Echocardiography Eye openers !

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INTRODUCTION

- Echocardiography is the most common advised investigation in routine practice
- Careful echocardiographic evalution is helpful in diagnosis and management
- Its important to:

  How to look for

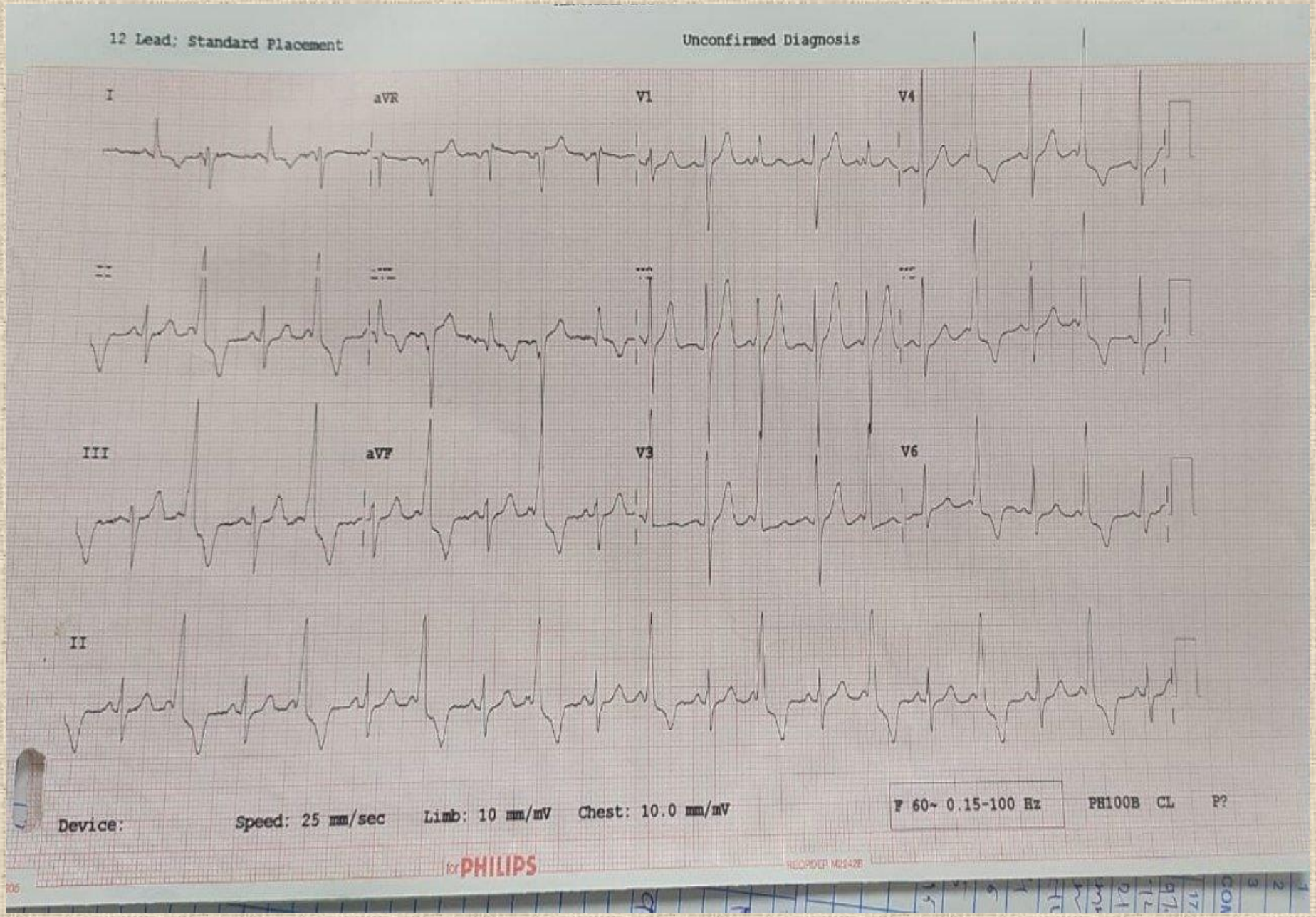
  What to look for

  Where to look for

- Multimodality imaging add on the information of echocardiography

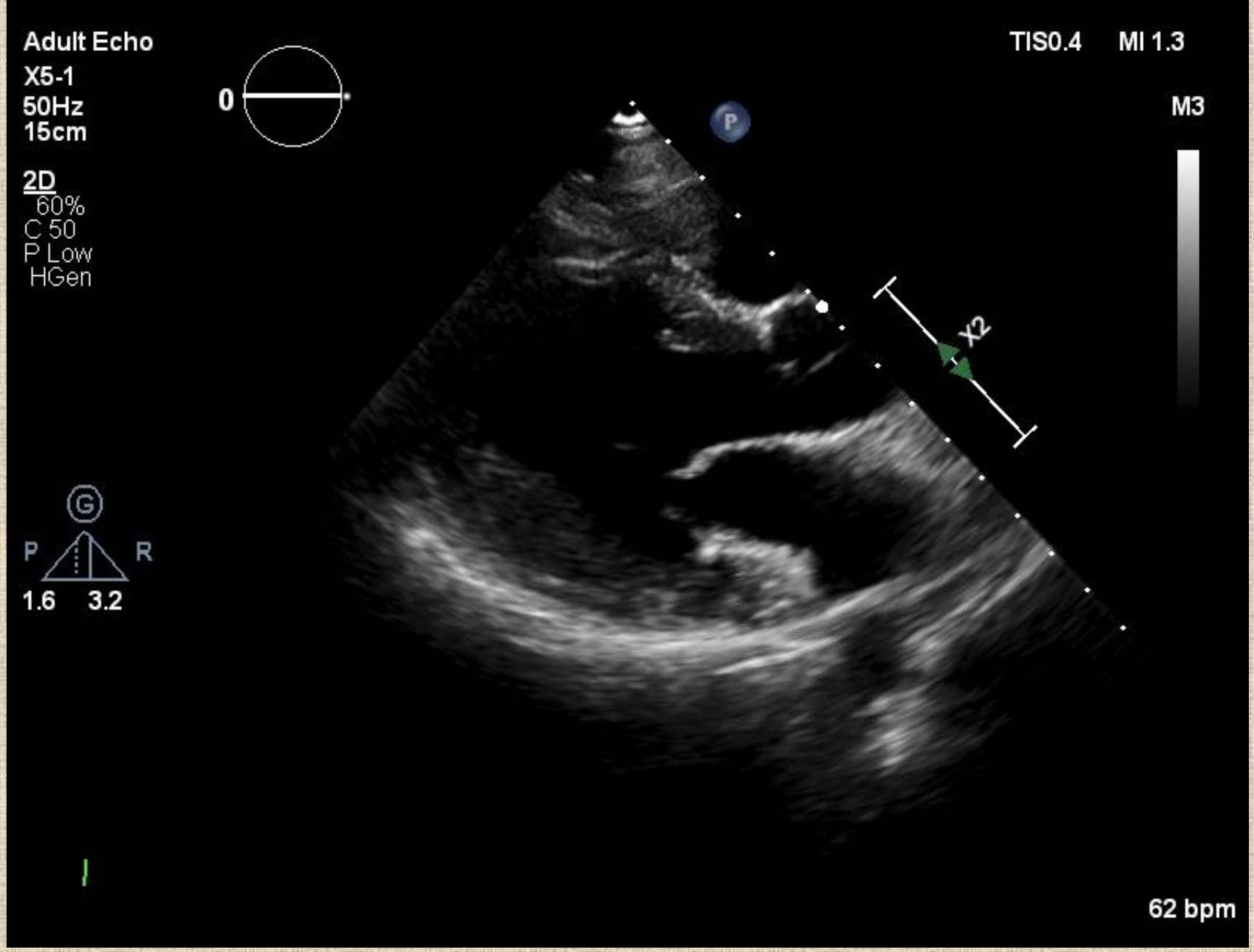
CASE 1

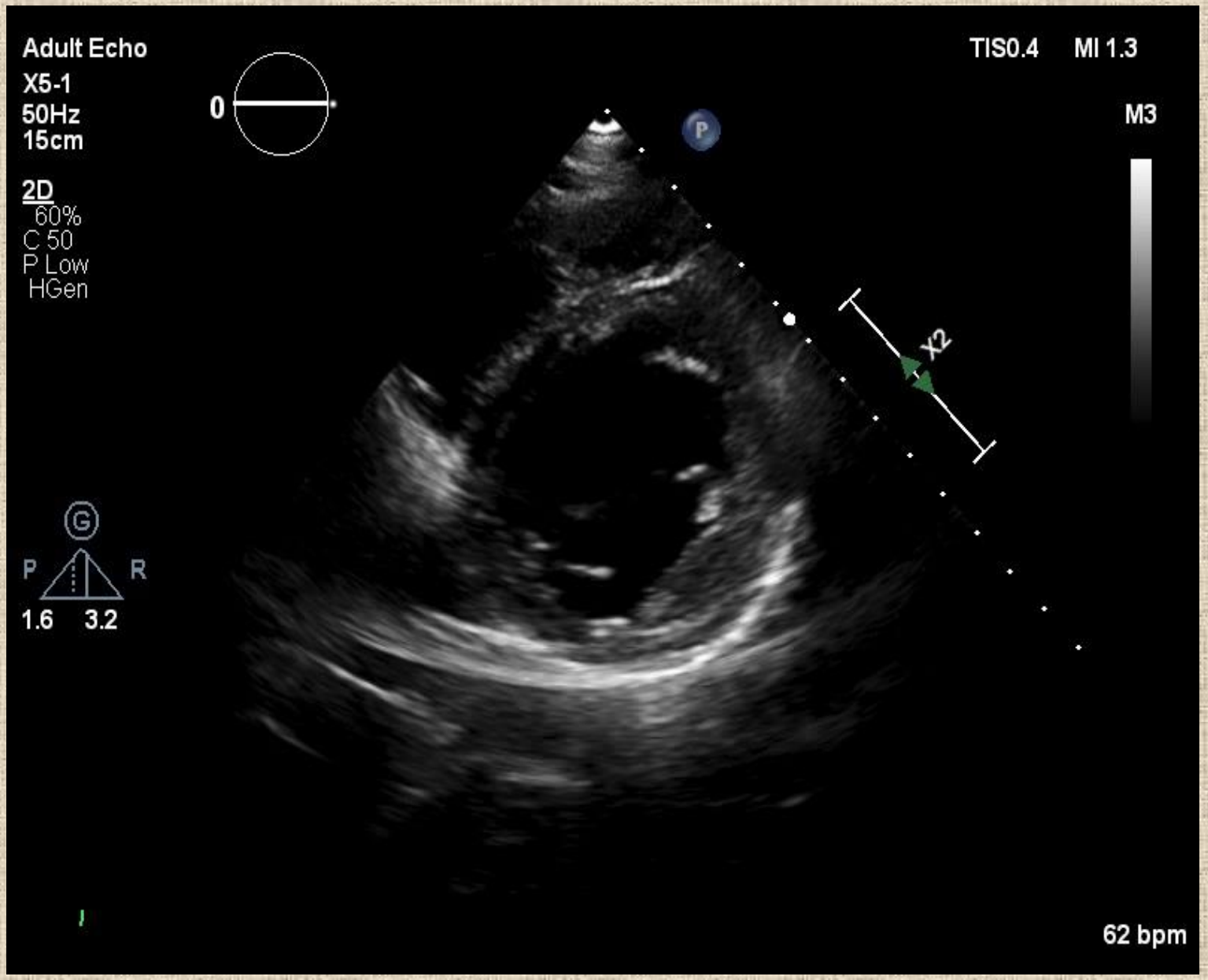
- 35 Years/ Male
- No Significant Past Medical History
- Presented with Ischemic CV STROKE
- General Examination-NAD
- CVS Examination-NAD
- Troponin I –Positive+
- 24 hrs Holter: Insignificant


12 Lead; Standard Placement
Unconfirmed Diagnosis
I
aVR
V1
V4
II
III
aVF
V3
V6
II
Device:
Speed: 25 mm/sec
Limb: 10 mm/mV
Chest: 10.0 mm/mV
F 60~ 0.15-100 Hz
PH100B CL
P?
for PHILIPS

MRI BRAIN

- Hyperacute non-hemorrhagic infarct in posterolateral portion of the left temporal lobe
- A small lesion lateral to the left zygomatic bone ? Parosteal lipoma.
- MR Angiography reveals no obvious abnormality.


