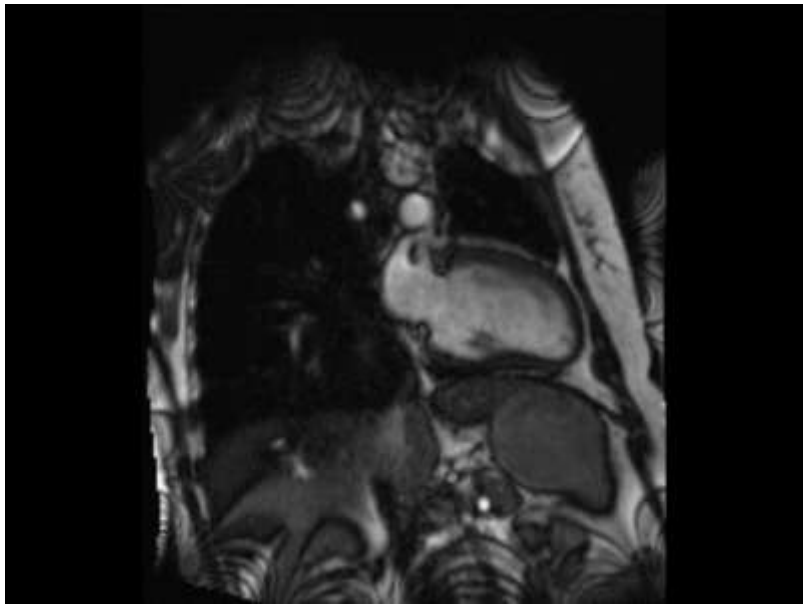
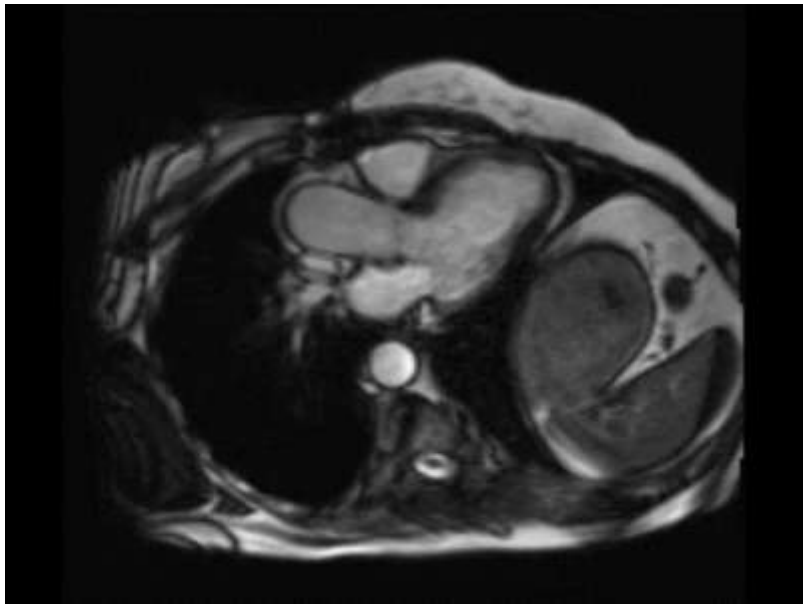
Ventricles	LV		RV	
Ejection Fraction	16 %	(50 - 75)	58 %	(40 - 60)
Stroke Volume	46.0 ml		46.9 ml	
End-Diastolic Volume Index	161 ml/m²	(50 - 84)	45.0 ml/m²	(62 - 88)
End-Systolic Volume Index	135 ml/m²	(17 - 37)	18.7 ml/m²	(19 - 30)
End-Diastolic Volume	287 ml	(89 - 166)	80.2 ml	
End-Systolic Volume	241 ml	(22 - 59)	33.3 ml	
Heart Rate	91 bpm		91 bpm	
Cardiac Output	4.2 l/min		4.3 l/min	
Cardiac Output Index	2.35 l/min/m²		2.39 l/min/m²	

Late Enhancement	
Infarct Mass	7.03 g
Left Ventricular Mass	160 g
Infarct	4.41 %

Decision : full anatomical revasc – CABG

- **MRT – LVEF 16%, viable myocardium**

1 year control CMR
LVEF=48%

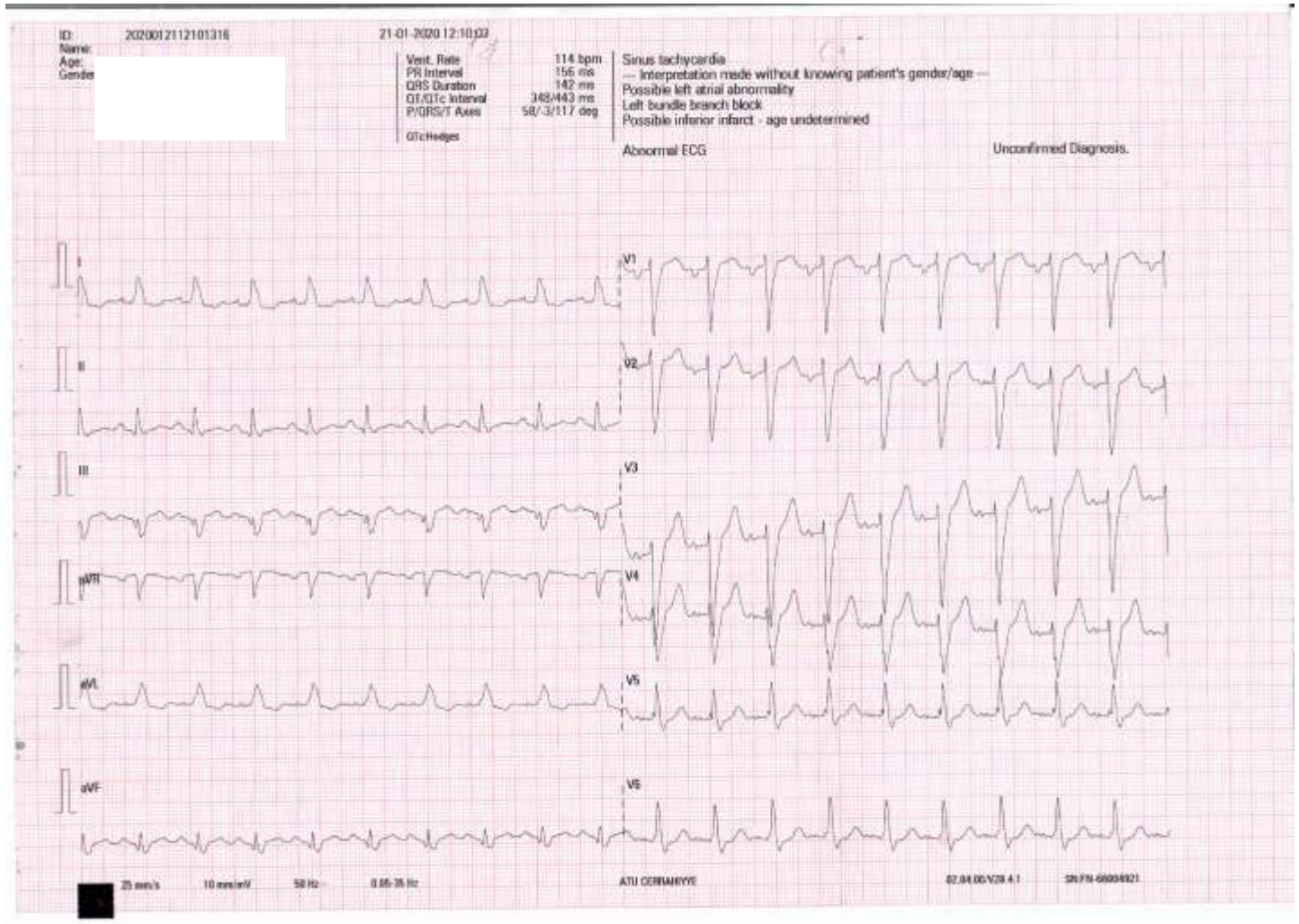




Case 2

Case 2 Mr.D.

- 55 y/o male patient with signs&symptoms of HF
- EKQ : Sinus ritmi, III, avF aparmalarında Q dişi
- Koronar angioqrafiya: LAD 90%, D1 90%, RCA 80%, LCx 100%
- Dz: ÜİX: ÜÇ IV f.s.

ECG


ID: 20200121121013 16
Name:
Age:
Gender
21-01-2020 12:10:03
Vent. Rate 114 bpm
PR Interval 156 ms
QRS Duration 142 ms
QT/QTc Interval 348/443 ms
P/QRS/T Axes 58/-3/117 deg
QTc Hodges
Sinus tachycardia
--- Interpretation made without knowing patient's gender/age ---
Possible left atrial abnormality
Left bundle branch block
Possible inferior infarct - age undetermined
Abnormal ECG
Unconfirmed Diagnosis.
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
25 mm/s
10 mm/mV
50 Hz
0.05-35 Hz
ATU CERNAVVE

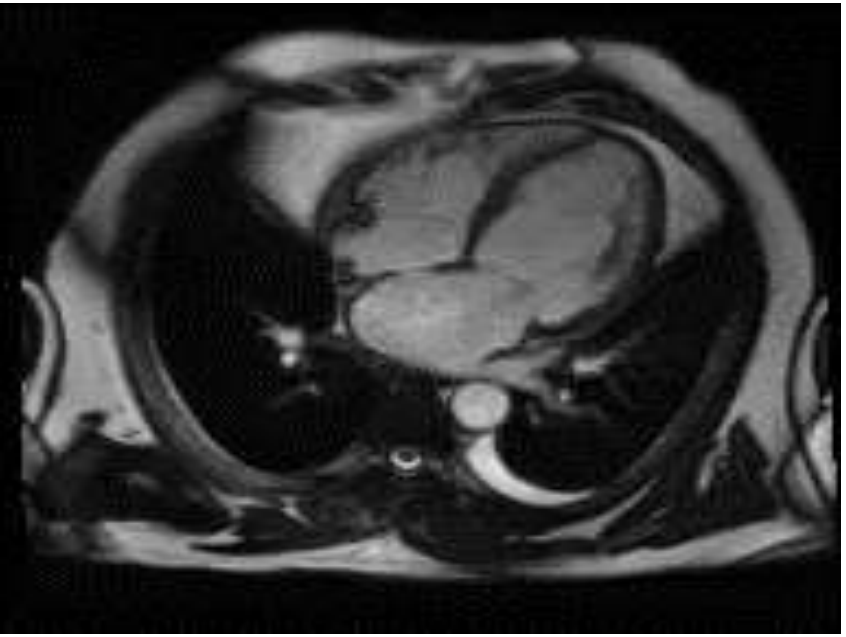
EchoCG

- LVEF 20%
- Global hypokinetisia with İS bazal, mid aneurisma & İL bazal, mid akinesi,
- MR eroa 0.33sm2-mild-to-moderate

