Παρουσίαση περιστατικού

Ευαγγελία Χριστοφοράτου

Καρδιολόγος

Διευθύντρια

Υπερηχοκαρδιογραφικού Εργαστηρίου & Τμήματος Βηματοδοτών Απινιδωτών Βιοκλινικής Αθηνών

Επιστημονικός Συνεργάτης Α΄ Πανεπιστημιακής Καρδιολογικής Κλινικής ΙΓΝΑ

Αθήνα, 17-03-2018

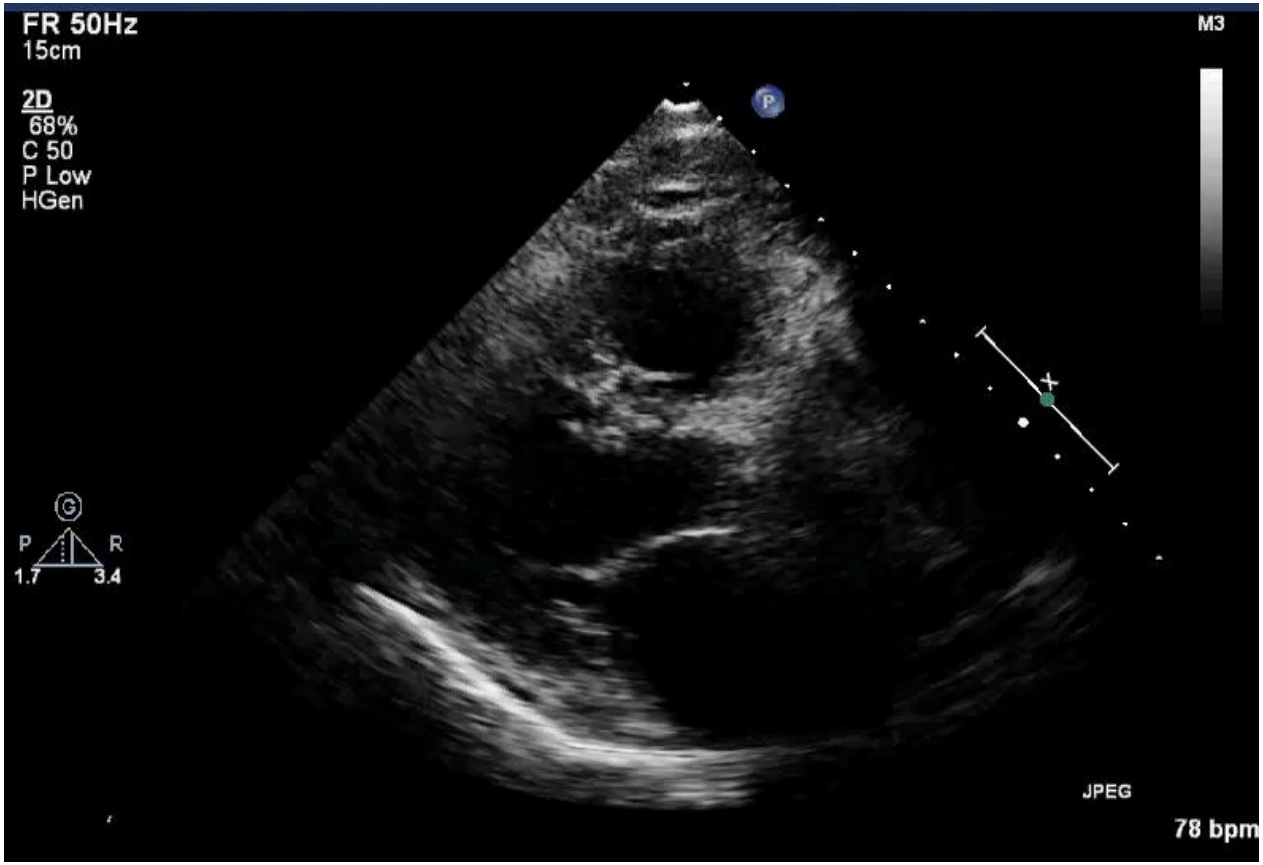
ΙΣΤΟΡΙΚΟ

- ΑΣΘΕΝΗΣ 77 ΕΤΩΝ
- ΥΠΕΡΤΑΣΙΚΟΣ,ΔΙΑΒΗΤΙΚΟΣ.