Adult Echo
X5-1
50Hz
15cm
2D
60%
C 50
P Low
HGen
0
TIS0.4
MI 1.3
M3
X2
G
P
R
1.6
3.2
62 bpm


Adult Echo
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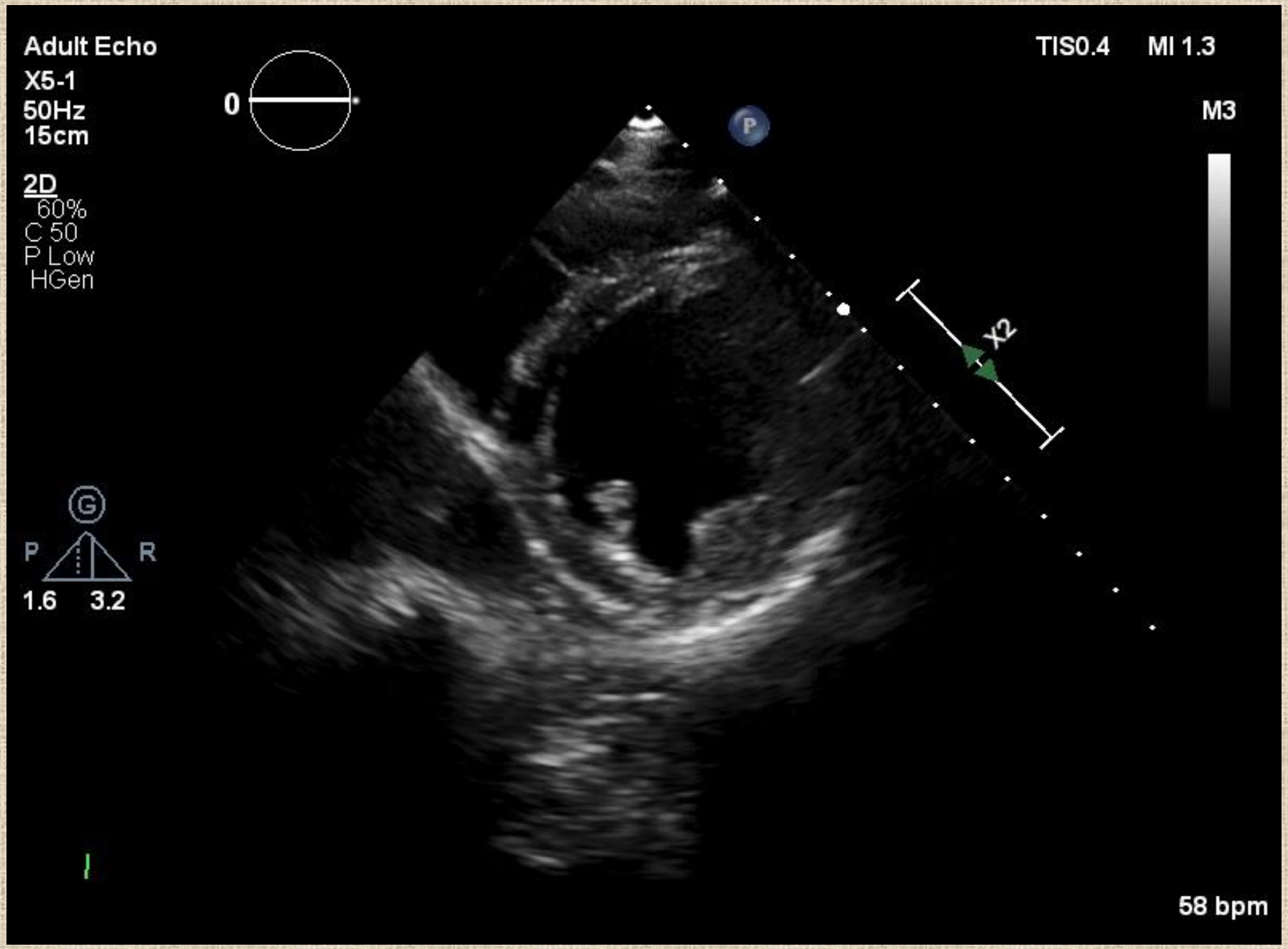
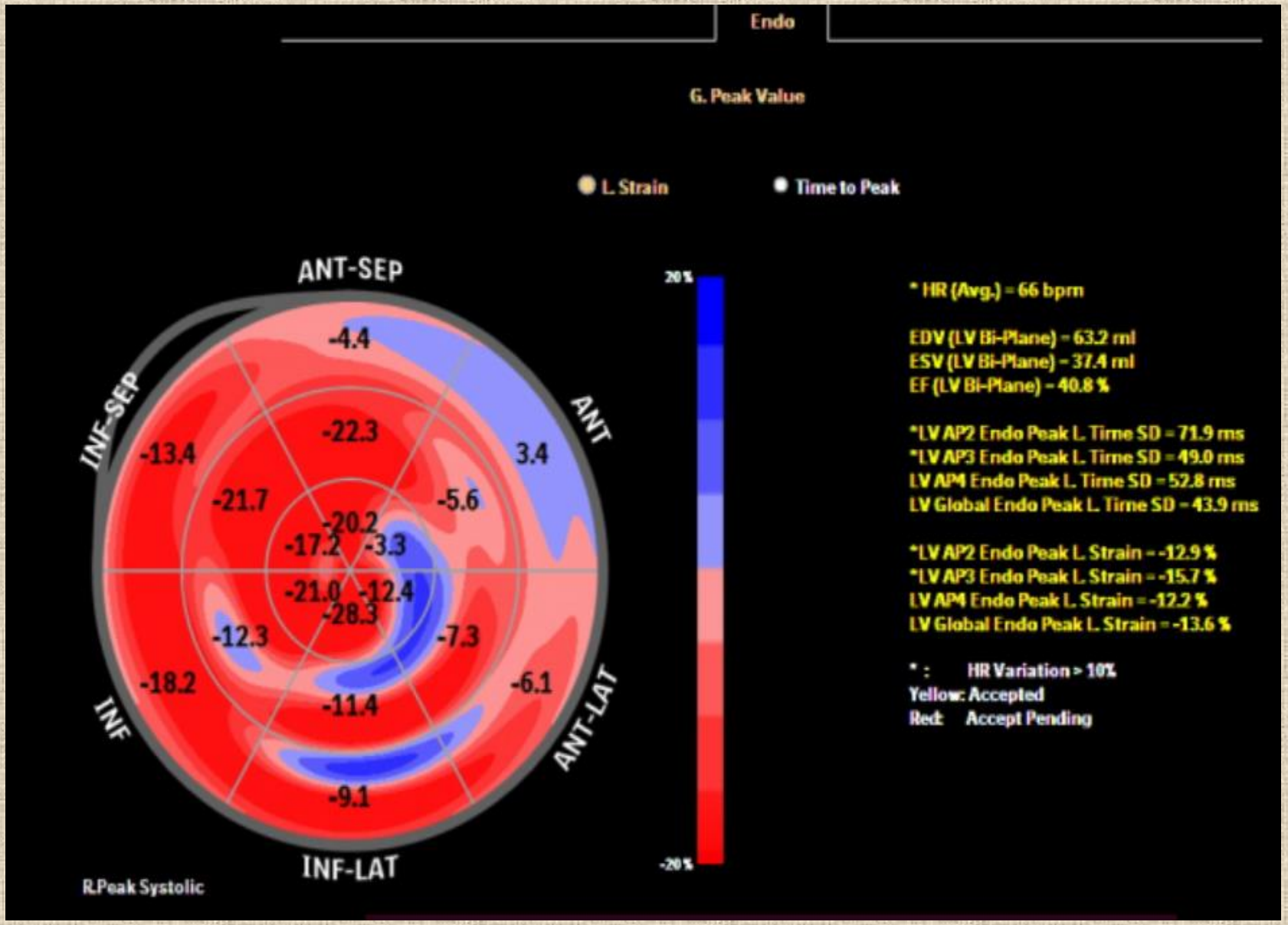
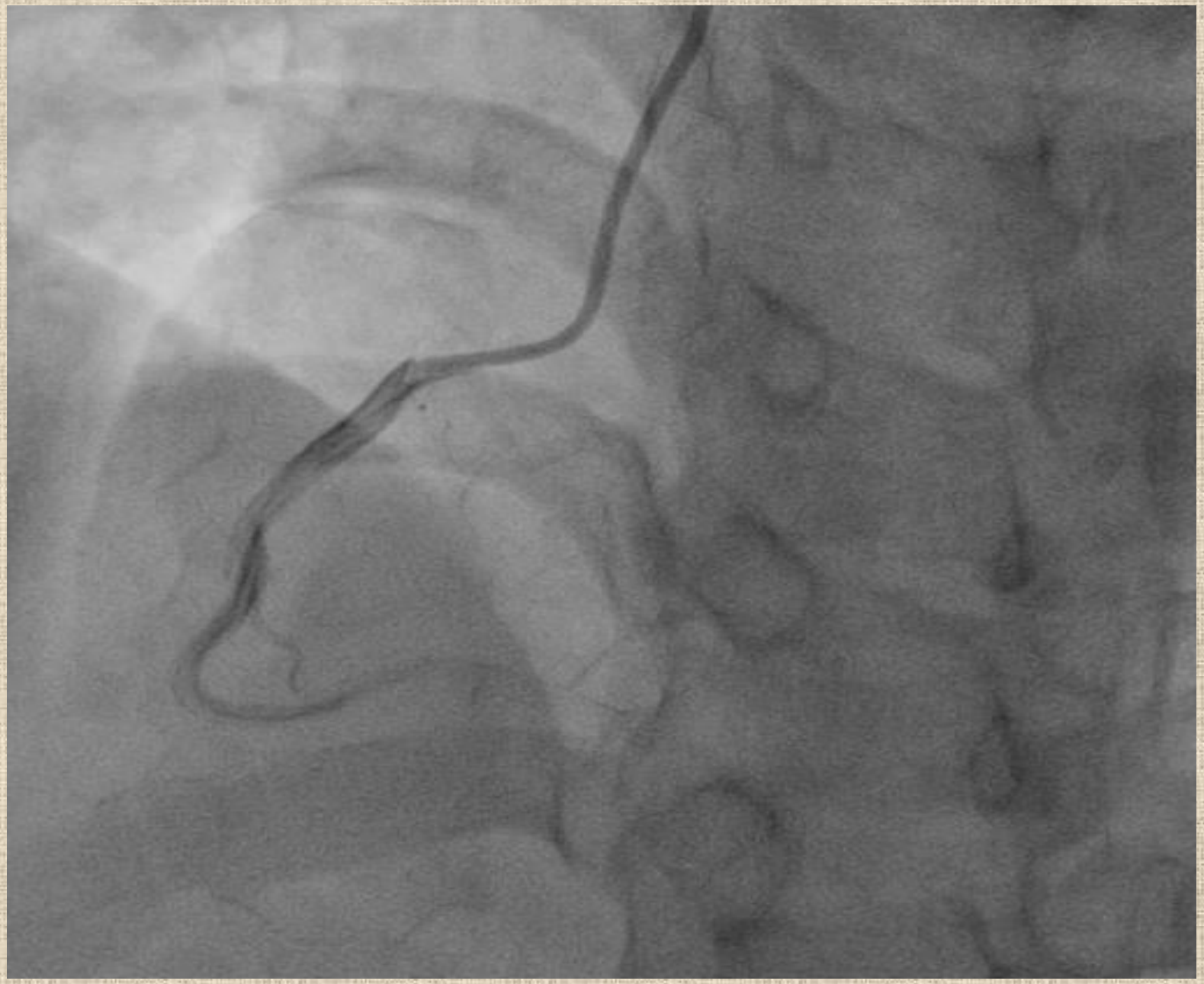
0
TIS0.4
MI 1.3
M3
X2
G
P
R
1.6
3.2
62 bpm


Adult Echo
X5-1
50Hz
15cm
2D
60%
C 50
P Low
HGen
0
TIS0.4
MI 1.3
M3
P
X2
G
P
R
1.6
3.2
58 bpm