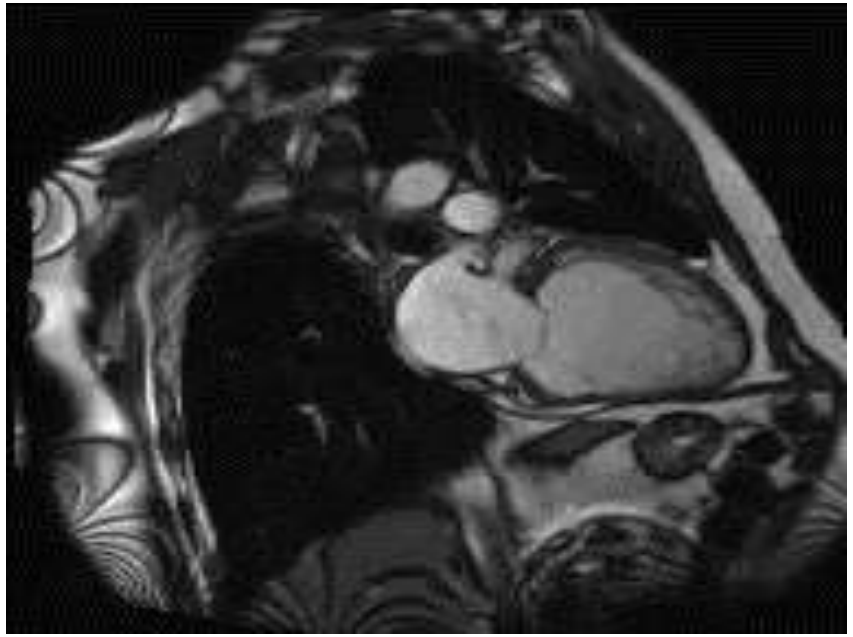
Coro

LAD 90%, D1 90%,
RCA 80%,
LCx 100%

CMR SSFP cine-images



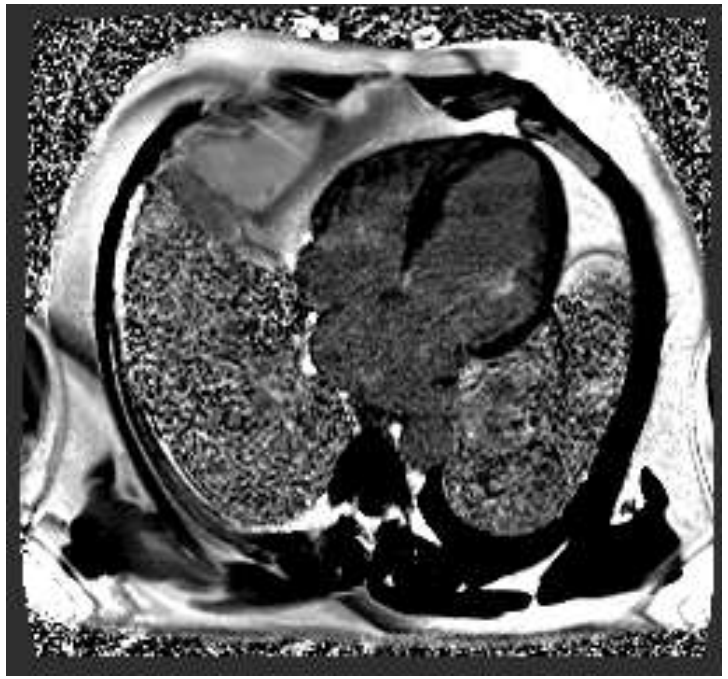
4CH

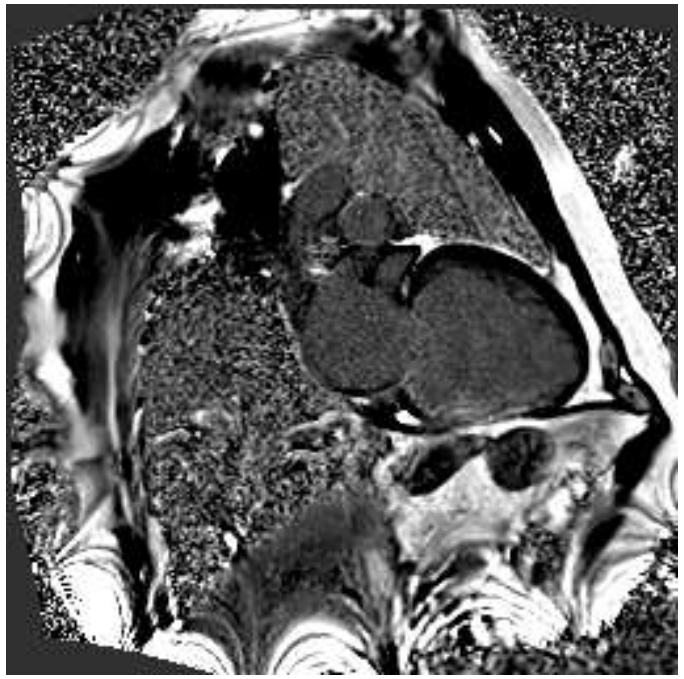


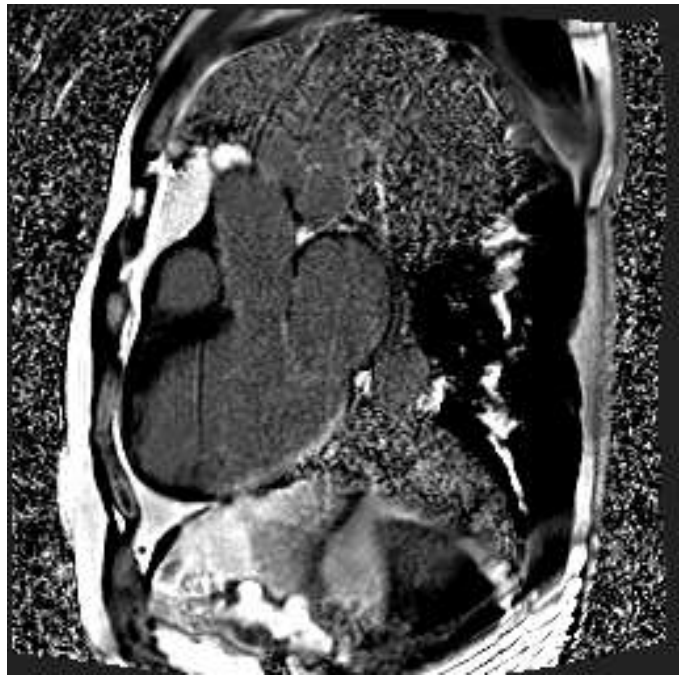
2CH

3CH

CMR – LGE

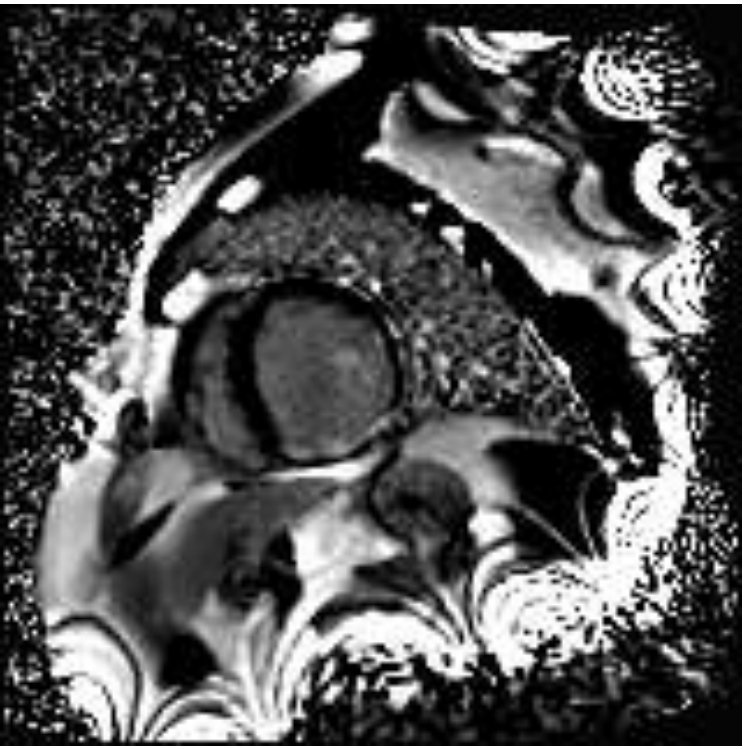




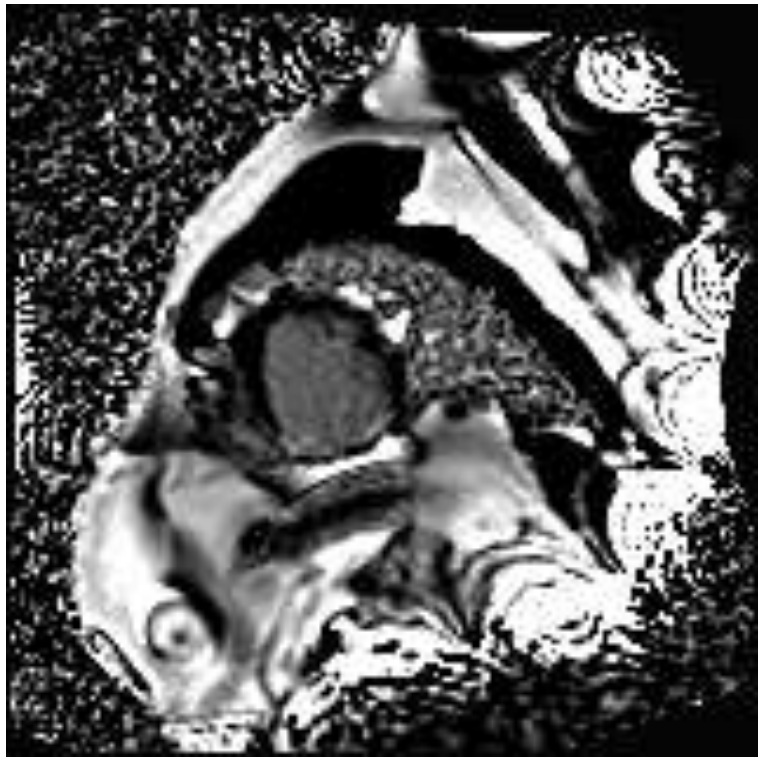


- 4CH
- 2CH
- 3CH

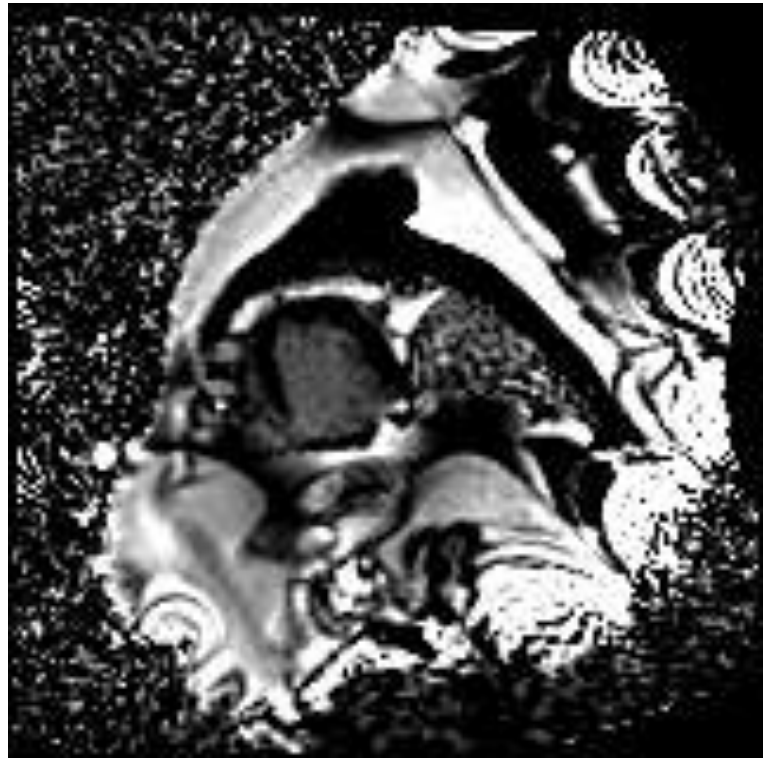
CMR – LGE SA view



basal



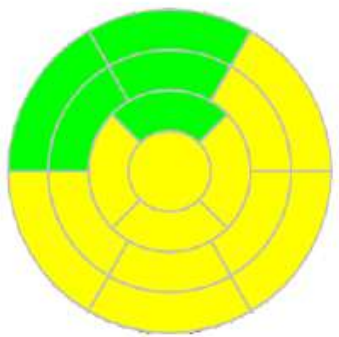
mid



apikal

CMR report

Study Date	Jan 11, 2020
ID	64-px-TS-RY
Age	55 year(s)
Sex	Male
Weight	70 kg
Height	160 cm
BSA	1.73 m²
Referred By	Rustemova Y.Dr



Function

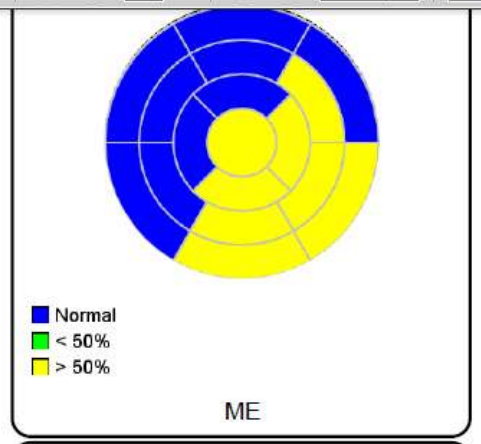
Ventricles	LV		RV	
Ejection Fraction	18 %	(57 - 74)	10 %	(40 - 60)
Stroke Volume	42.8 ml		12.3 ml	
End-Diastolic Volume Index	137 ml/m²	(68 - 103)	69.1 ml/m²	(62 - 88)
End-Systolic Volume Index	113 ml/m²	(19 - 41)	61.9 ml/m²	(19 - 30)
End-Diastolic Volume	238 ml	(113 - 196)	120 ml	
End-Systolic Volume	195 ml	(29 - 74)	107 ml	
Heart Rate	126 bpm		126 bpm	
End-Diastolic Mass	116 g	(74 - 146)		
End-Diastolic Mass Index	67 g/m²	(47 - 77)		
Peak Filling Rate	739 ml/s		120 ml/s	
Peak Ejection Rate	1084 ml/s		179 ml/s	
Cardiac Output	5.4 l/min		1.6 l/min	
Cardiac Output Index	3.11 l/min/m²		0.90 l/min/m²	
Stroke Volume Index	24.7 ml/m²		7.1 ml/m²	