- ΧΡΟΝΙΑ ΚΟΛΠΙΚΗ ΜΑΡΜΑΡΥΓΗ ΑΓΝΩΣΤΟΥ ΕΝΑΡΞΕΩΣ
- ΑΝΑΦΕΡΟΜΕΝΗ ΔΥΣΠΝΟΙΑ ΠΡΟΣΠΑΘΕΙΑΣ
- ΗΚΓ:ΑΓ,ΔΕΞΙΟΣ ΑΞΟΝΑΣ

ΚΛΙΝΙΚΗ ΕΞΕΤΑΣΗ

ΑΚΡΟΑΣΗ ΚΑΡΔΙΑΣ

- Συστολικό φύσημα εξωθήσεως 2ο μεσοπλεύριο διάστημα
- Ολοσυστολικό φύσημα 3ο-4ο μεσοπλεύριο διάστημα παραστερνικά αριστερά.


FR 50Hz
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2D
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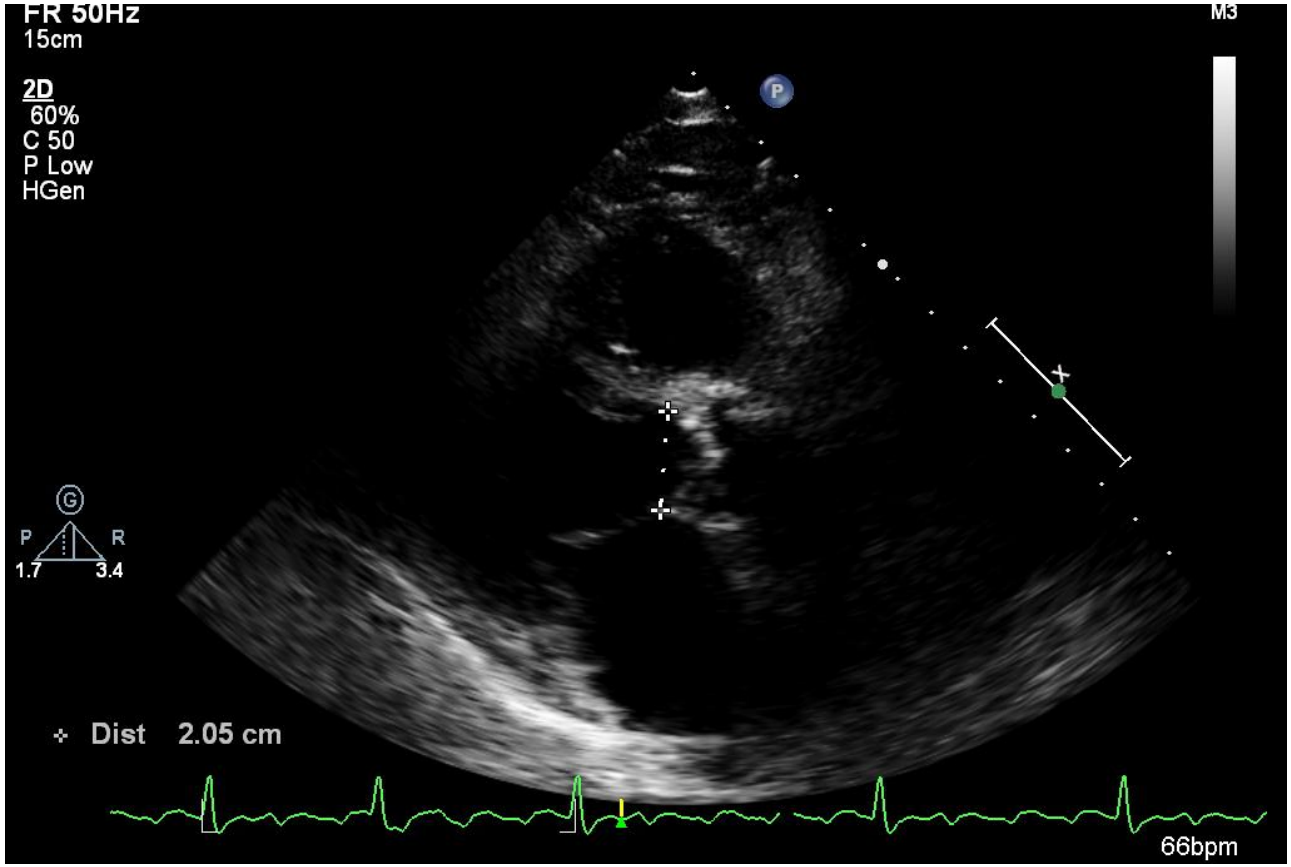
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
JPEG
78 bpm