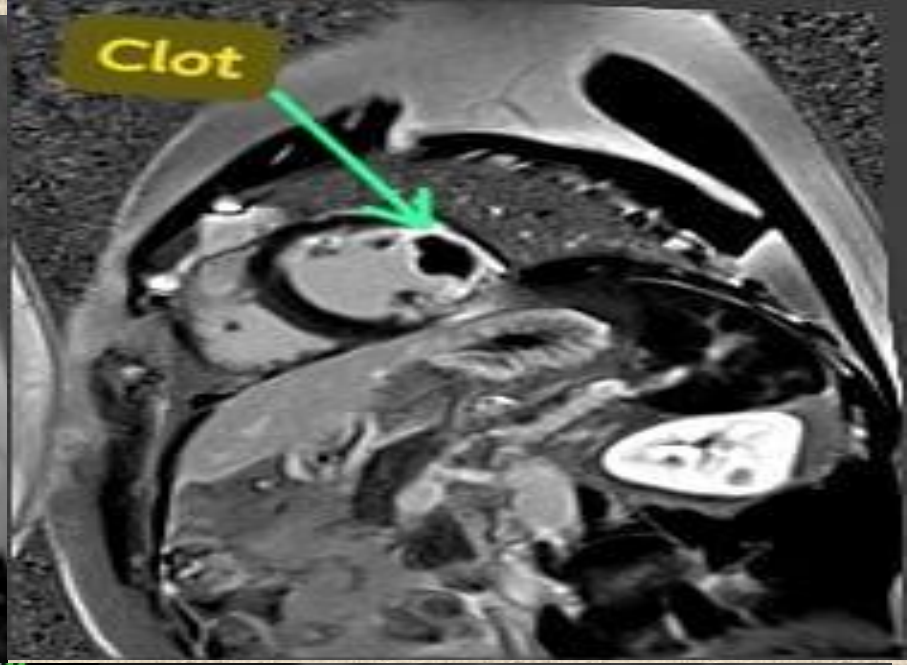

Endo
G. Peak Value
L. Strain
Time to Peak
ANT-SEP
ANT
ANT-LAT
INF-LAT
INF
INF-SEP
-4.4
-22.3
3.4
-13.4
-21.7
-5.6
-20.2
-17.2
-3.3
-21.0
-12.4
-28.3
-12.3
-7.3
-18.2
-6.1
-11.4
-9.1
20%
-20%
* HR (Avg.) = 66 bpm
EDV (LV Bi-Plane) = 63.2 ml
ESV (LV Bi-Plane) = 37.4 ml
EF (LV Bi-Plane) = 40.8 %
*LV AP2 Endo Peak L. Time SD = 71.9 ms
*LV AP3 Endo Peak L. Time SD = 49.0 ms
LV AP4 Endo Peak L. Time SD = 52.8 ms
LV Global Endo Peak L. Time SD = 43.9 ms
*LV AP2 Endo Peak L. Strain = -12.9 %
*LV AP3 Endo Peak L. Strain = -15.7 %
LV AP4 Endo Peak L. Strain = -12.2 %
LV Global Endo Peak L. Strain = -13.6 %
* : HR Variation > 10%
Yellow: Accepted
Red: Accept Pending
R.Peak Systolic

- **RWMA in LCX territory +**
- Dignosed as ACS-NSTEMI With mild LV Dysfunction



- CAG s/o Non-Obstructive CAD
- MINOCA
- What Next ?


Clot
Transmural LGE uptake


Clot


Clot with LGE uptake
M
036Y
PL AR
HFS
DR. ROHATGI NEURO
3.16 mm

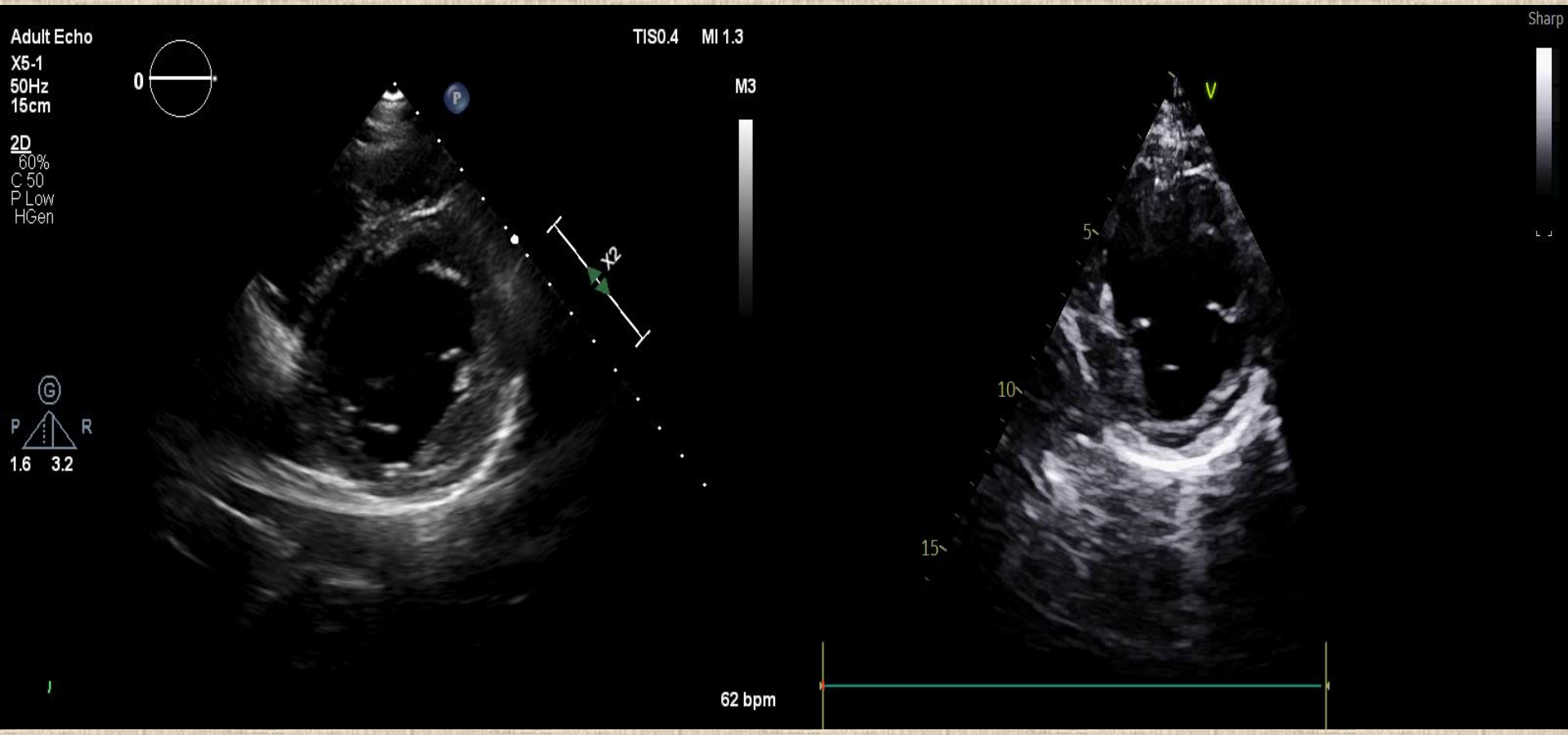
CAG Review

- **Final diagnosis:**

  ACS (Diagonal territory MI- ? TYPE II SCAD) with LV Clot and cardio embolic stroke

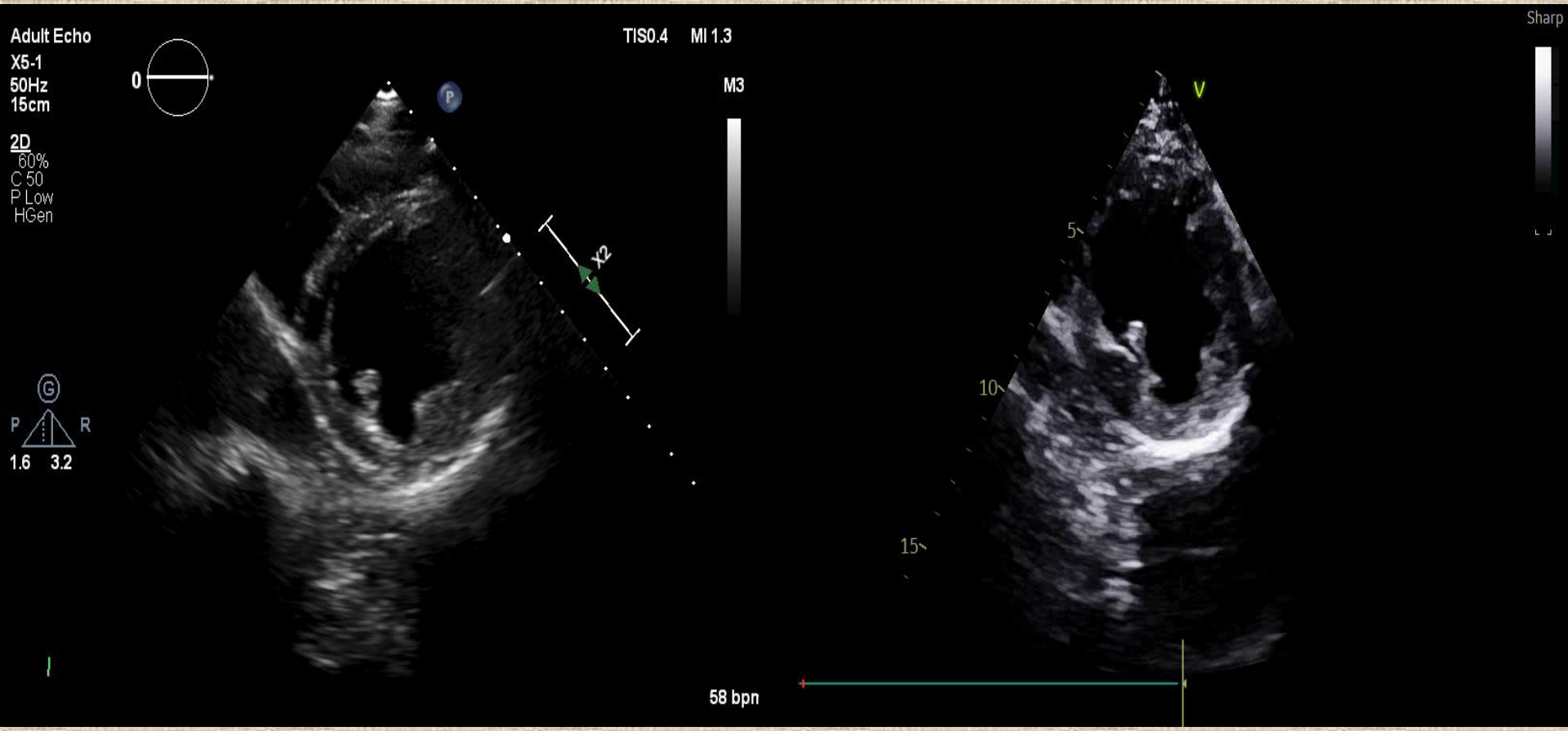
- **Work up for young MI and Stroke Done-Negative**
- **Prothrombotic work up-Pending**