End-Systolic Mass	101 g			
End-Systolic Mass Index	58 g/m²			
Epicardial End-Diastolic Volume	348 ml			
Epicardial End-Systolic Volume	291 ml			

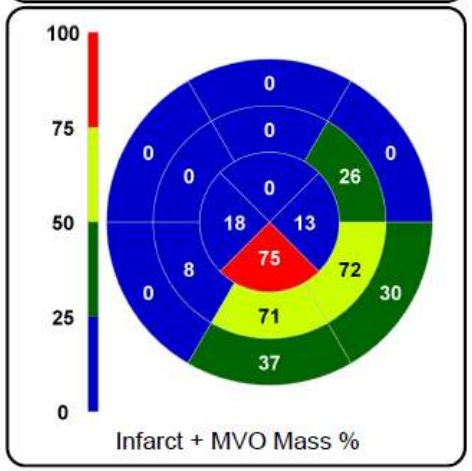
Ventricles (Long Axis)	LV	
Ejection Fraction	17 %	(56 - 75)
Stroke Volume	33.1 ml	(59 - 119)
End-Diastolic Volume Index	109 ml/m²	(59 - 99)
End-Systolic Volume Index	90.3 ml/m²	(25 - 37)

CMR report -2

Heyderov, Dadash 64-px-TS-RY Jan 11, 2020 033532 PM.pdf - Adobe Reader

Файл Редактирование Просмотр Окно Справка





End-Systolic Volume	156 ml	(25 - 66)
Heart Rate	112 bpm	
End-Diastolic Mass	117 g	(74 - 146)
End-Diastolic Mass Index	68 g/m²	(47 - 77)
Peak Filling Rate	414 ml/s	
Peak Ejection Rate	194 ml/s	
Cardiac Output	3.7 l/min	
Cardiac Output Index	2.14 l/min/m²	
Stroke Volume Index	19.1 ml/m²	
Mass Phase	119 g	
Mass Index Phase	69 g/m²	
End-Systolic Mass	124 g	
End-Systolic Mass Index	72 g/m²	
Epicardial End-Diastolic Volume	301 ml	
Epicardial End-Systolic Volume	275 ml	

Atria (Fast)	LA	RA
End-Diastolic Volume Index	56.1 ml/m²	40.1 ml/m²
End-Diastolic Volume	97.2 ml	69.4 ml

Late Enhancement	
Infarct Mass	40.8 g
Left Ventricular Mass	173 g
Infarct	23.7 %

Decision :

- **CMR – LVEF 18%, no viable myocardium in the zone of LCx**

functional revasc of viable myocardium

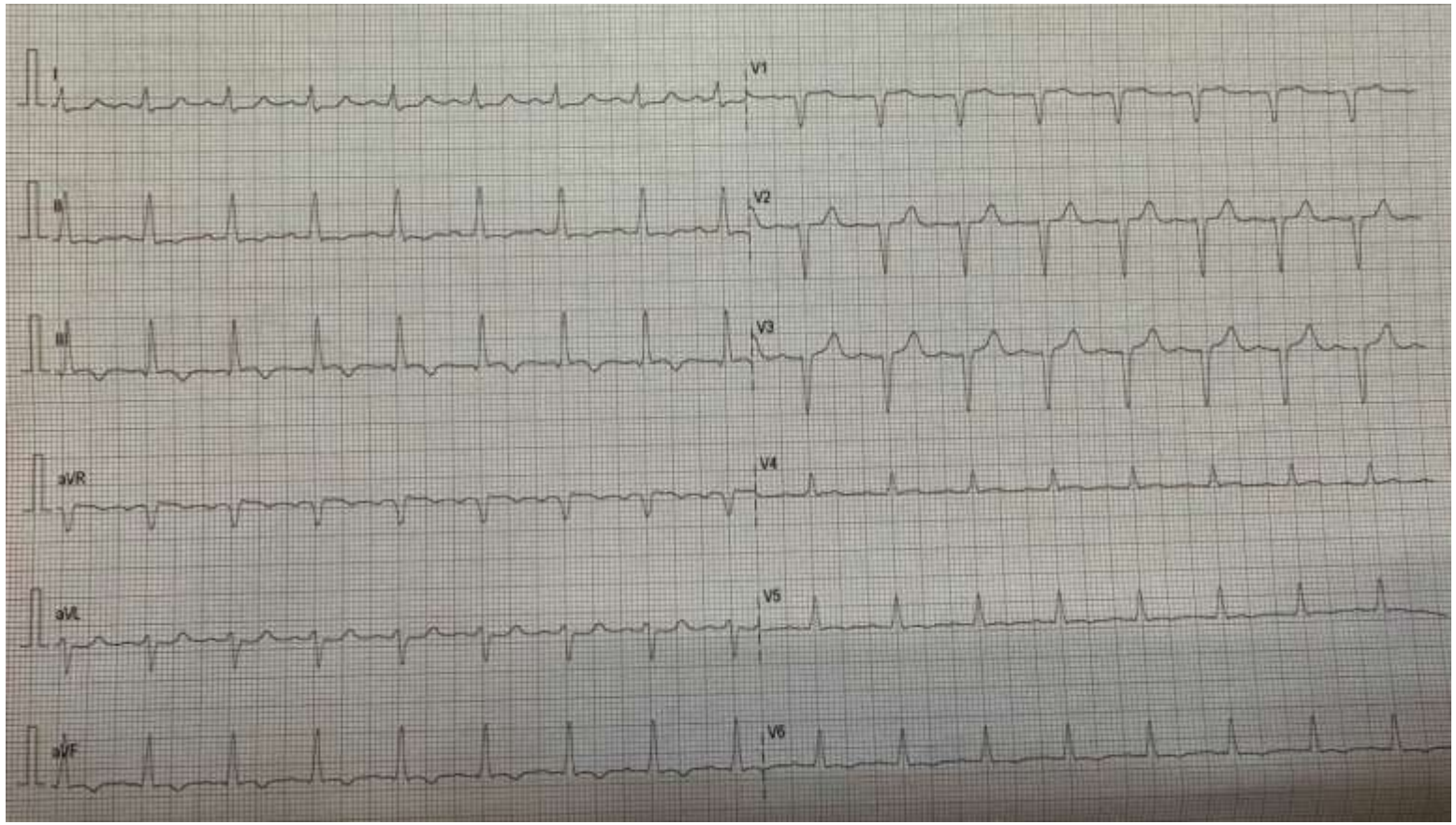
+OMT

+ICD

Case 3

Case -3 Ms. L.