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G
P
R
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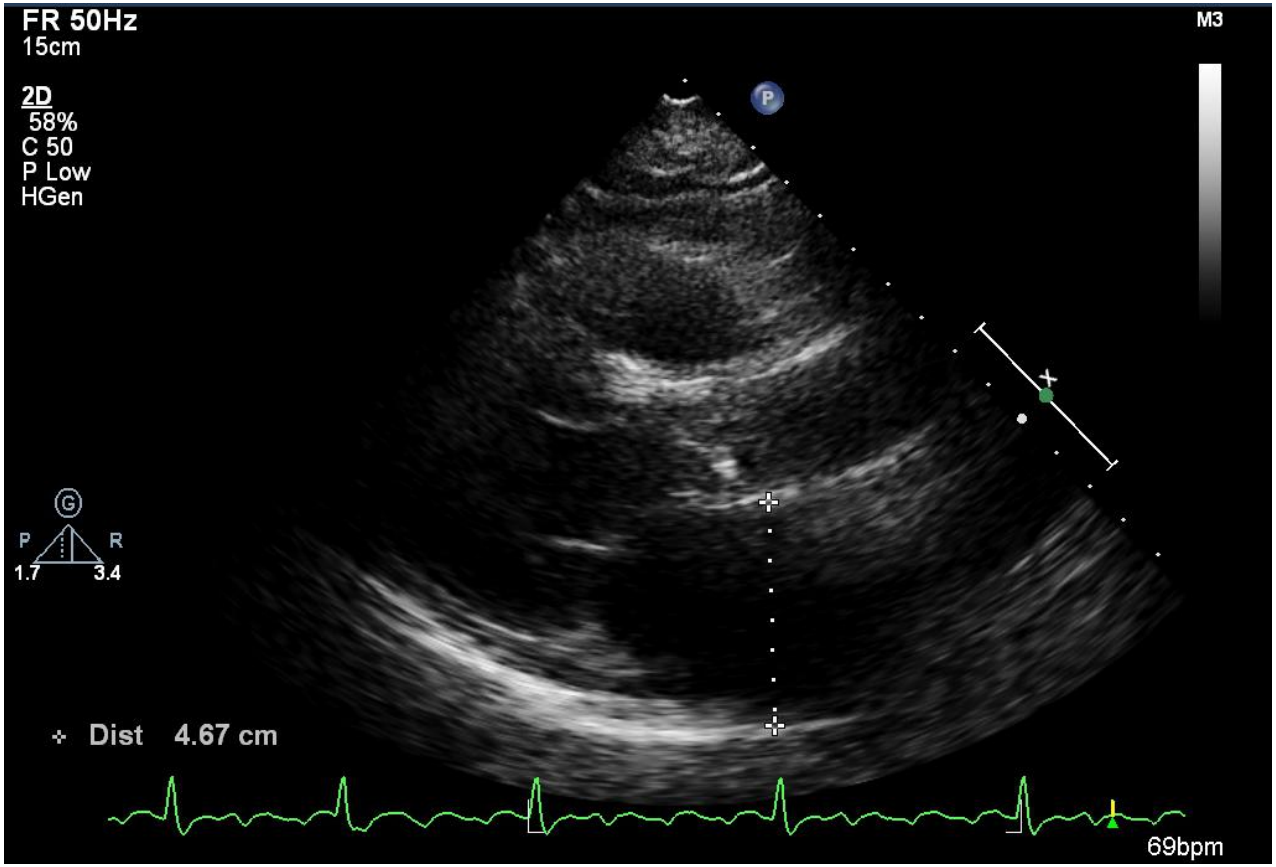
3.4
Dist 2.05 cm
66bpm