- **Review after 6 months of SAPT and NOAC**



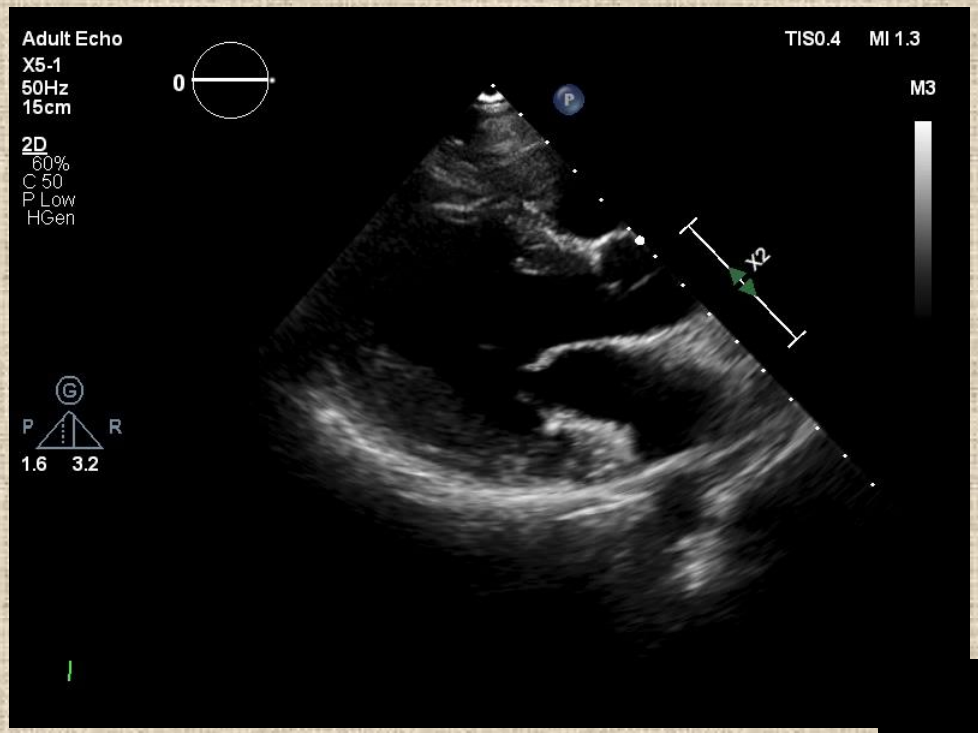
At the time of presentation

After 6 months



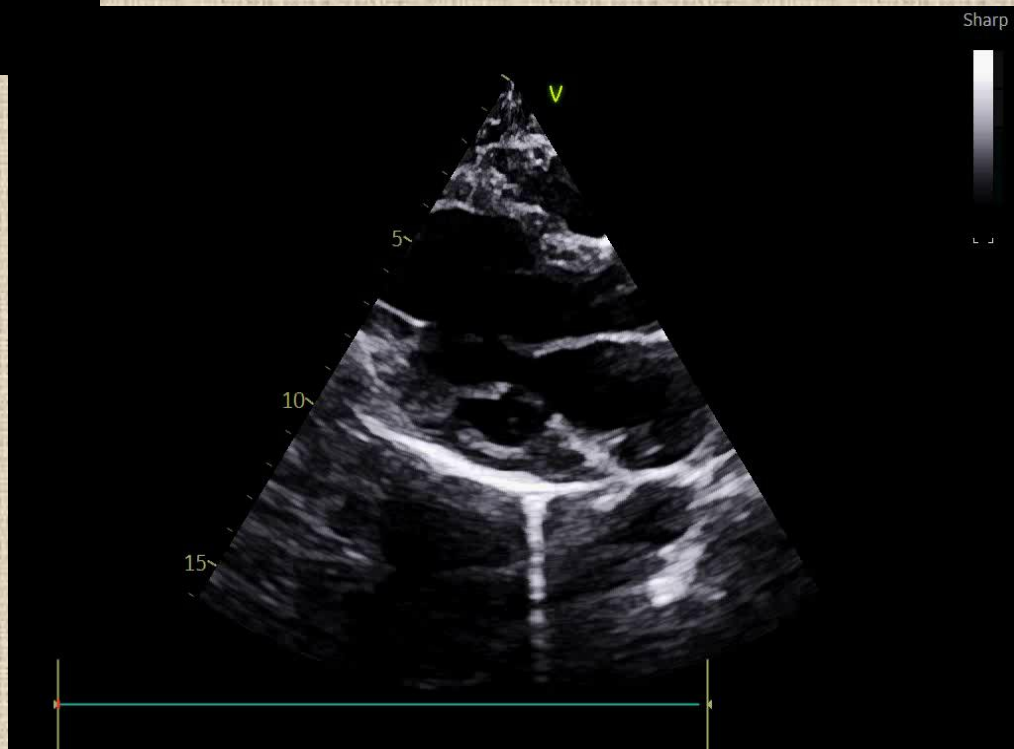
At the time of presentation

After 6 months



At the time of presentation

After 6 months



Case Series

Spectrum of intracardiac thrombi in different clinical scenarios at a tertiary care center

ABSTRACT

Cardiologists frequently encounter intracardiac thrombi in the course of their work. Along with tumor and vegetation, it is one of the most frequent differential diagnoses for intracardiac masses. Cardioembolic stroke patients frequently have intracardiac thrombi in the left ventricle. Although the potential for cerebral emboli persists in a large population of patients with chronic left ventricular (LV) dysfunction, the risk of LV thrombus formation is highest during the first 3 months after acute myocardial infarction. The main risk factors for the development of left atrial thrombi are rheumatic valvular disease, especially mitral stenosis and atrial fibrillation. Right heart chamber thrombi may develop *in situ* or occur when peripheral venous clots that are on their way to the lungs become stuck, leading to acute pulmonary embolism, and their incidence ranges from 4% to 18%. We are presenting five cases that represent a broad range of clinical circumstances involving intracardiac thrombus. When performed during systole and diastole, echocardiography can detect thrombus as a discrete, echo-dense mass with clearly defined borders that is separate from the endocardium. Since dimensions, shape, regularity or irregularity, and homogeneity are all characteristic features that define the embolic risk and therapeutic management, the morphology and structure of thrombi should be carefully assessed.

Keywords: Cardioembolic stroke, echocardiography, intracardiac thrombi

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doi: 10.4103/2211-4122.166081

PMCID: PMC5353410 | PMID: 28465941

Unusual Site of Left Ventricular Thrombus after Acute Myocardial Infarction

Amjad Ali, J. R. Vijaykumar, and Cholenahally N. Manjunath

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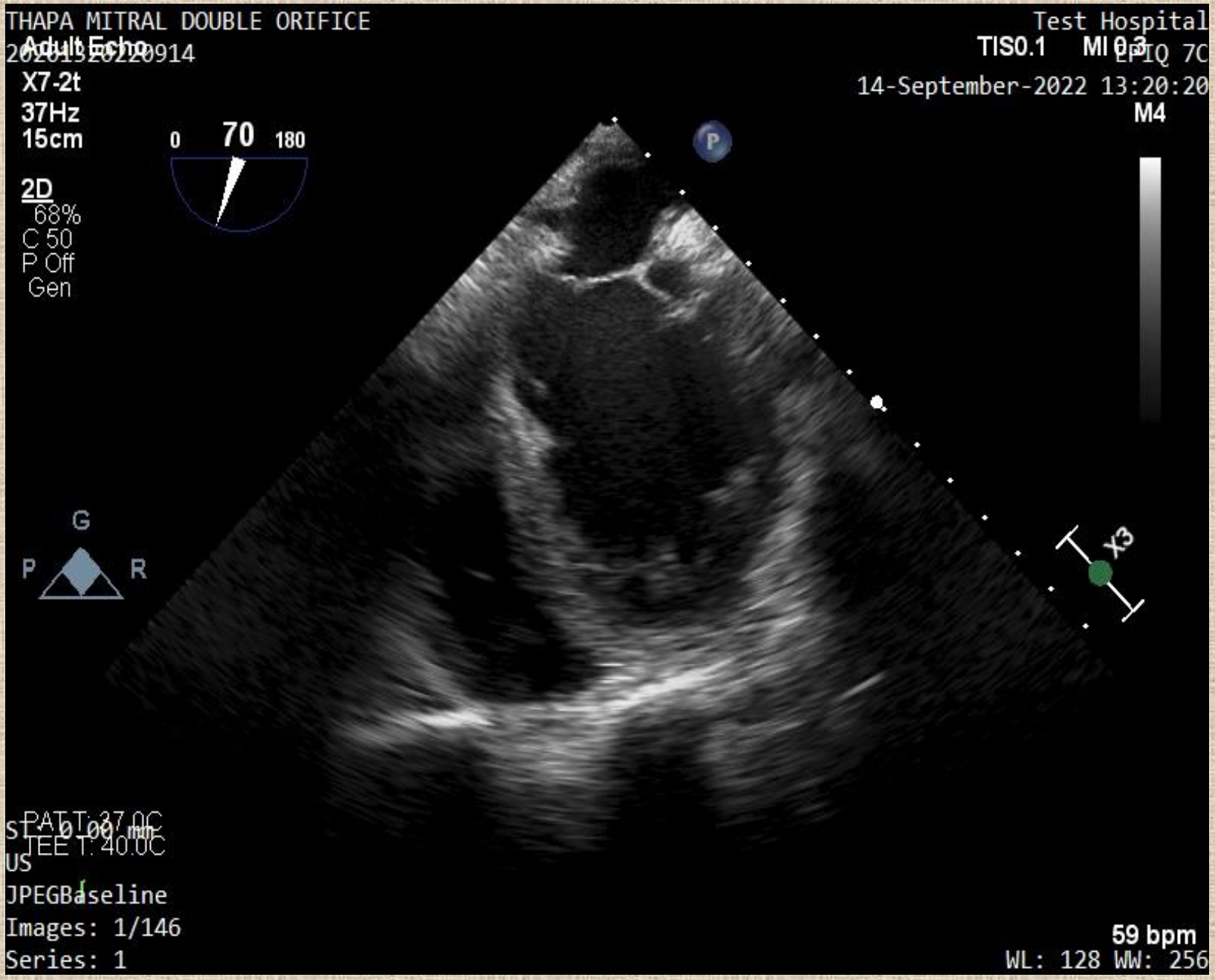
LEARNING POINTS

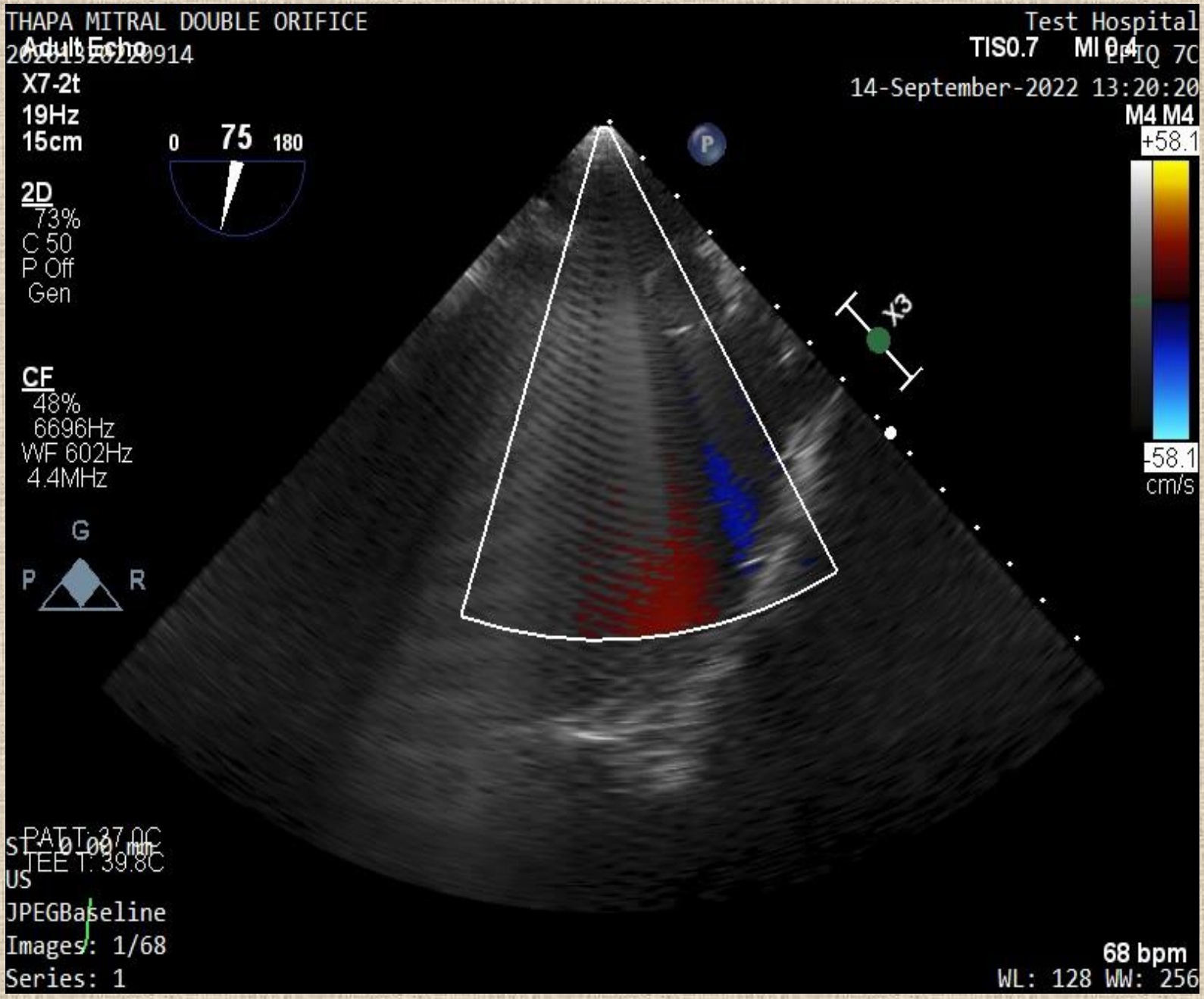
- LV clot can be present at atypical locations and hence careful echo evaluation is required.
- Diagnosis of that atypical location clots is important because that leads to change in management protocol
- Cardiac MRI further aids in diagnosis of inobvious MI and atypical clot locations.