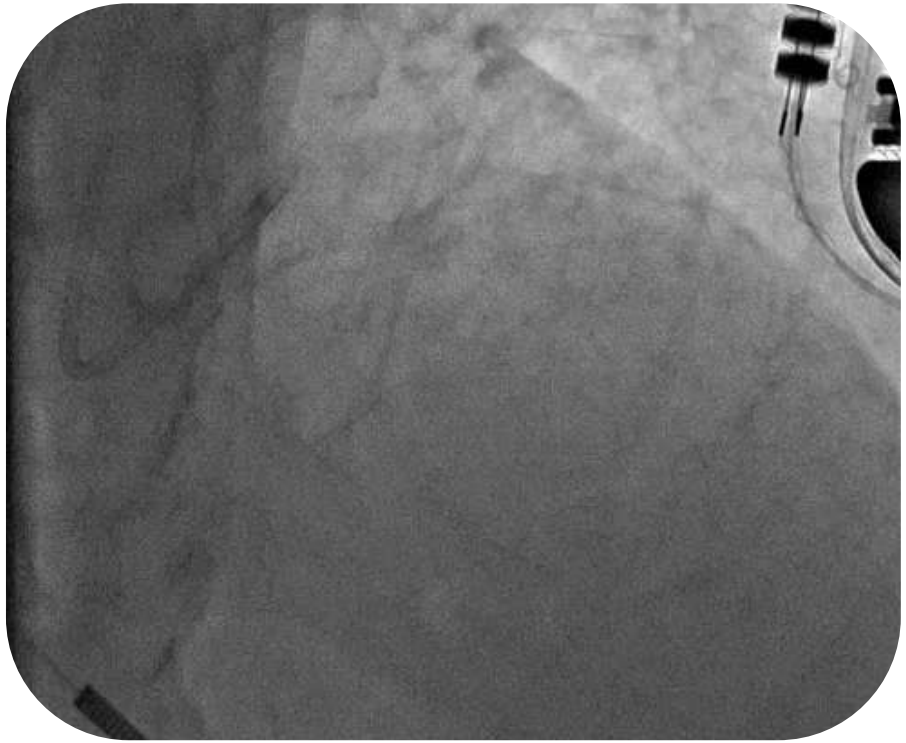
- 54 y/o woman, with symptoms&signs of HF
- **ECG**



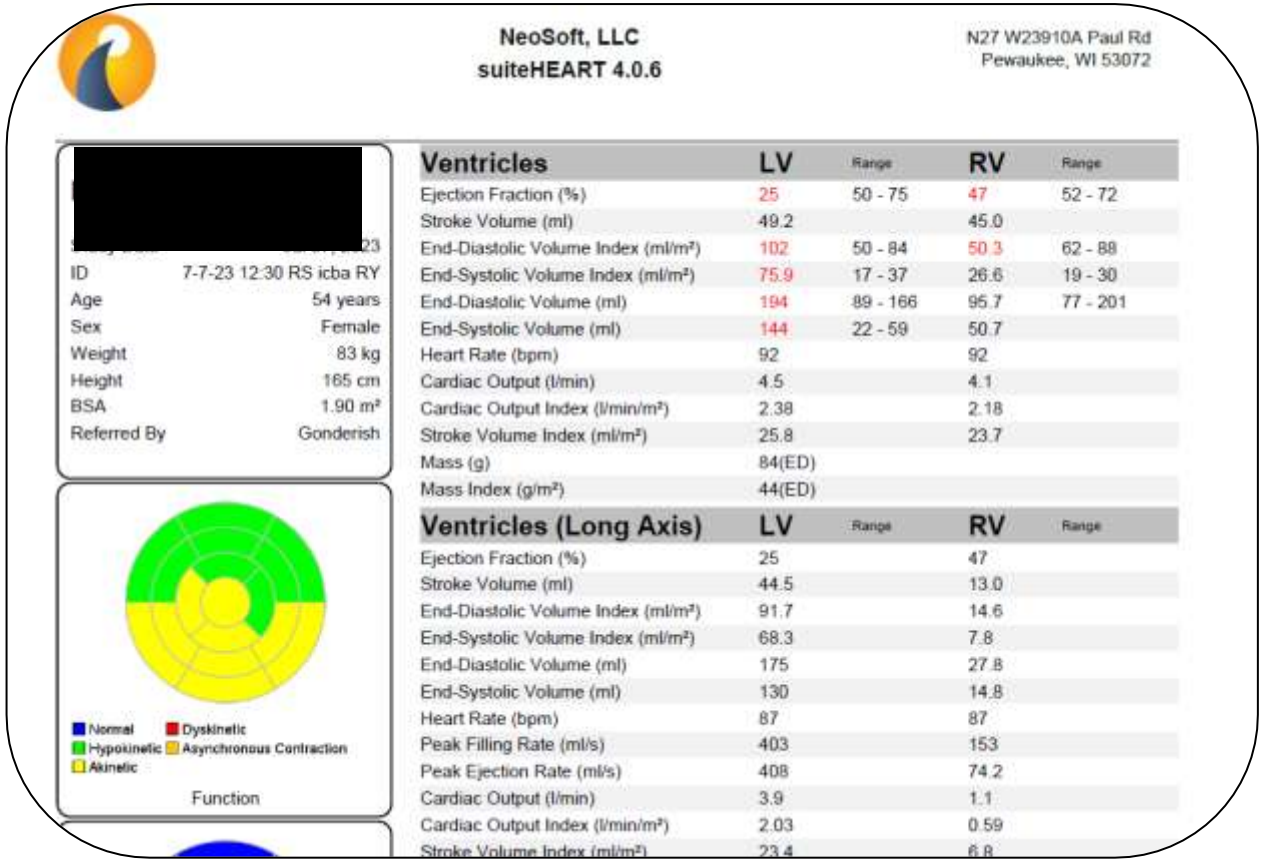
EchoCG

- LVEF=35%
- WMA: INF, IS basal,mid, apical akynesia, AS mid, SEP apical, apex hypoknetic
- LV wall thickness 10 mm
- LA = 36 mm,
- LAVol=78 ml,
- LAVI=43 ml/m^2
- MR eroa=0,24sm^2 , MR Vol=39ml, vena contracta 5 mm - moderate
- SPAP 35 mmHg

Coronary angiogram



CMR cine-images SA view



NeoSoft, LLC
suiteHEART 4.0.6

N27 W23910A Paul Rd
Pewaukee, WI 53072

[redacted]

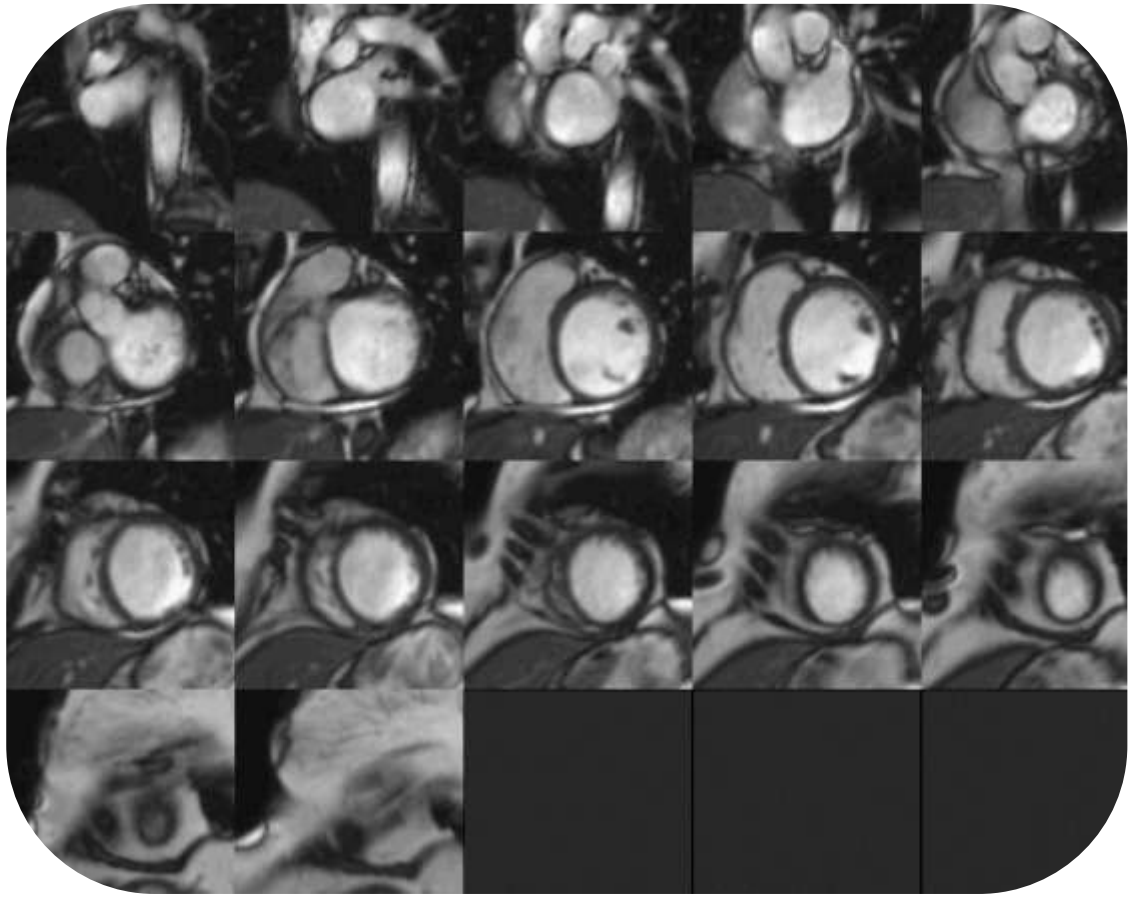
ID	7-7-23 12:30 RS icba RY
Age	54 years
Sex	Female
Weight	83 kg
Height	165 cm
BSA	1.90 m²
Referred By	Gonderish