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P Low
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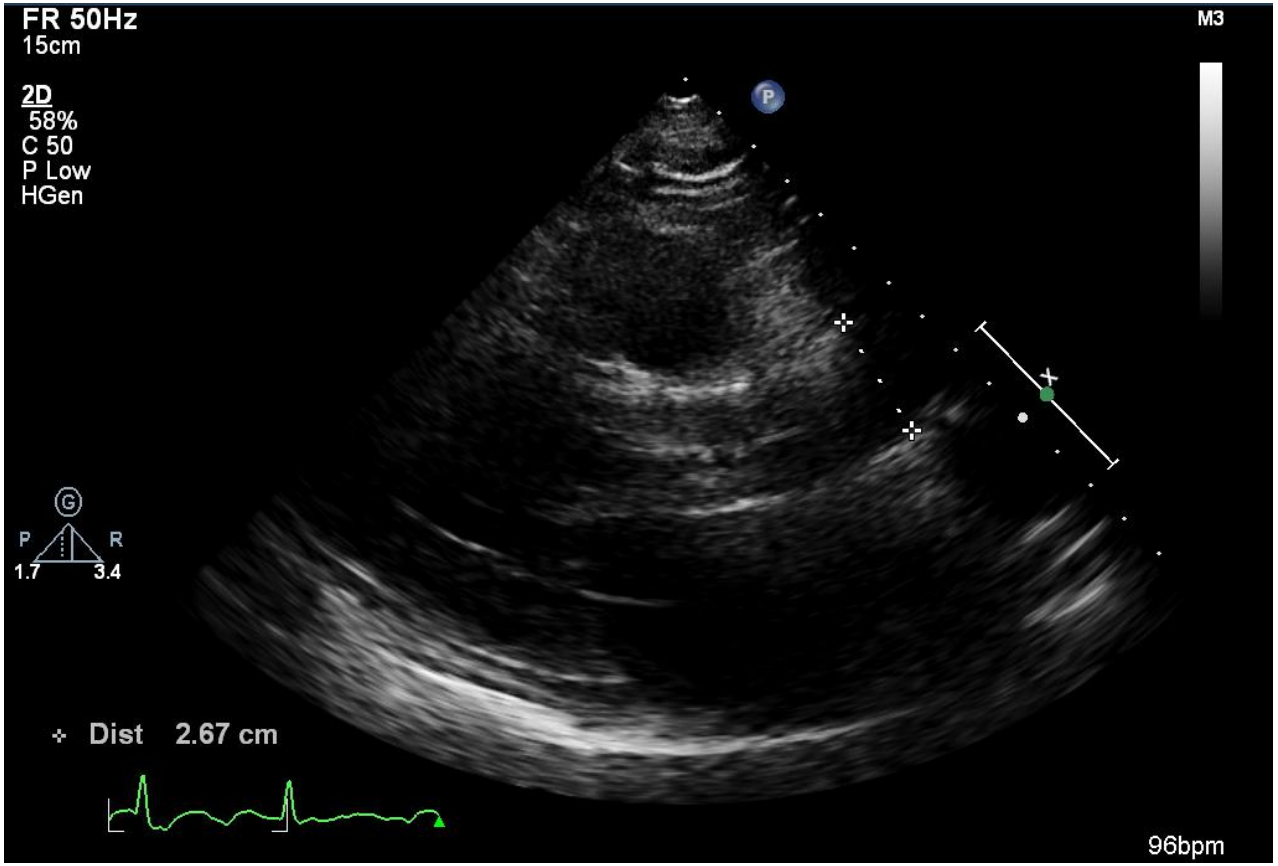
M3
P
G
P
R
1.7
3.4
Dist 4.67 cm