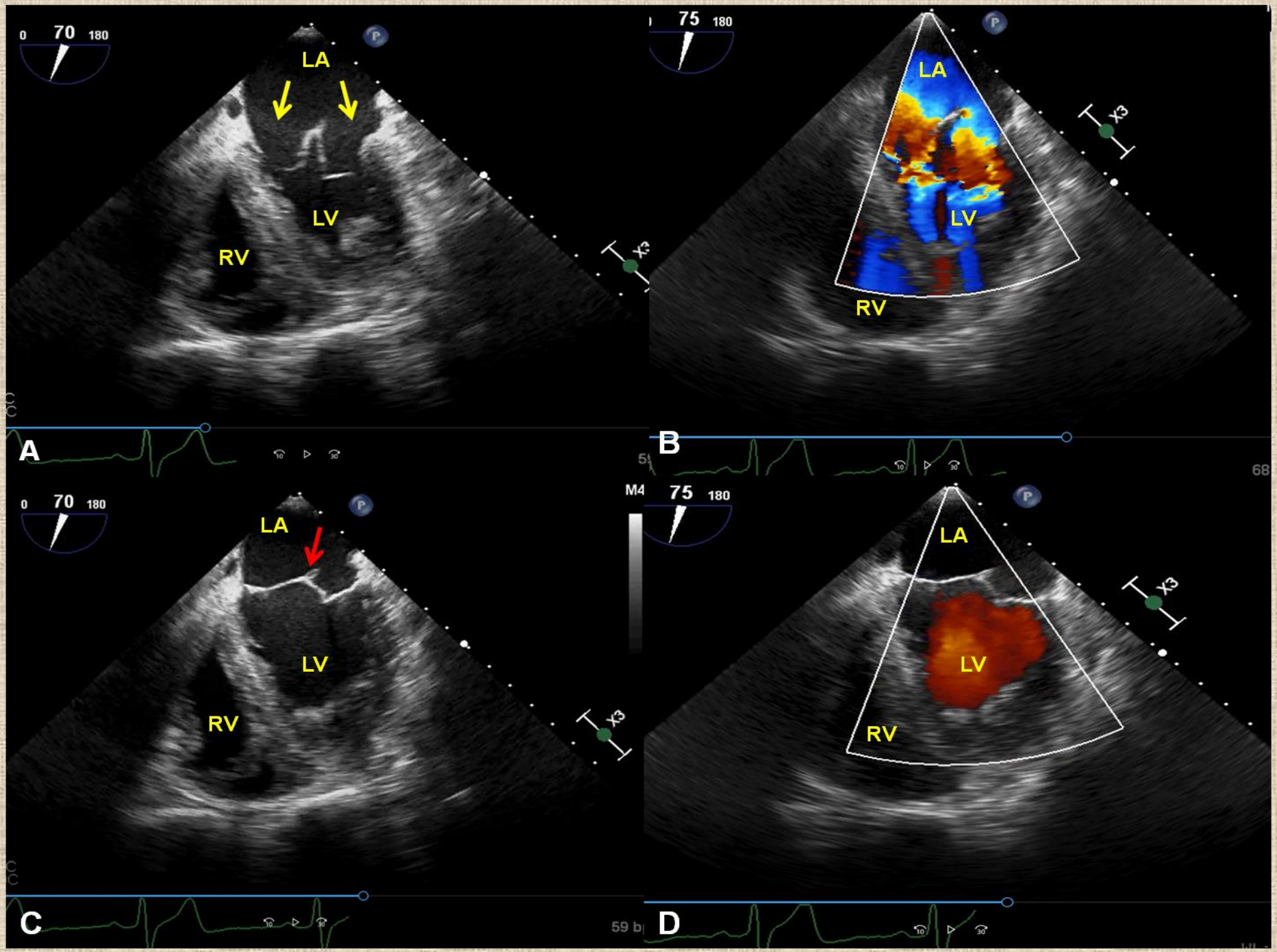
CASE 2

27 yrs old male labourer came to OPD for follow up Echo

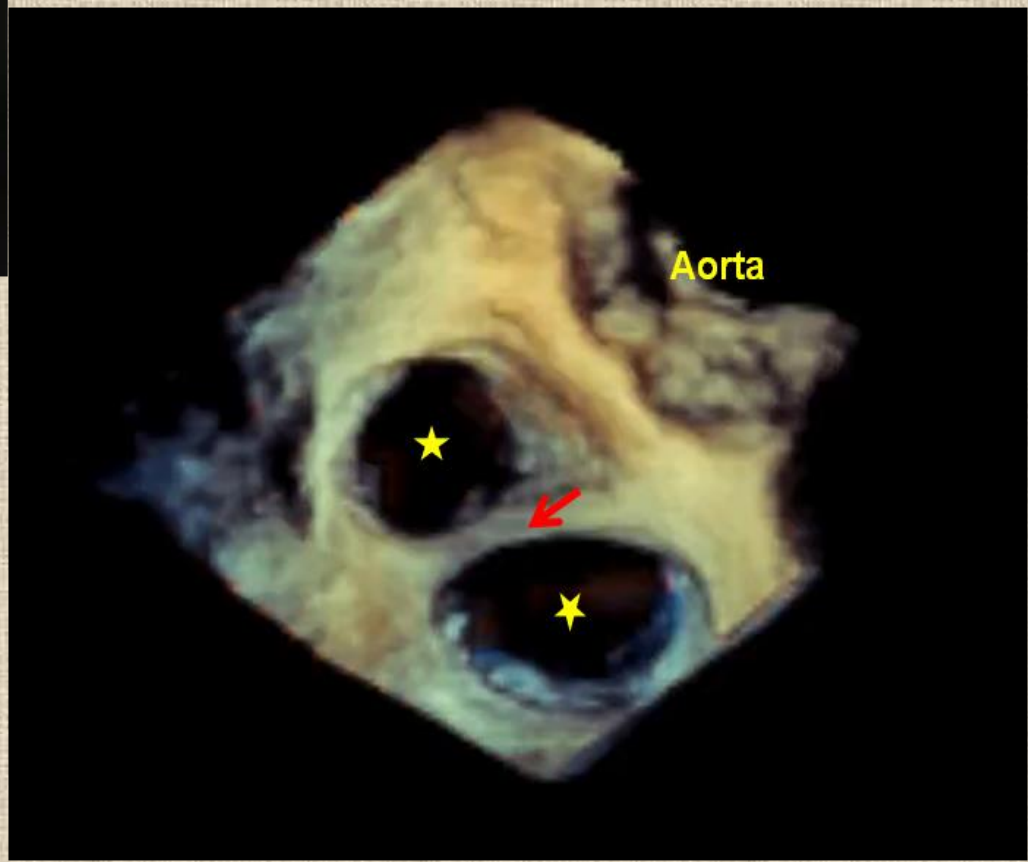
- **Diagnosed as RVHD**
- **Mild MS Mild MR MVA-1.72 cm2 since 2 yrs**
- **Was on Penicillin prophylaxis since 2 years**
- **No H/O Rheumatic Fever in Childhood or balloon intervention in past**
- **No fresh complaints at present**
- **ECG – Sinus Rhythm**


THAPA MITRAL DOUBLE ORIFICE
Adult Echo
20201320220914
X7-2t
37Hz
15cm
0
70
180
2D
68%
C 50
P Off
Gen
Test Hospital
TIS0.1
MI 0.3
EPIQ 7C
14-September-2022 13:20:20
M4
G
P
R
X3
PAT: 37.0C
TEE 1: 40.0C
US
JPEGBaseline
Images: 1/146
Series: 1
59 bpm
WL: 128 WW: 256


THAPA MITRAL DOUBLE ORIFICE
Test Hospital
Adult Echo
TIS0.7 MI 0.4
X7-2t
19Hz
15cm
14-September-2022 13:20:20
M4 M4
+58.1
-58.1
cm/s
2D
73%
C 50
P Off
Gen
CF
48%
6696Hz
WF 602Hz
4.4MHz
G
P
R
X3
PAT T: 37.0C
TEE T: 39.8C
US
JPEGBaseline
Images: 1/68
Series: 1
68 bpm
WL: 128 WW: 256


A
LA
LV
RV
B
LA
LV
RV
C
LA
LV
RV
D
LA
LV
RV


LV


Aorta

- Based on echocardiographic features, there are three morphological types of congenital DOMV described in the literature;
- Incomplete Bridge- The eccentric type accounts for approximately 85% of all cases and is characterized by a larger main orifice and a smaller accessory orifice located either at the posteromedial or anterolateral commissure.
- Complete bridge- The central or bridge type is seen in 15% of patients with DOMV and is characterized by a central bridge of fibrous tissue connecting the two leaflets of the mitral valve. The two orifices may be of the same size or unequal
- Hole Type –accessory orifice surrounded by leaflet tissue that may have a chordal ring.

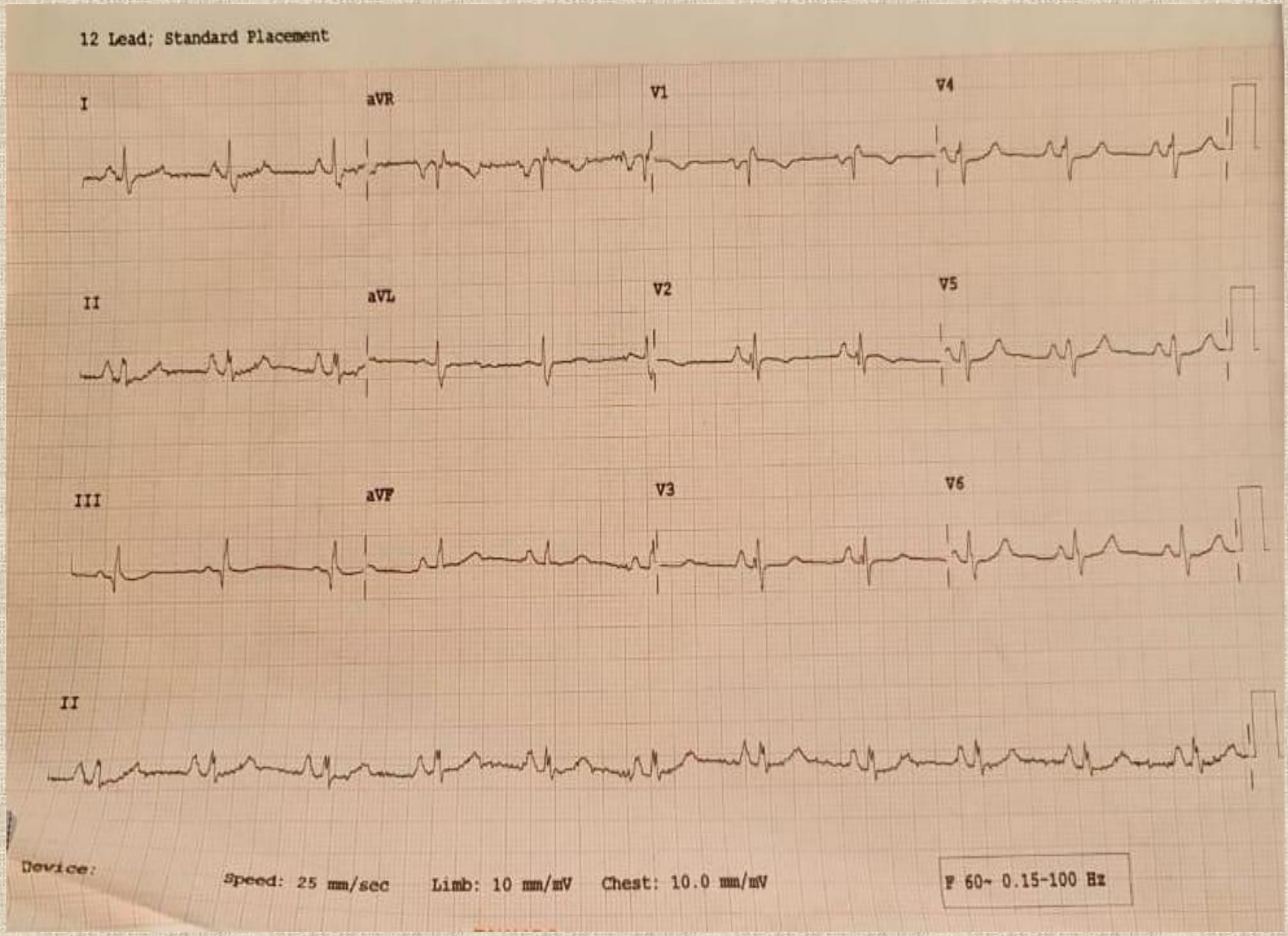
Trowitzsch E, Bano-Rodrigo A, Burger BM, Colan SD, Sanders SP. Two-dimensional echocardiographic findings in double orifice mitral valve. J Am Coll Cardiol. 1985 Aug;6(2):383-7.