Normal
Dyskinetic
Hypokinetic
Asynchronous Contraction
Akinetic

Function

Ventricles	LV	Range	RV	Range
Ejection Fraction (%)	25	50 - 75	47	52 - 72
Stroke Volume (ml)	49.2		45.0	
End-Diastolic Volume Index (ml/m²)	102	50 - 84	50.3	62 - 88
End-Systolic Volume Index (ml/m²)	75.9	17 - 37	26.6	19 - 30
End-Diastolic Volume (ml)	194	89 - 166	95.7	77 - 201
End-Systolic Volume (ml)	144	22 - 59	50.7	
Heart Rate (bpm)	92		92	
Cardiac Output (l/min)	4.5		4.1	
Cardiac Output Index (l/min/m²)	2.38		2.18	
Stroke Volume Index (ml/m²)	25.8		23.7	
Mass (g)	84(ED)			
Mass Index (g/m²)	44(ED)			

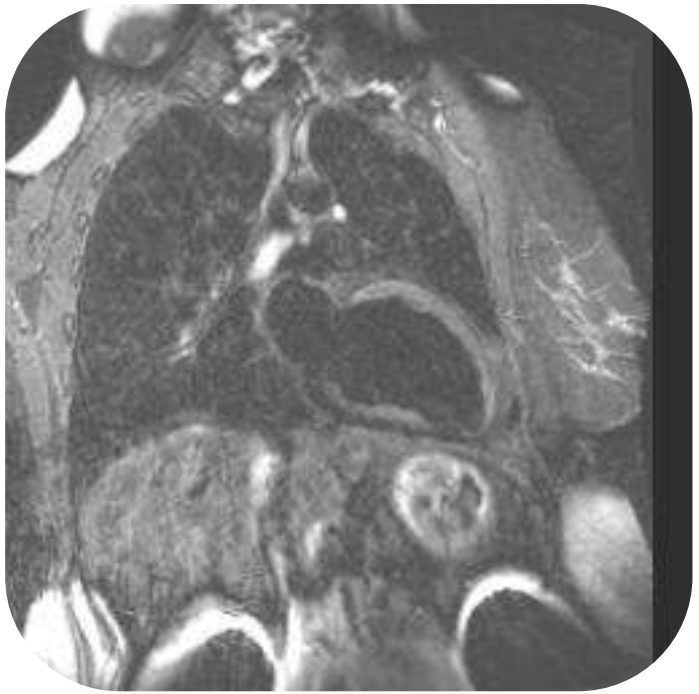
Ventricles (Long Axis)	LV	Range	RV	Range
Ejection Fraction (%)	25		47	
Stroke Volume (ml)	44.5		13.0	
End-Diastolic Volume Index (ml/m²)	91.7		14.6	
End-Systolic Volume Index (ml/m²)	68.3		7.8	
End-Diastolic Volume (ml)	175		27.8	
End-Systolic Volume (ml)	130		14.8	
Heart Rate (bpm)	87		87	
Peak Filling Rate (ml/s)	403		153	
Peak Ejection Rate (ml/s)	408		74.2	
Cardiac Output (l/min)	3.9		1.1	
Cardiac Output Index (l/min/m²)	2.03		0.59	
Stroke Volume Index (ml/m²)	23.4		6.8	