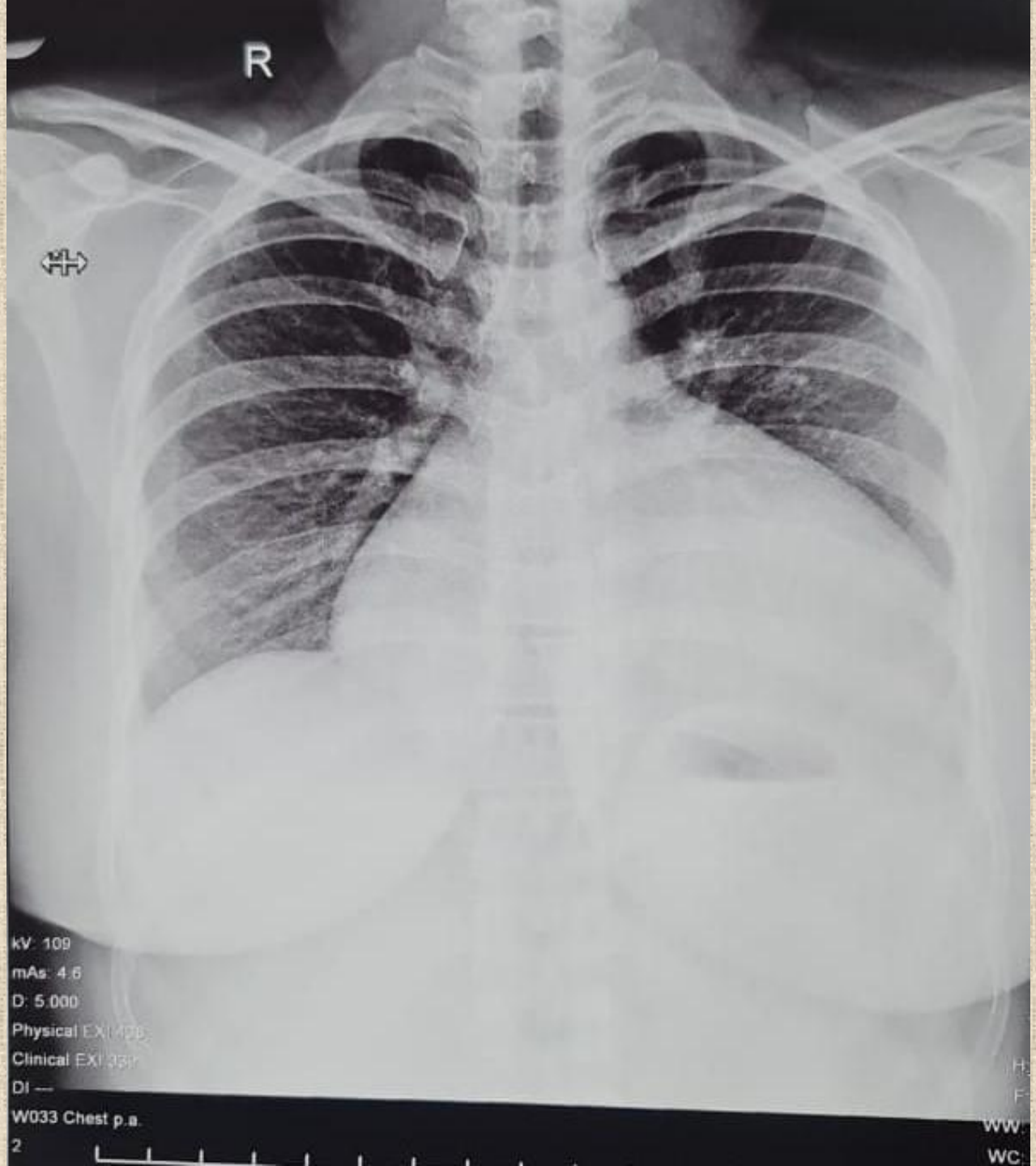
Learning points

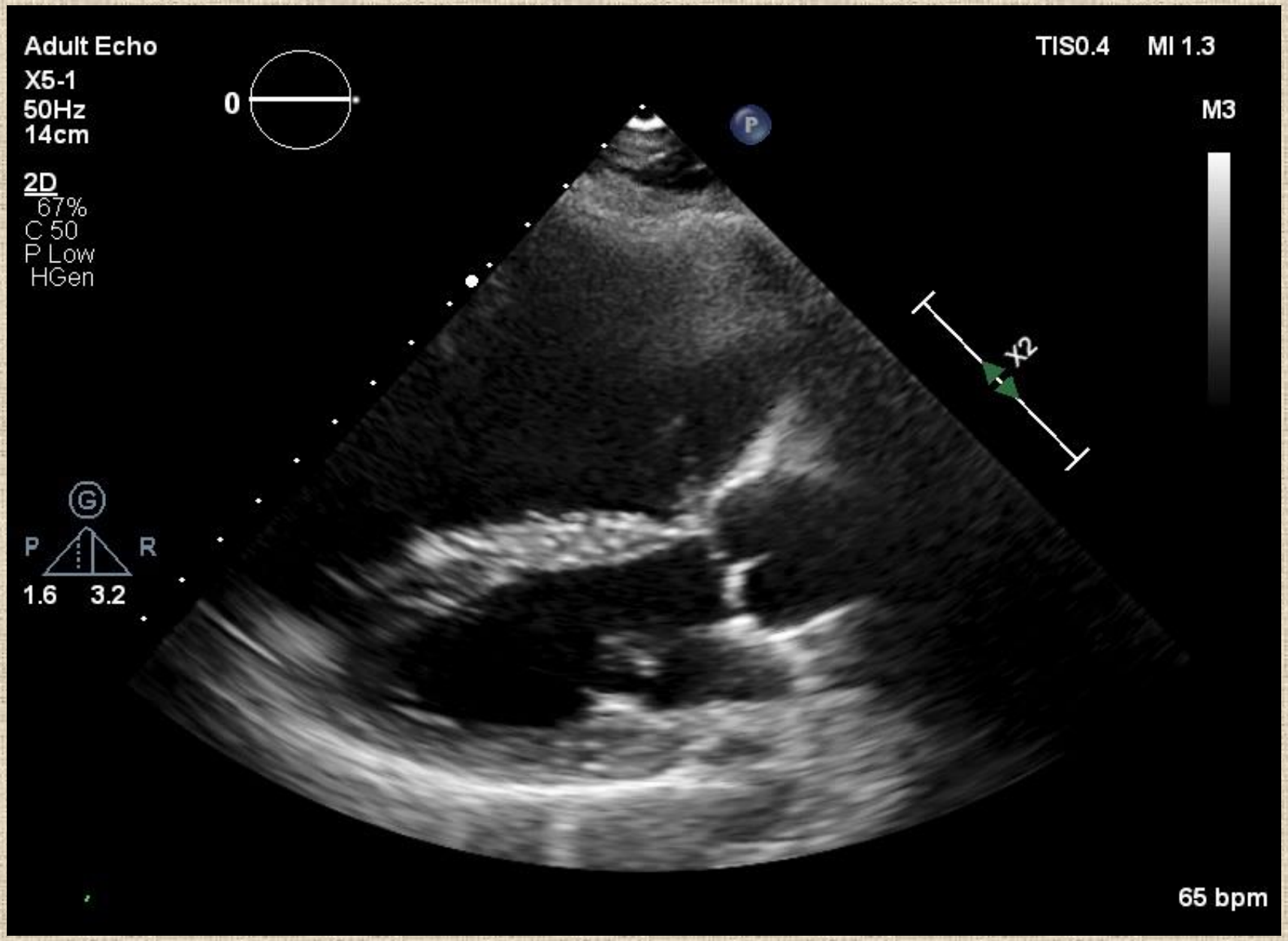
- Final diagnosis - DOMV
- Penicillin prophylaxis was stopped
- Patient was advised regular follow up
-
- **Congenital Mitral valve abnormalities can be misdiagnosed as RHD**

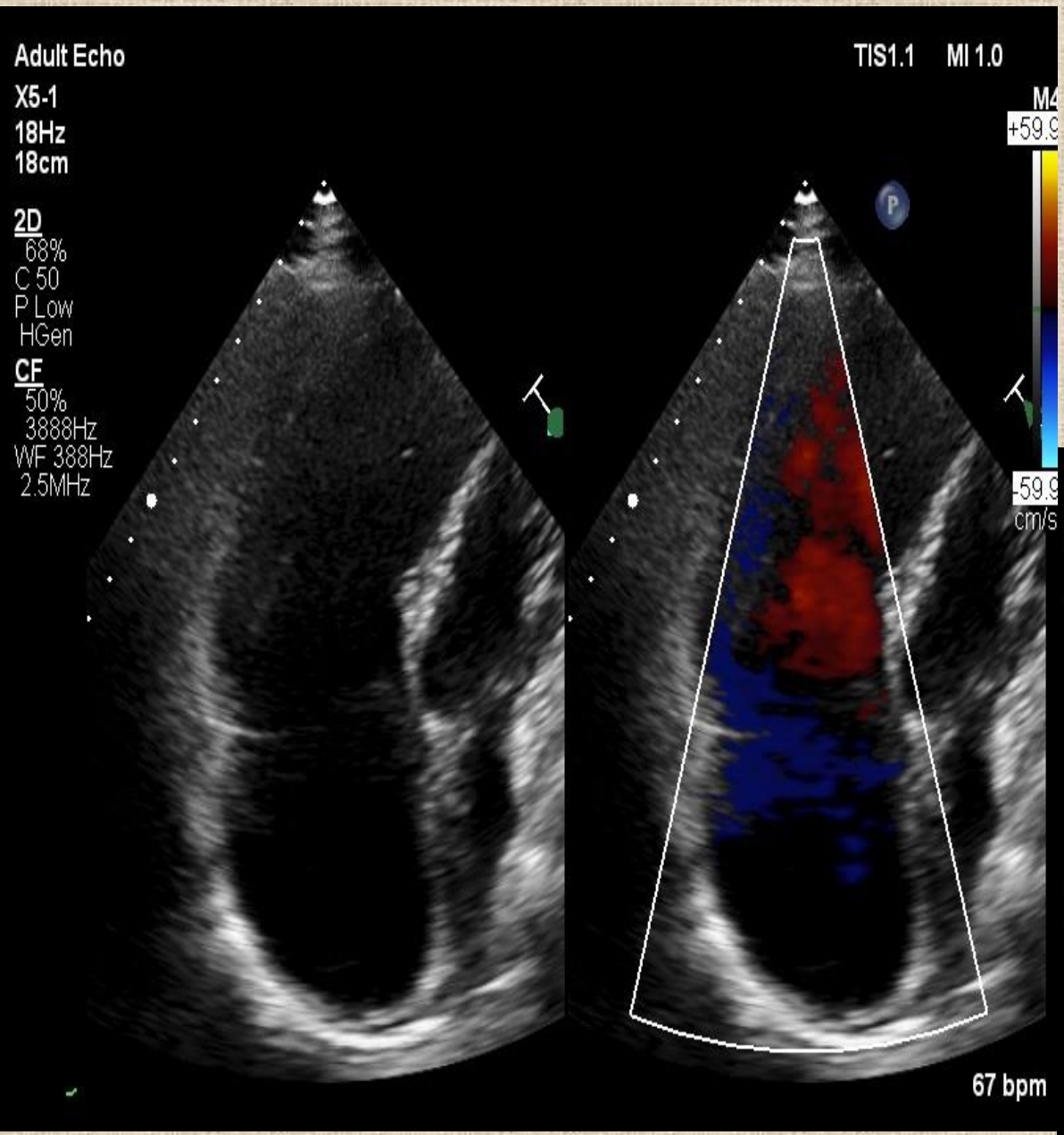
CASE 3

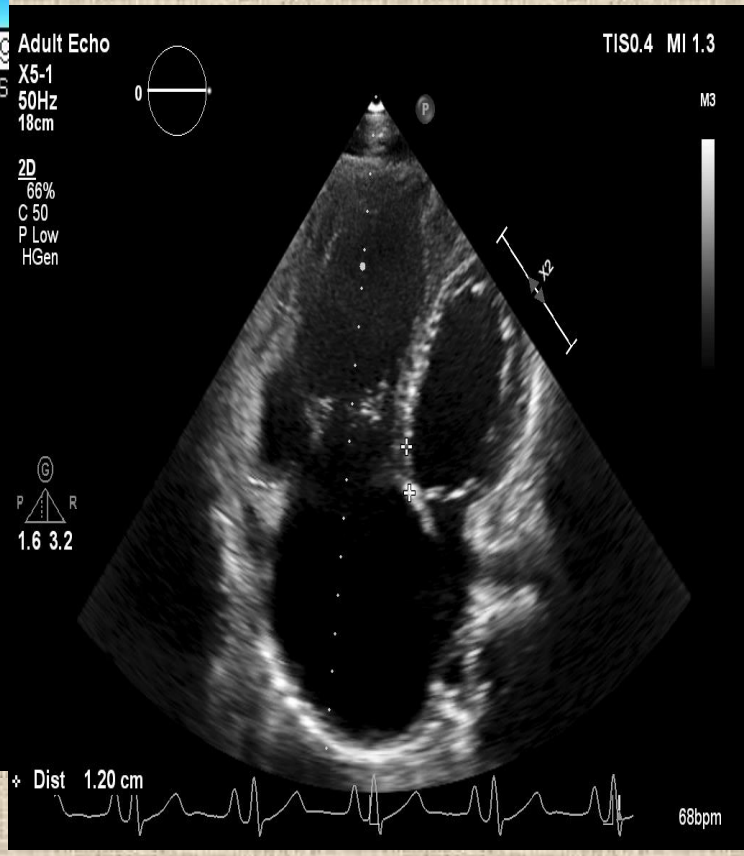
- 33 Y/F
- C/O DOE NYHA CL II Since Last 6 Months
- Mother Of Two Children(younger child 9 years old)
- Clinical Examination
- Loud S 1
- Cascade of sounds
- Murmur of TR +

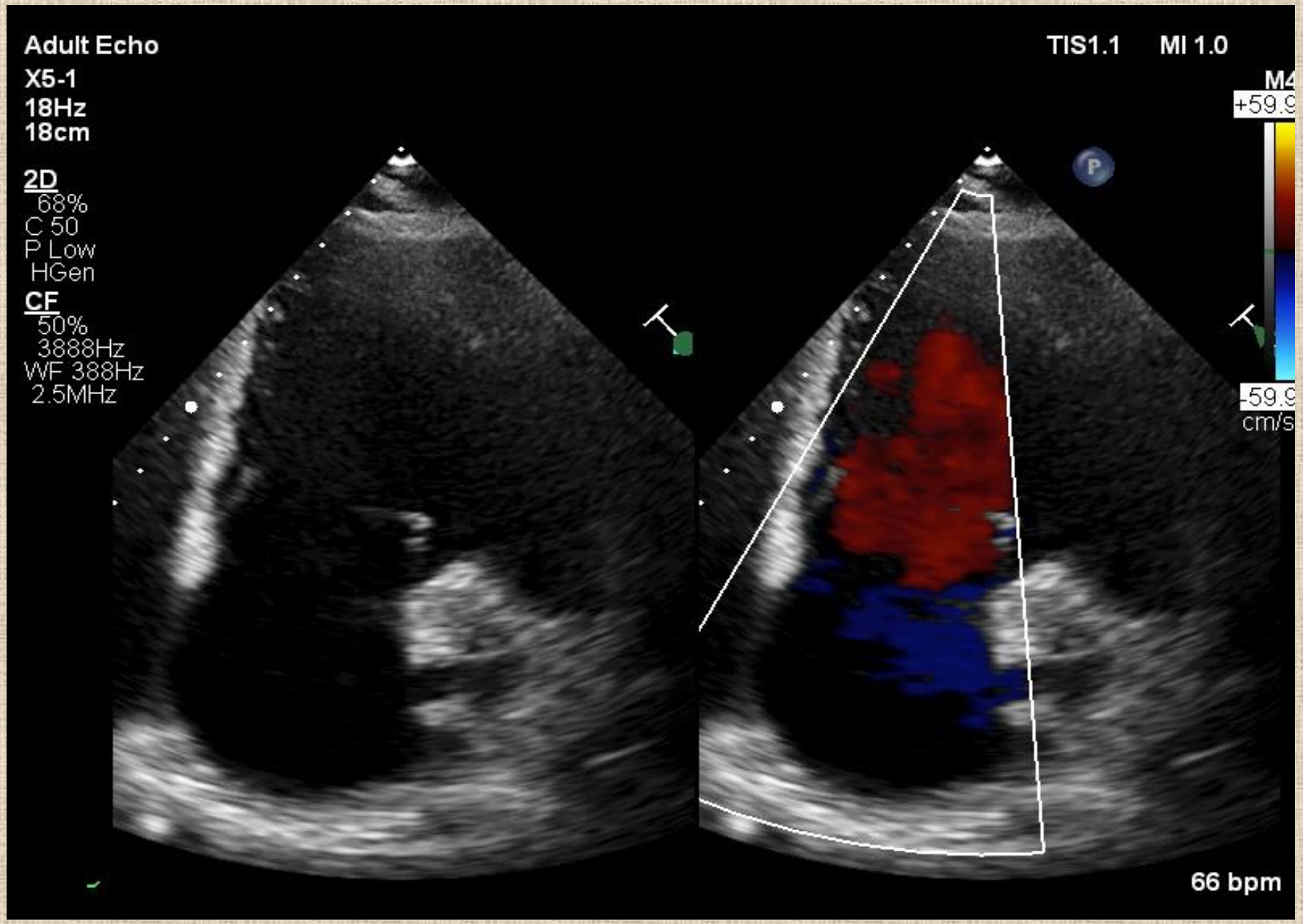

12 Lead; Standard Placement
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Device:
Speed: 25 mm/sec
Limb: 10 mm/mV
Chest: 10.0 mm/mV
F 60~ 0.15-100 Hz

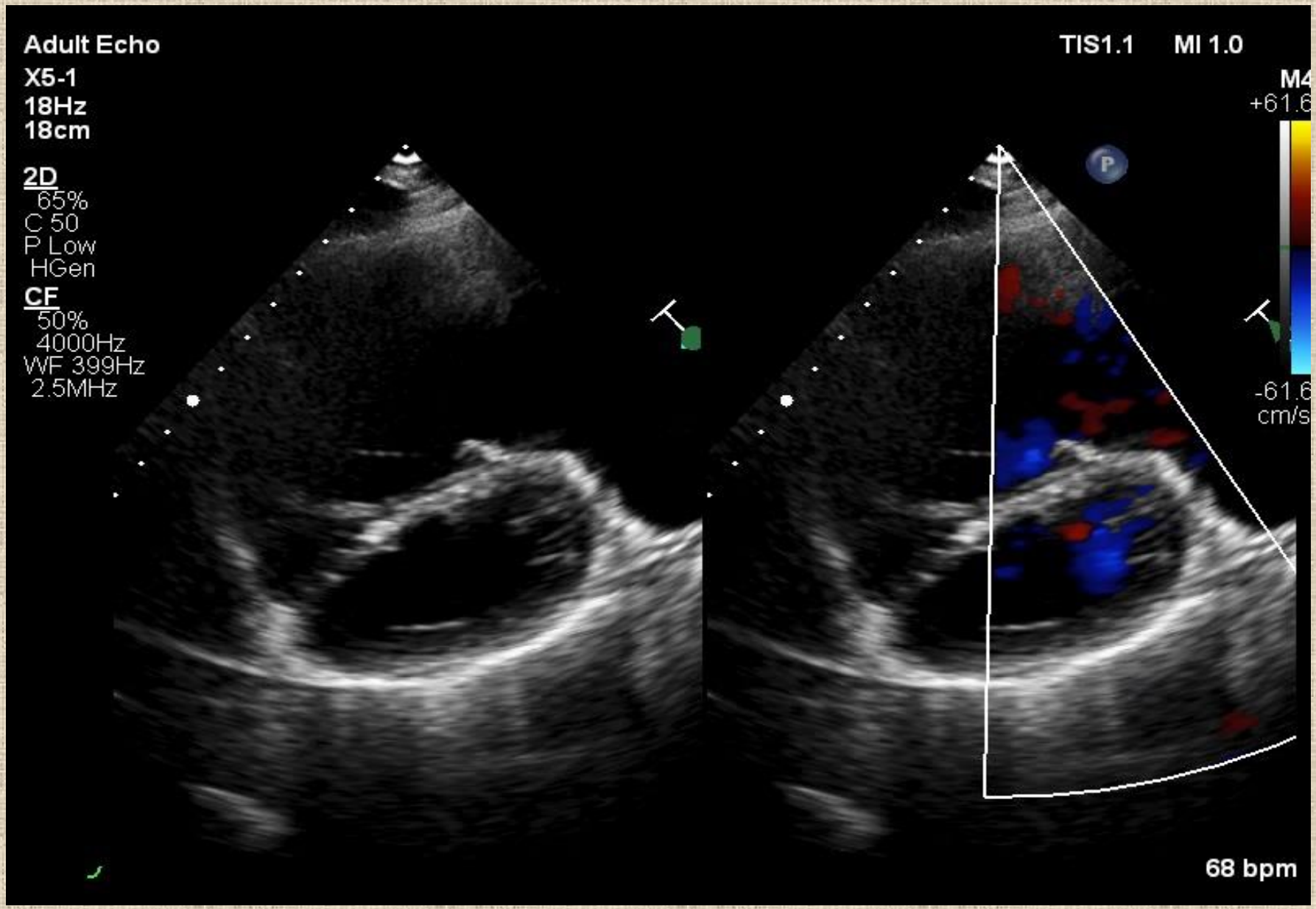

R
kV: 109
mAs: 4.6
D: 5.000
Physical EXI
Clinical EXI
DI ---
W033 Chest p.a.
2
WW:
WC:

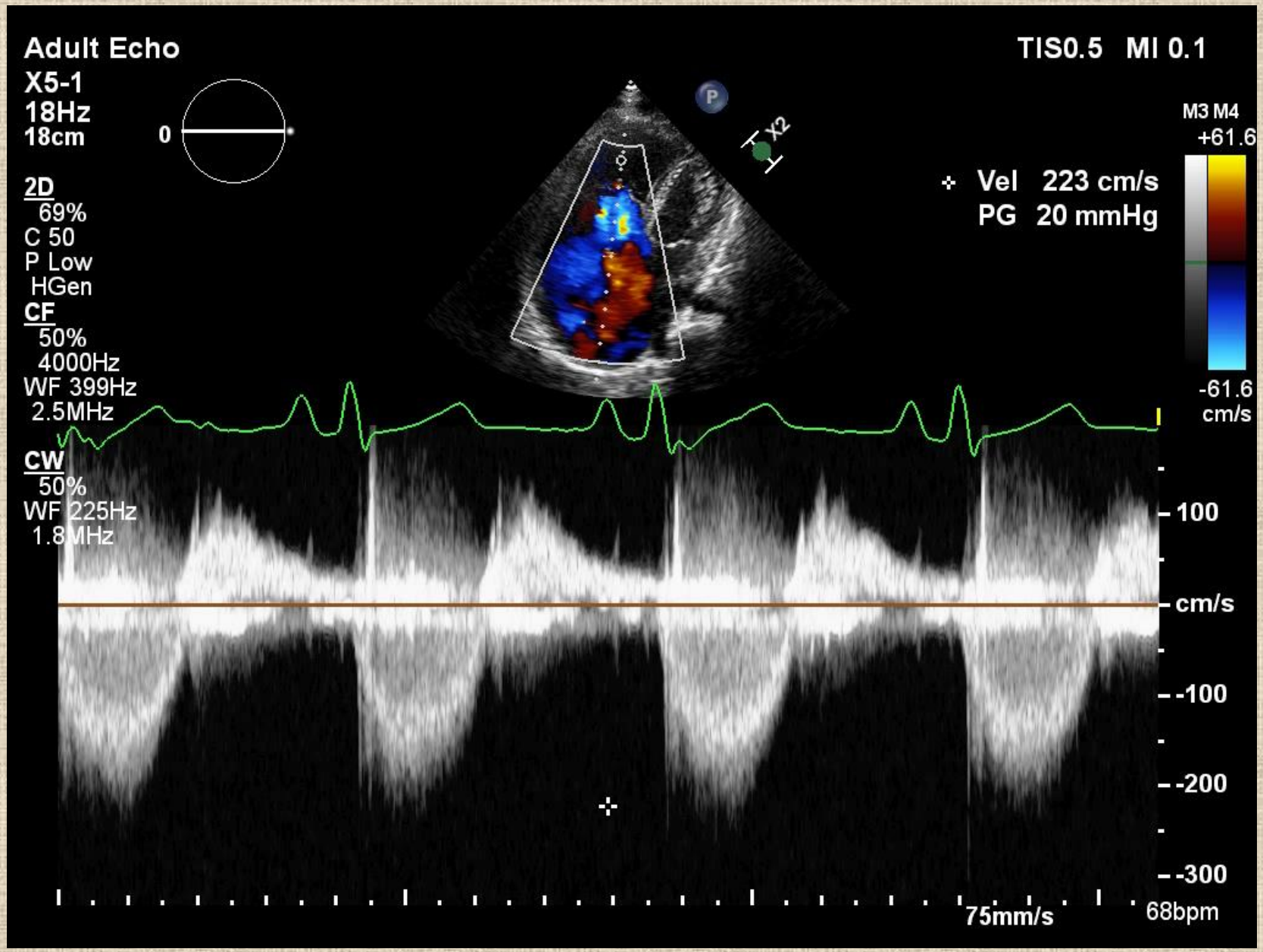

Adult Echo
X5-1
50Hz
14cm
2D
67%
C 50
P Low
HGen
0
TIS0.4
MI 1.3
M3
X2
G
P
R
1.6
3.2
65 bpm