CMR SSFP cine images

CMR T2w images – no edema

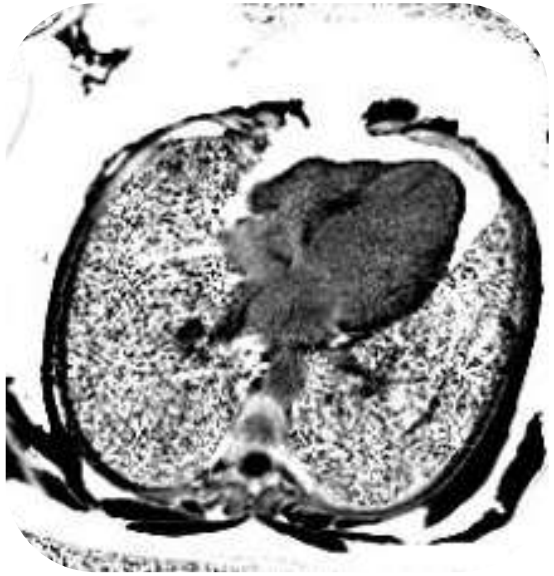
4CH View



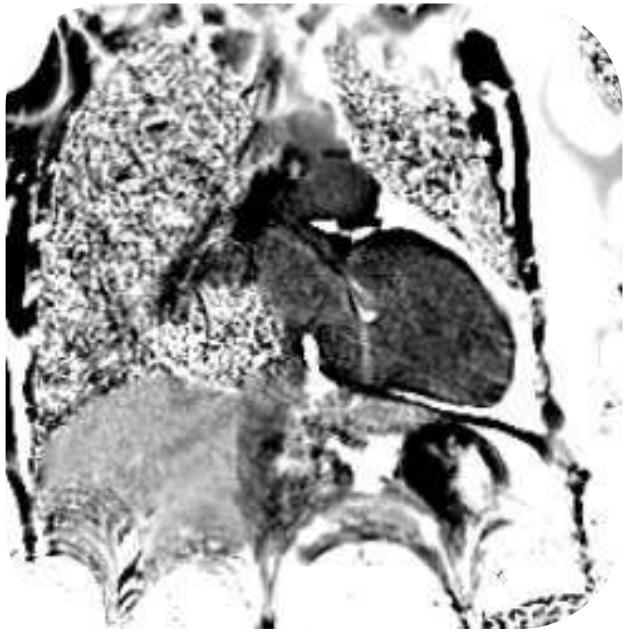
2CH View

3CH View

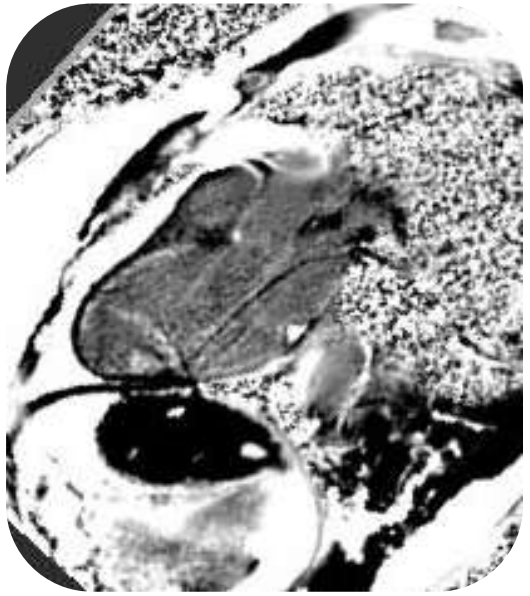
CMR LGE images



4CH View

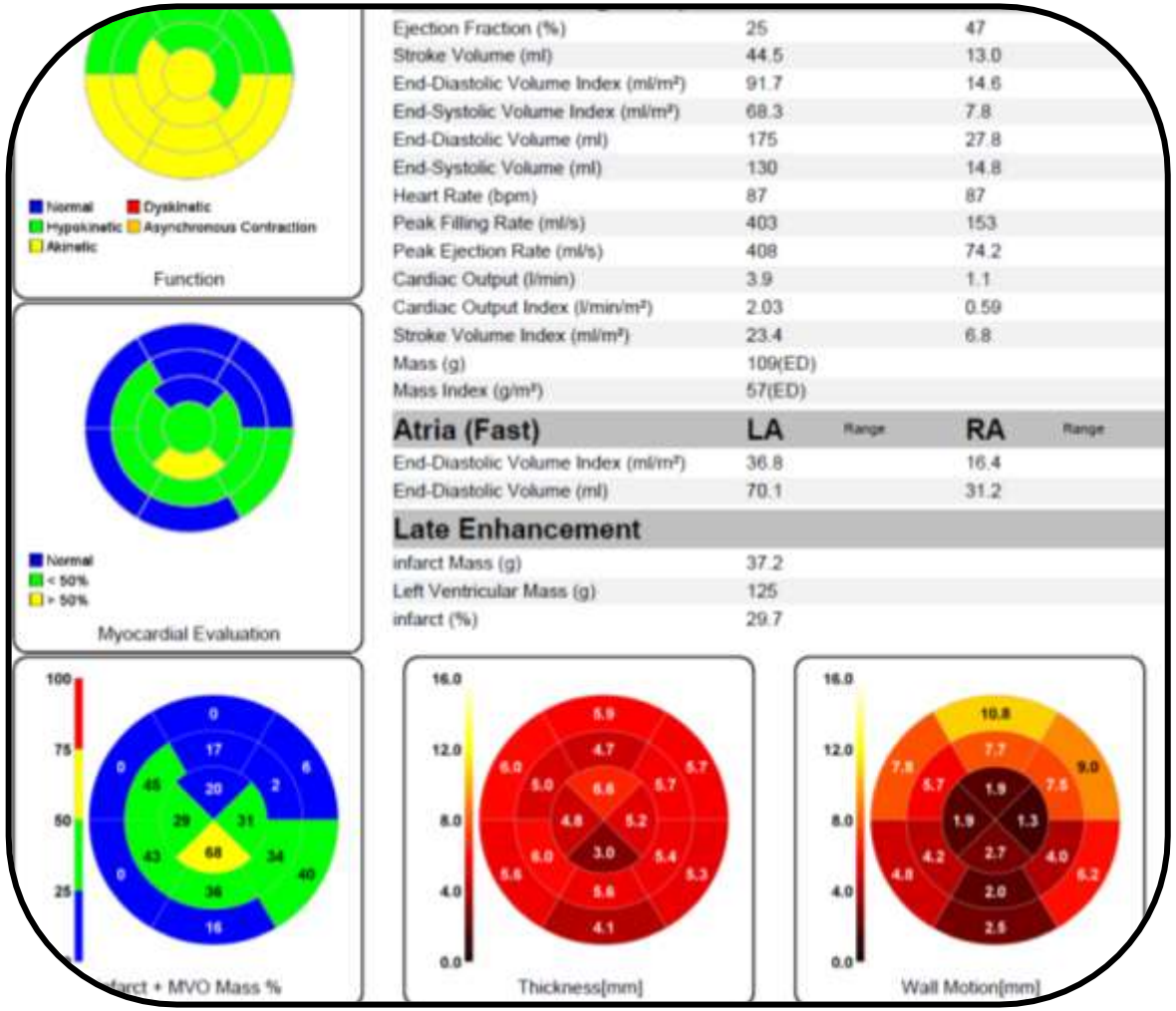


2CH View

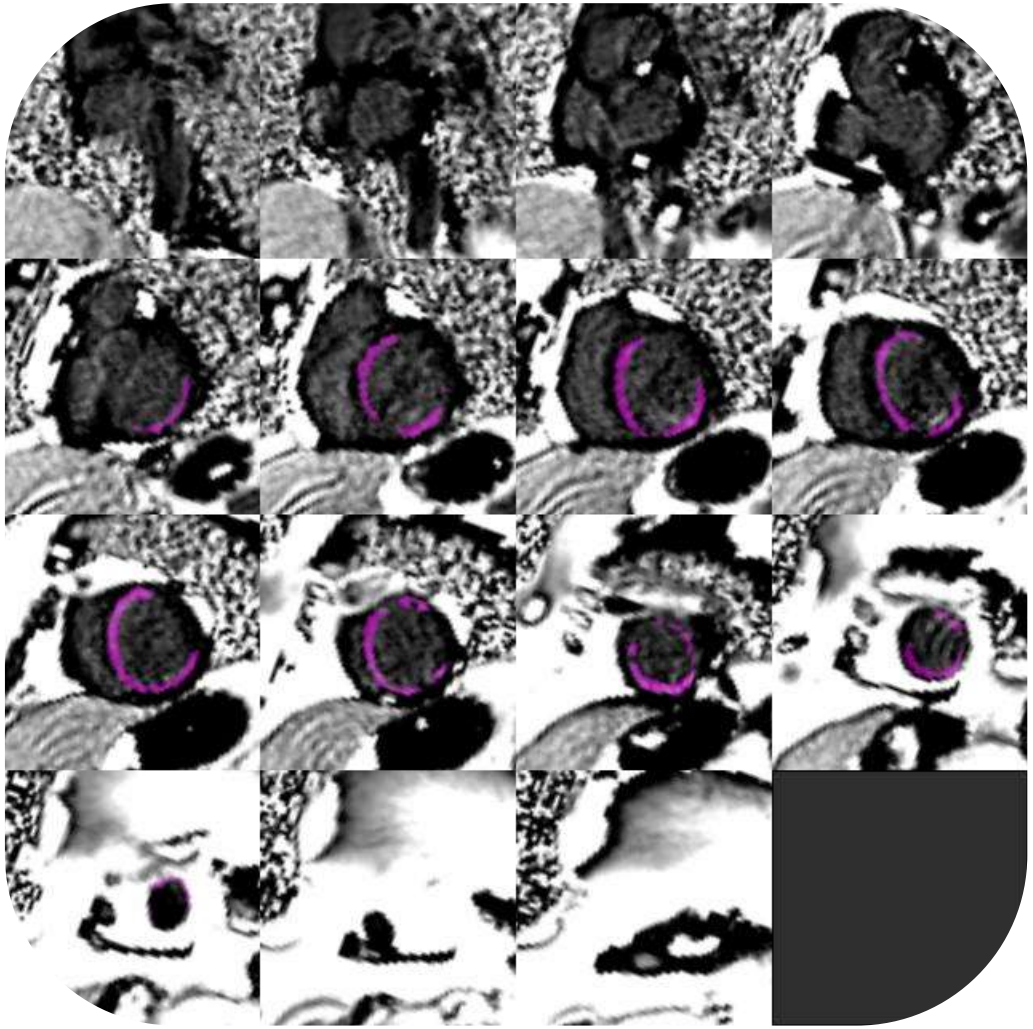


3CH View

CMR LGE SA view



Ejection Fraction (%)	25		47	
Stroke Volume (ml)	44.5		13.0	
End-Diastolic Volume Index (ml/m²)	91.7		14.6	
End-Systolic Volume Index (ml/m²)	68.3		7.8	
End-Diastolic Volume (ml)	175		27.8	
End-Systolic Volume (ml)	130		14.8	
Heart Rate (bpm)	87		87	
Peak Filling Rate (ml/s)	403		153	
Peak Ejection Rate (ml/s)	408		74.2	
Cardiac Output (l/min)	3.9		1.1	
Cardiac Output Index (l/min/m²)	2.03		0.59	
Stroke Volume Index (ml/m²)	23.4		6.8	
Mass (g)	109(ED)			
Mass Index (g/m²)	57(ED)			
Atria (Fast)	**LA**	Range	**RA**	Range
End-Diastolic Volume Index (ml/m²)	36.8		16.4	
End-Diastolic Volume (ml)	70.1		31.2	
Late Enhancement				
infarct Mass (g)	37.2			
Left Ventricular Mass (g)	125			
infarct (%)	29.7			

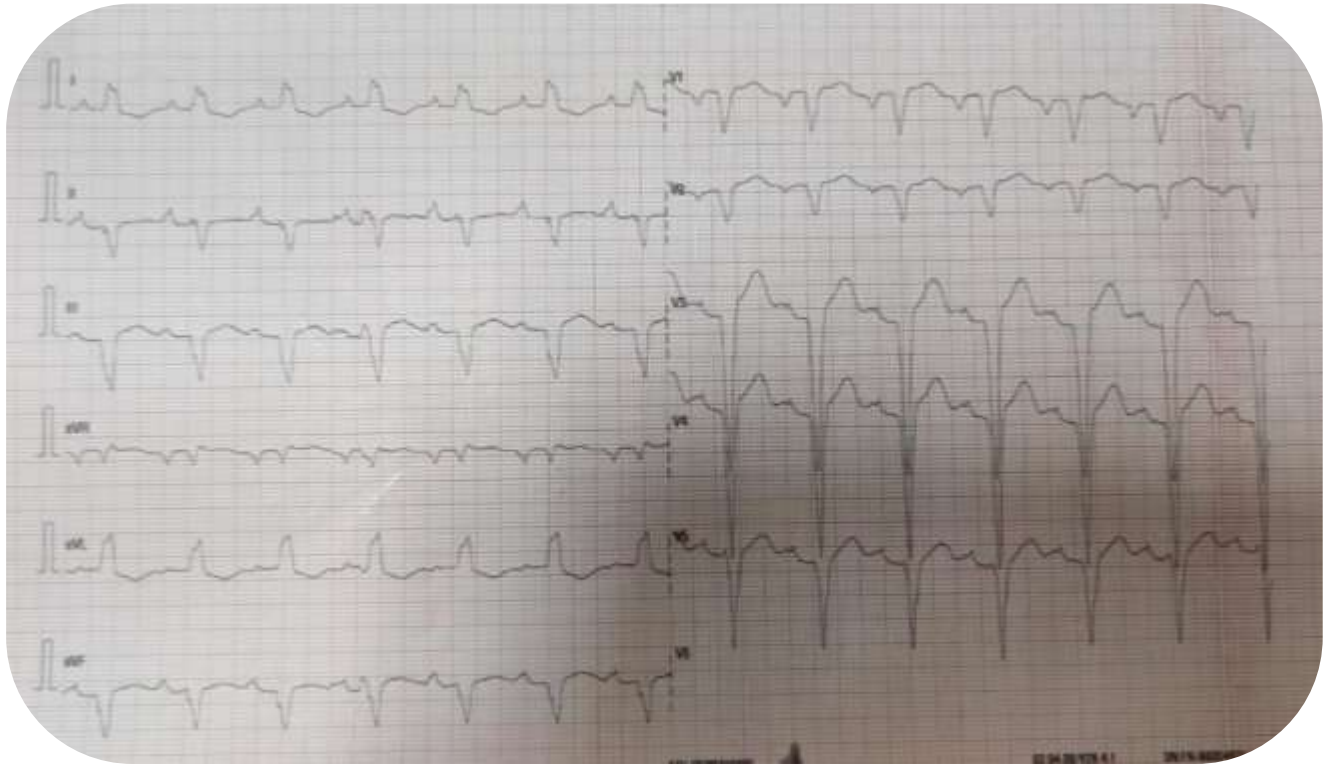


Desicion

- No transmural scar
- But extension is wide
- Moderate-to-severe Mitral regurgitation
- High risk for intervention
- ICD for primary prevention
- GDMT

Case-4 Mr. Ch.