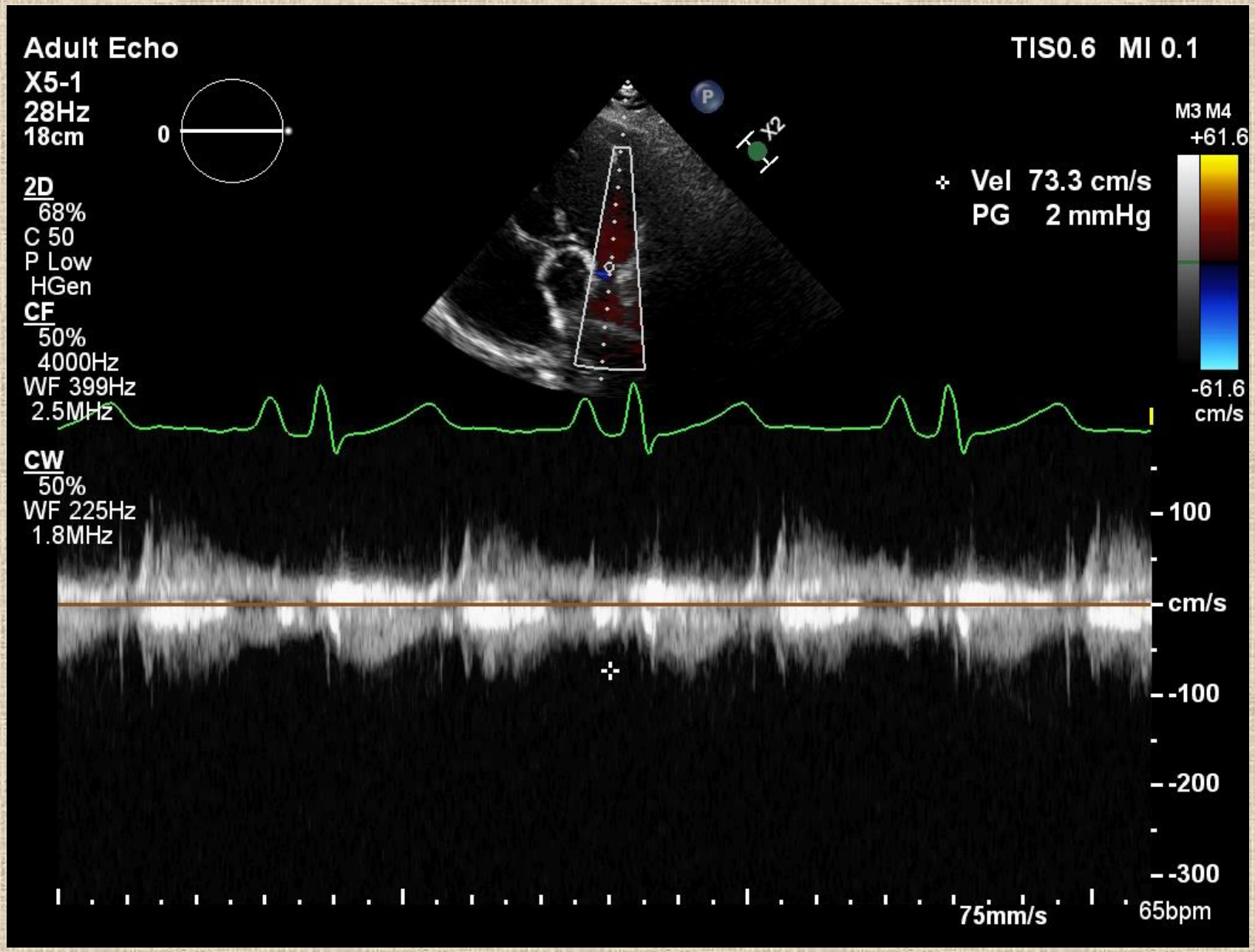

Adult Echo
X5-1
18Hz
18cm
2D
68%
C 50
P Low
HGen
CF
50%
3888Hz
WF 388Hz
2.5MHz
TIS1.1 MI 1.0
M4
+59.9
-59.9
cm/s
67 bpm


Adult Echo
X5-1
50Hz
18cm
2D
66%
C 50
P Low
HGen
TIS0.4 MI 1.3
M3
1.6 3.2
Dist 1.20 cm
68bpm

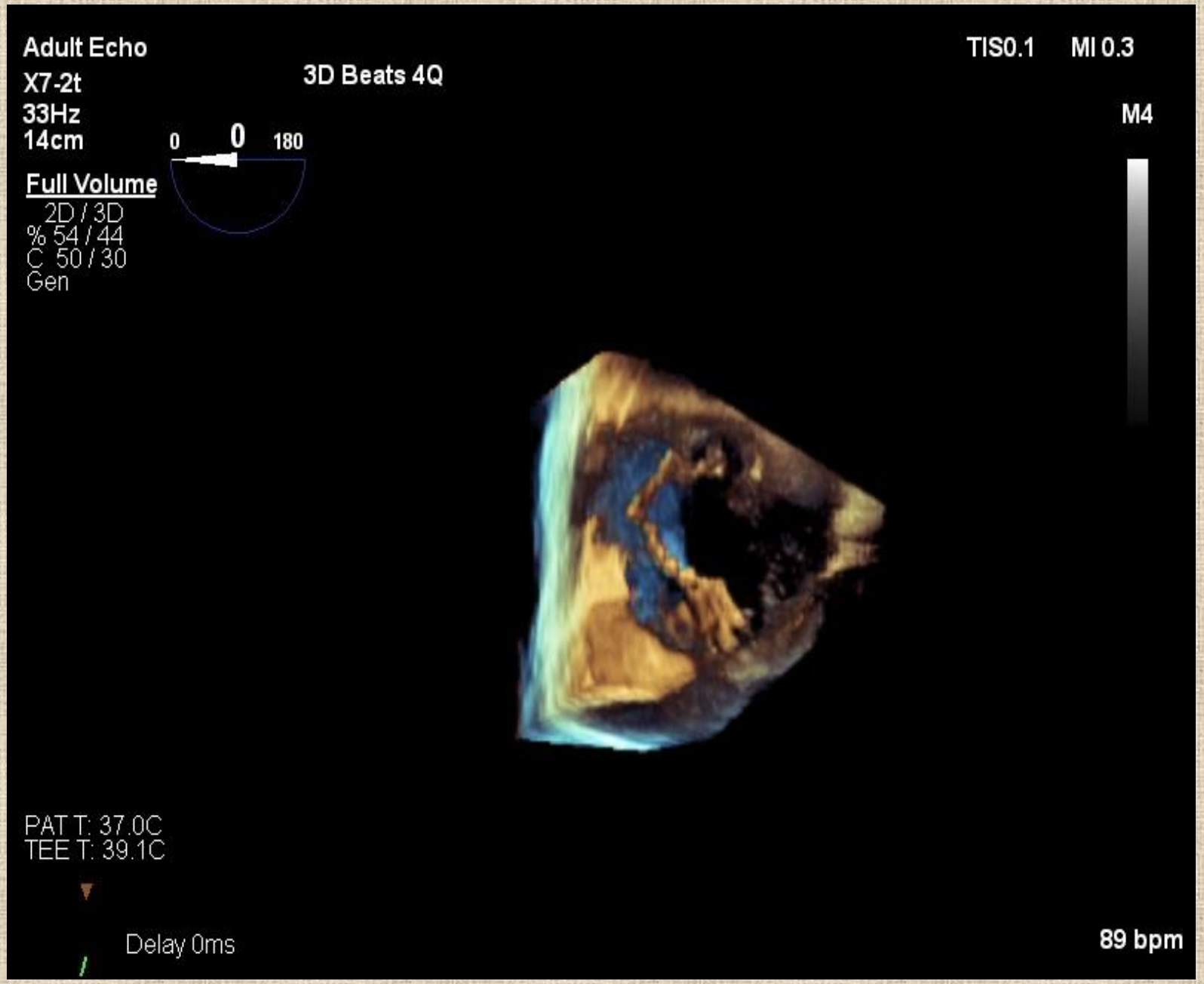

Adult Echo
X5-1
18Hz
18cm
2D
68%
C 50
P Low
HGen
CF
50%
3888Hz
WF 388Hz
2.5MHz
TIS1.1
MI 1.0
M4
+59.9
-59.9
cm/s
66 bpm


Adult Echo
X5-1
18Hz
18cm
2D
65%
C 50
P Low
HGen
CF
50%
4000Hz
WF 399Hz
2.5MHz
TIS1.1
MI 1.0
M4
+61.6
-61.6
cm/s
68 bpm

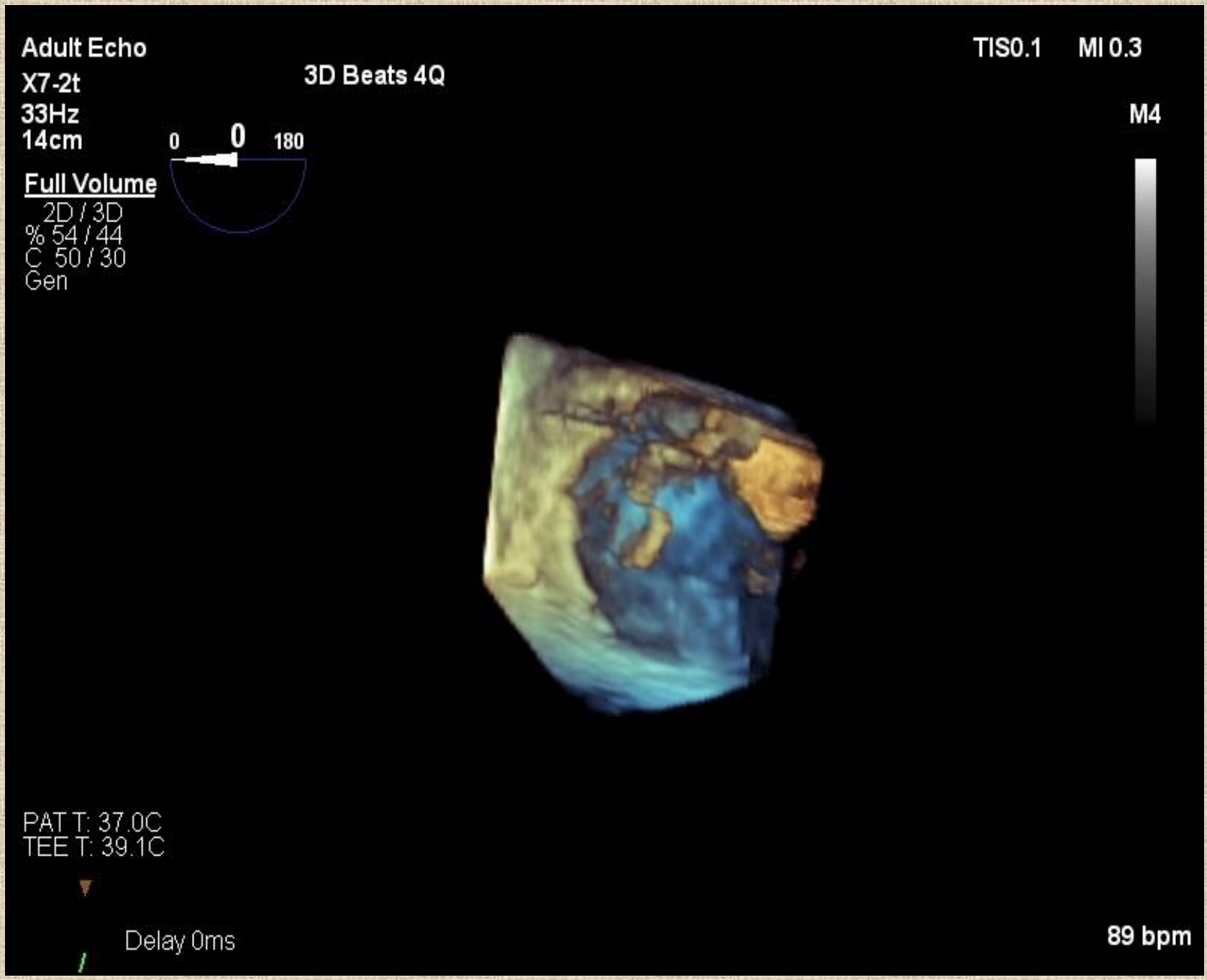

Adult Echo
X5-1
18Hz
18cm
0
TIS0.5 MI 0.1
M3 M4
+61.6
-61.6
cm/s
Vel 223 cm/s
PG 20 mmHg
2D
69%
C 50
P Low
HGen
CF
50%
4000Hz
WF 399Hz
2.5MHz
CW
50%
WF 225Hz
1.8MHz
100
cm/s
-100
-200
-300
75mm/s
68bpm


Adult Echo
X5-1
28Hz
18cm
0
TIS0.6 MI 0.1
M3 M4
+61.6
-61.6
cm/s
Vel 73.3 cm/s
PG 2 mmHg
2D
68%
C 50
P Low
HGen
CF
50%
4000Hz
WF 399Hz
2.5MHz
CW
50%
WF 225Hz
1.8MHz
100
cm/s
-100
-200
-300
75mm/s
65bpm

- What is the echocardiography Diagnosis????
- What next???


Adult Echo
X7-2t
33Hz
14cm
3D Beats 4Q
TIS0.1
MI 0.3
M4
0
0
180
Full Volume
2D / 3D
% 54 / 44
C 50 / 30
Gen
PAT T: 37.0C
TEE T: 39.1C
Delay 0ms
89 bpm

Regurgitant Orifice Area 2.98 cm2


Adult Echo
X7-2t
33Hz
14cm
Full Volume
2D / 3D
% 54 / 44
C 50 / 30
Gen
3D Beats 4Q
0
0
180
TIS0.1
MI 0.3
M4
PAT T: 37.0C
TEE T: 39.1C
Delay 0ms
89 bpm


TV L Prolapse

TAKE HOME MESSAGE

- Careful echocardiographic evaluation not only helps in diagnosis of rare disease but it leads to proper management

- Cardiac MRI,Cardiac CT and other multi modality imaging add on the echocardiographic information and helps in diagnosis


THANK
YOU