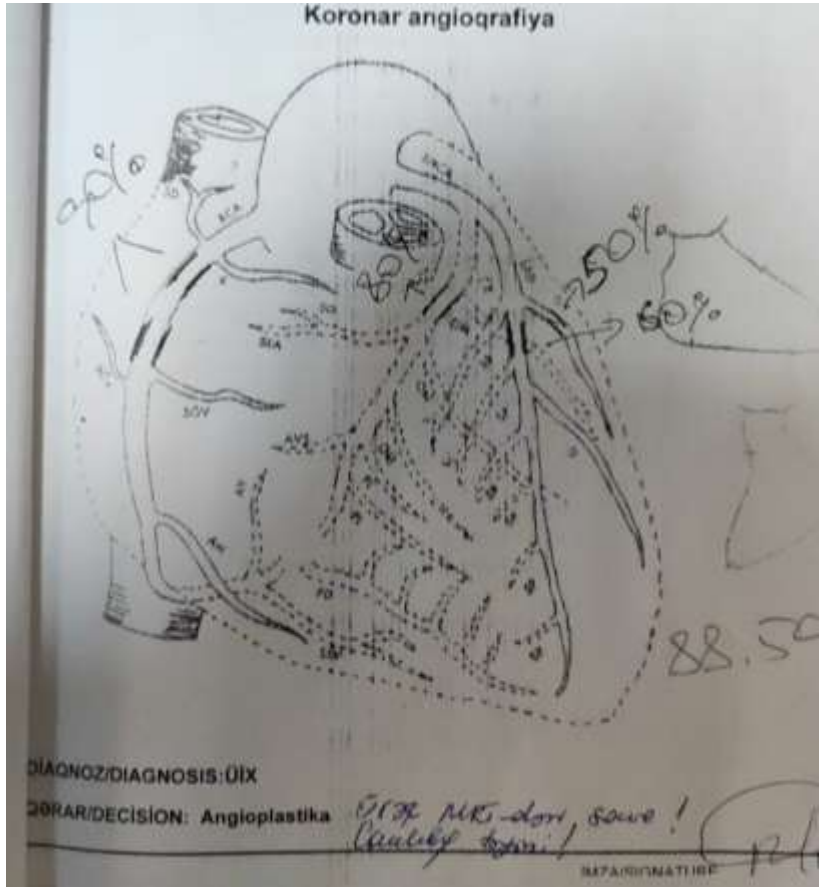
- 74 y/o man with signs&symptoms of HF



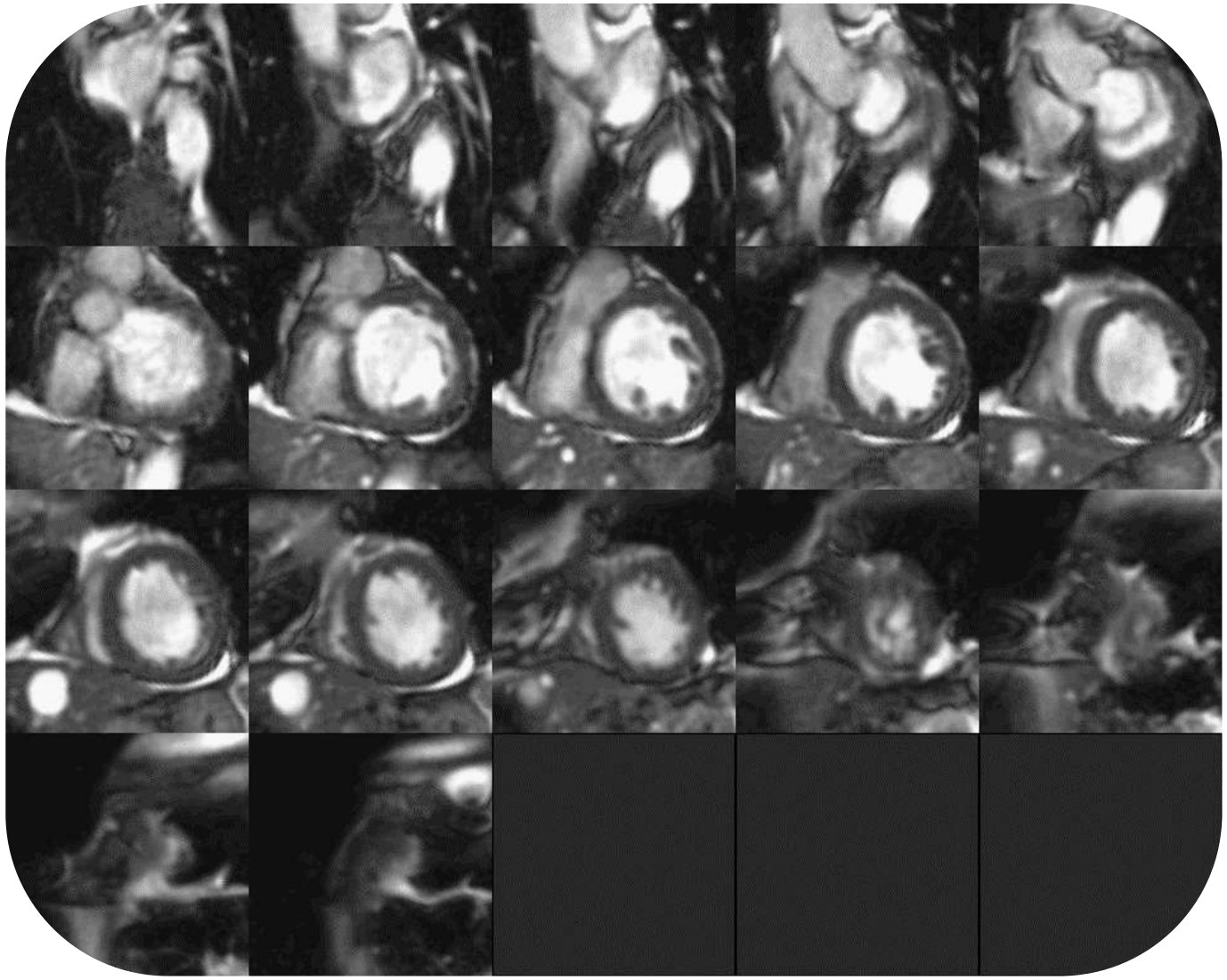
EcoCG

- LVEF<20%
- WMA: Global hypokinesia with rotation&twist impairment
- LV wall thickness 8 mm
- LA = 43 mm,
- LAVol=80 ml,
- LAVI=42 ml/m^2
- MR eroa=0,40 sm^2 , MR Vol=64 ml, vena contracta 7 mm - severe
- SPAP 35 mmHg

Coronary angiography



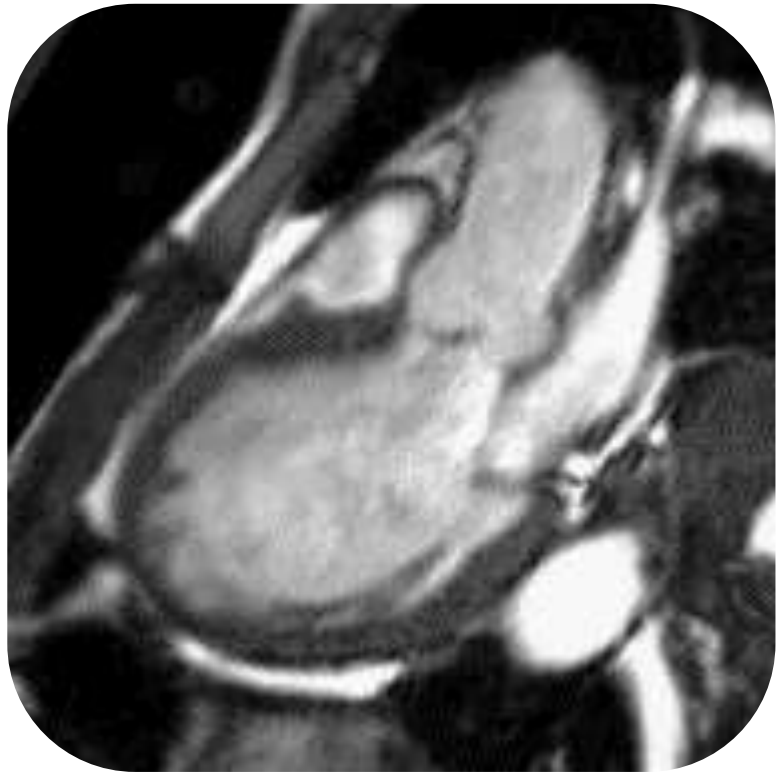
CMR SSFP SA view



CMR SSFP

4CH view

2CH view

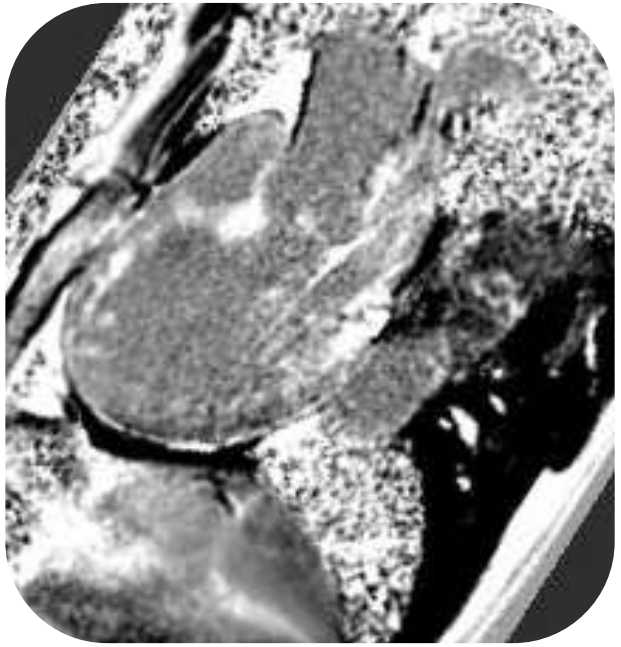


3CH view

CMR LGE images

4CH view

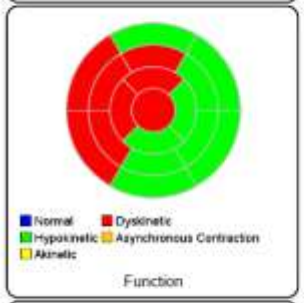
2CH view



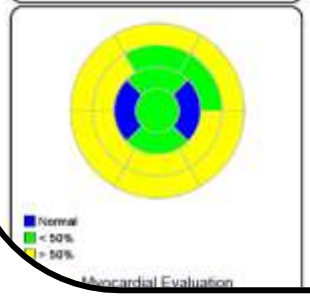
3CH view

[redacted]

Study Date	Aug 17, 2023
ID	17.08.23.15.40.TS.RY.Icb
Age	75 years
Sex	Male
Weight	66 kg
Height	172 cm
BSA	1.78 m²
Referred By	Rustemova Y.Dr



Function



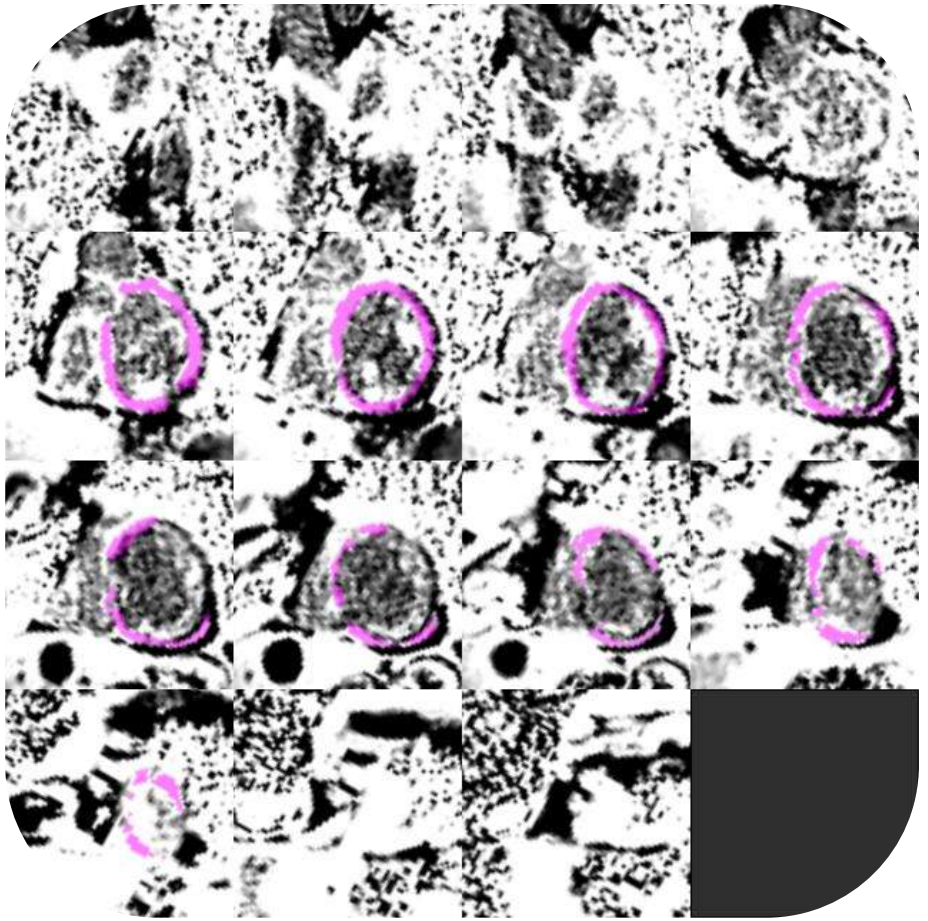
Myocardial Evaluation

Ventricles	LV	Range	RV	Range
Ejection Fraction (%)	16	51 - 71	24	40 - 60
Stroke Volume (ml)	42.1		18.8	
End-Diastolic Volume Index (ml/m²)	146	57 - 105	44.7	48 - 112
End-Systolic Volume Index (ml/m²)	122	14 - 38	34.2	41 - 117
End-Diastolic Volume (ml)	259	106 - 214	79.6	77 - 201
End-Systolic Volume (ml)	217	29 - 74	60.8	24 - 84
Heart Rate (bpm)	90		90	
Cardiac Output (l/min)	3.8		1.7	
Cardiac Output Index (l/min/m²)	2.13		0.95	
Stroke Volume Index (ml/m²)	23.6		10.6	12 - 52
Mass (g)	150(ED)	58 - 140		
Mass Index (g/m²)	84(ED)	41 - 81		

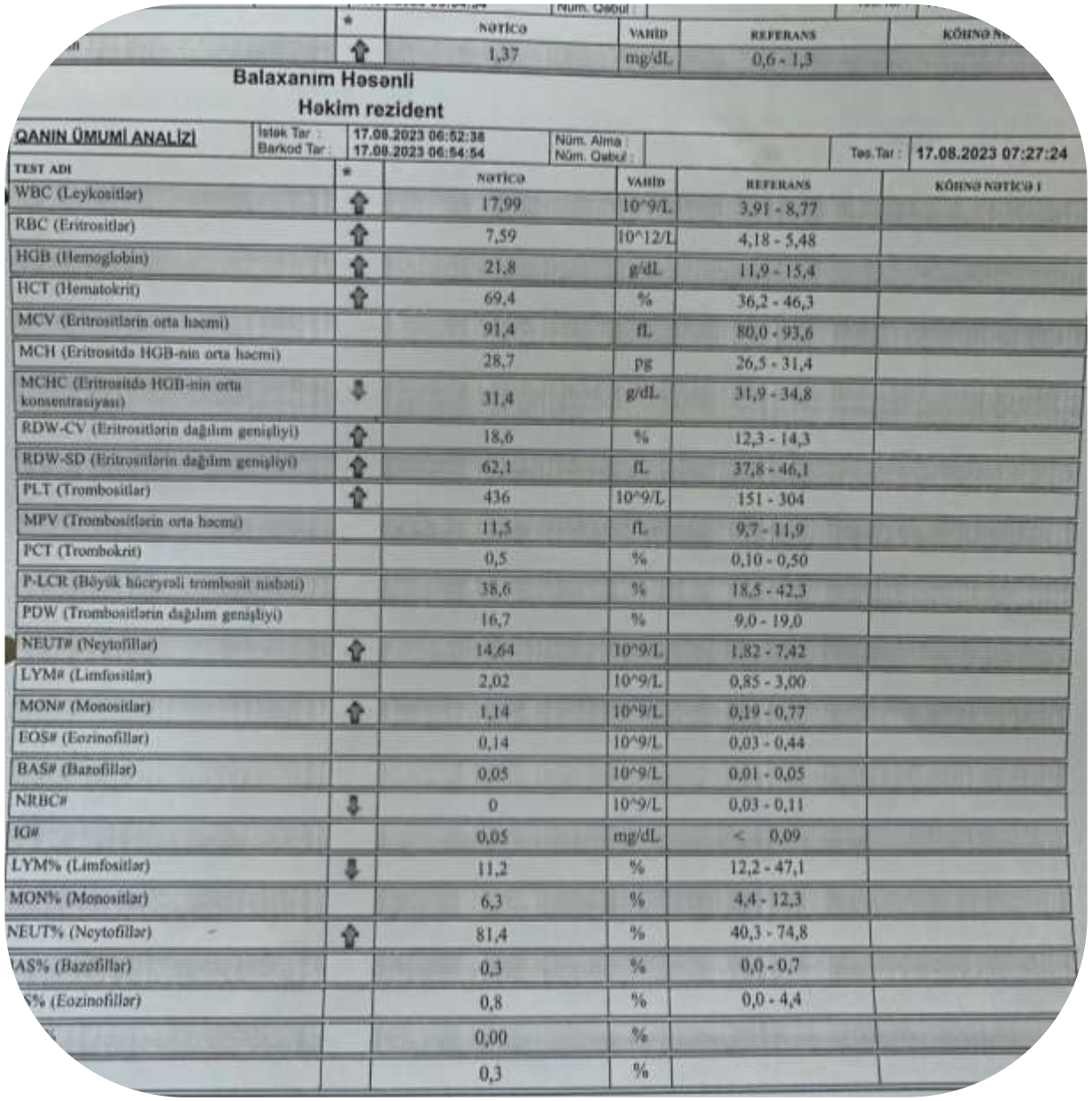
Ventricles (Long Axis)	LV	Range	RV	Range
Ejection Fraction (%)	14	56 - 75	20	
Stroke Volume (ml)	32.7	59 - 119	8.3	
End-Diastolic Volume Index (ml/m²)	131	59 - 99	23.1	
End-Systolic Volume Index (ml/m²)	113	25 - 37	18.4	
End-Diastolic Volume (ml)	234	90 - 179	41.1	
End-Systolic Volume (ml)	201	25 - 66	32.8	
Heart Rate (bpm)	89		89	
Peak Filling Rate (ml/s)	323		122	
Peak Ejection Rate (ml/s)	318		189	
Cardiac Output (l/min)	2.9		0.7	
Cardiac Output Index (l/min/m²)	1.63		0.42	
Stroke Volume Index (ml/m²)	18.4		4.7	
Mass (g)	192(ED)			
Mass Index (g/m²)	108(ED)			

Atria (Fast)	LA	Range	RA	Range
End-Diastolic Volume Index (ml/m²)	11.3		8.1	
End-Diastolic Volume (ml)	20.1		14.4	

Late Enhancement	
infarct Mass (g)	77.2
Left Ventricular Mass (g)	148
infarct (%)	52.0



Blood tests



	*	NƏTİCƏ	VAHİD	REFERANS	KÖHNƏ N
	⇧	1,37	mg/dL	0,6 - 1,3	

Balaxanım Həsənli

Həkim rezident

QANIN ÜMUMİ ANALİZİ | İstək Tar : 17.08.2023 06:52:38 | Barkod Tar : 17.08.2023 06:54:54 | Núm. Alma : | Núm. Qəbul : | Təs.Tar : 17.08.2023 07:27:24

TEST ADI	*	NƏTİCƏ	VAHİD	REFERANS	KÖHNƏ NƏTİCƏ I
WBC (Leykositlər)	⇧	17,99	10^9/L	3,91 - 8,77	
RBC (Eritrositlər)	⇧	7,59	10^12/L	4,18 - 5,48	
HGB (Hemoglobin)	⇧	21,8	g/dL	11,9 - 15,4	
HCT (Hematokrit)	⇧	69,4	%	36,2 - 46,3	
MCV (Eritrositlərin orta həcmi)		91,4	fL	80,0 - 93,6	
MCH (Eritrositdə HGB-nin orta həcmi)		28,7	pg	26,5 - 31,4	
MCHC (Eritrositdə HGB-nin orta konsentrasiyası)	⇩	31,4	g/dL	31,9 - 34,8	
RDW-CV (Eritrositlərin dağılım genişliyi)	⇧	18,6	%	12,3 - 14,3	
RDW-SD (Eritrositlərin dağılım genişliyi)	⇧	62,1	fL	37,8 - 46,1	
PLT (Trombositlər)	⇧	436	10^9/L	151 - 304	
MPV (Trombositlərin orta həcmi)		11,5	fL	9,7 - 11,9	
PCT (Trombokrit)		0,5	%	0,10 - 0,50	
P-LCR (Böyük hüceyrəli trombosit nisbəti)		38,6	%	18,5 - 42,3	
PDW (Trombositlərin dağılım genişliyi)		16,7	%	9,0 - 19,0	
NEUT# (Neytofillər)	⇧	14,64	10^9/L	1,82 - 7,42	
LYM# (Limfositlər)		2,02	10^9/L	0,85 - 3,00	
MON# (Monositlər)	⇧	1,14	10^9/L	0,19 - 0,77	
EOS# (Eozinofillər)		0,14	10^9/L	0,03 - 0,44	
BAS# (Bazofillər)		0,05	10^9/L	0,01 - 0,05	
NRBC#	⇩	0	10^9/L	0,03 - 0,11	
IG#		0,05	mg/dL	< 0,09	
LYM% (Limfositlər)	⇩	11,2	%	12,2 - 47,1	
MON% (Monositlər)		6,3	%	4,4 - 12,3	
NEUT% (Neytofillər)	⇧	81,4	%	40,3 - 74,8	
AS% (Bazofillər)		0,3	%	0,0 - 0,7	
S% (Eozinofillər)		0,8	%	0,0 - 4,4	
		0,00	%		
		0,3	%		

Blood tests

- Polycythemia vera

GENETİK HASTALIKLAR DEĞERLENDİRME MERKEZİ
(Ruhsat No: GHDM-SM/06.11/01)

ÖRNEK TİPİ:	Periferik Kan
KABUL TARİHİ:	18.08.2023
RAPOR TARİHİ:	25.08.2023
İSTENEN TETKİK KODU:	6297
GÖNDEREN MERKEZ:	Ege Hospital

GENETİK İNCELEME BULGULARI

İNCELENEN DEĞİŞİKLİK	SONUÇ
JAK2 V617F	**Pozitif**

Açıklama:
JAK2 V617F mutasyonu **saptanmıştır.**

Decision

- Not to revasc : as it is a stable patient
- Not to revasc: no prognostic effect
- CRT-D
- GDMT : Empagliflozin+Spiro