69bpm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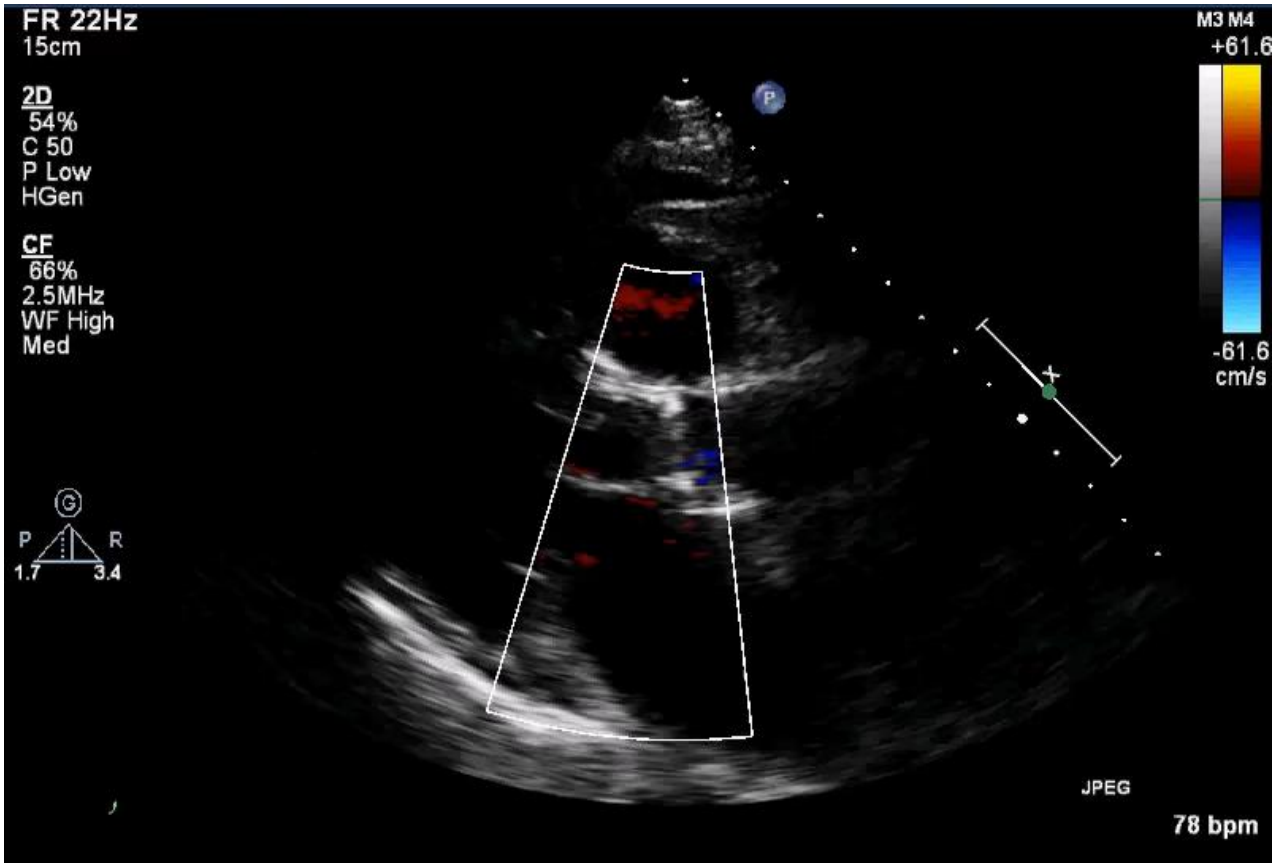
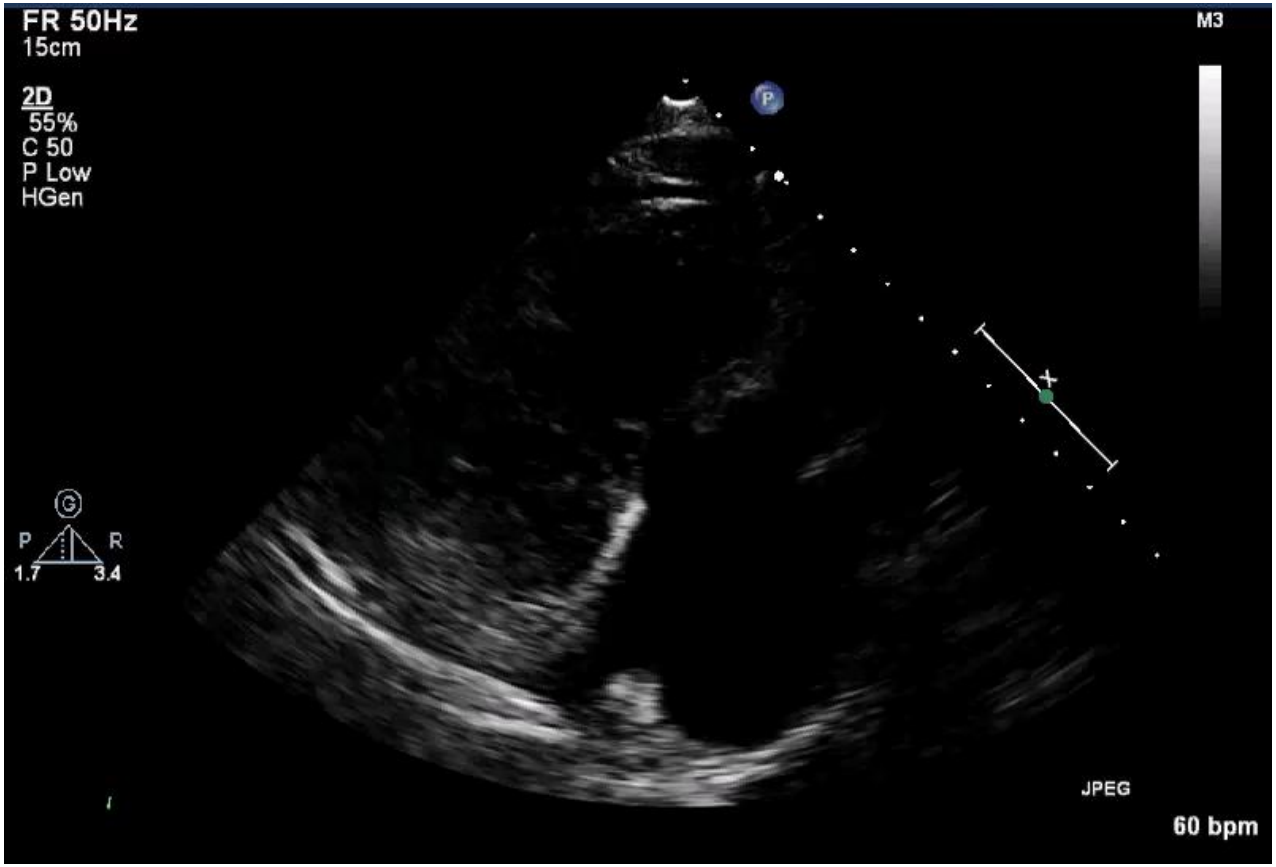
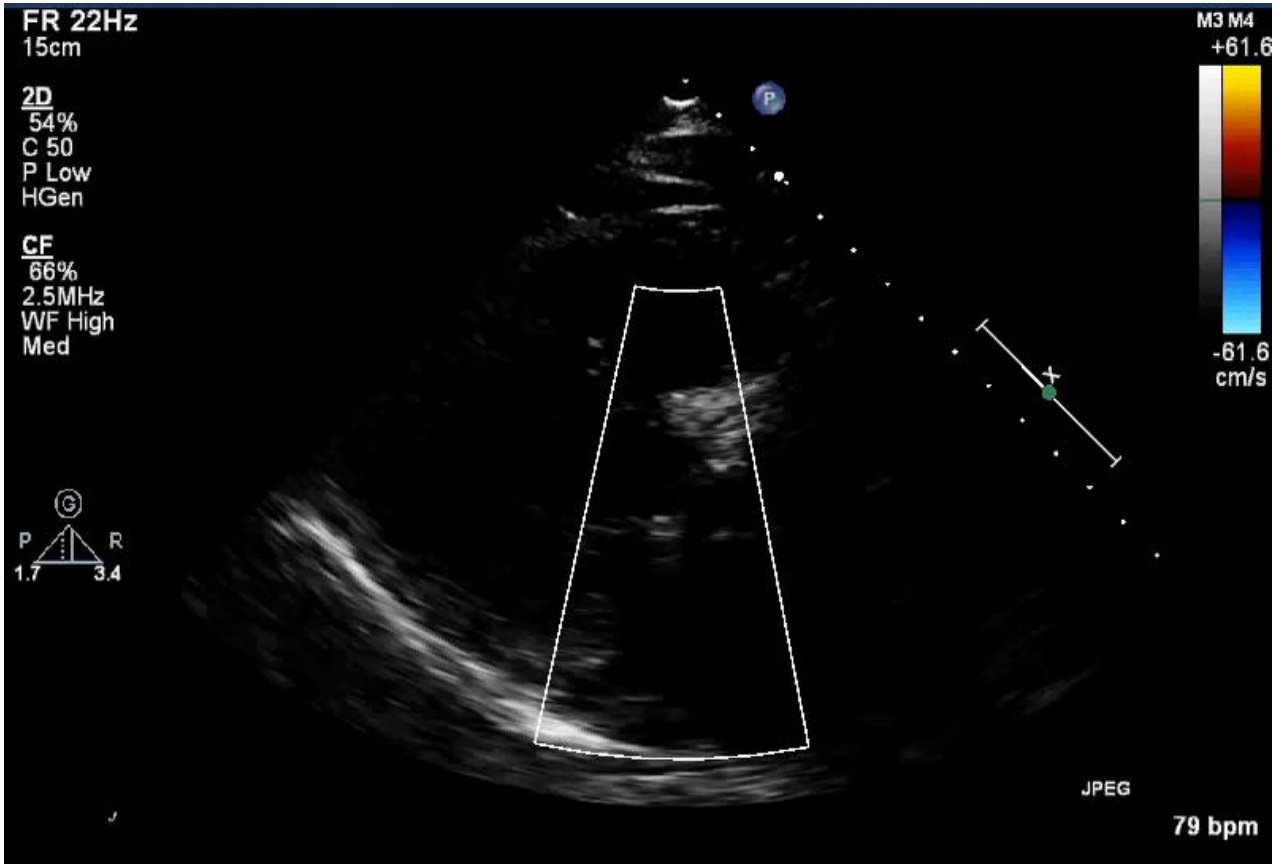
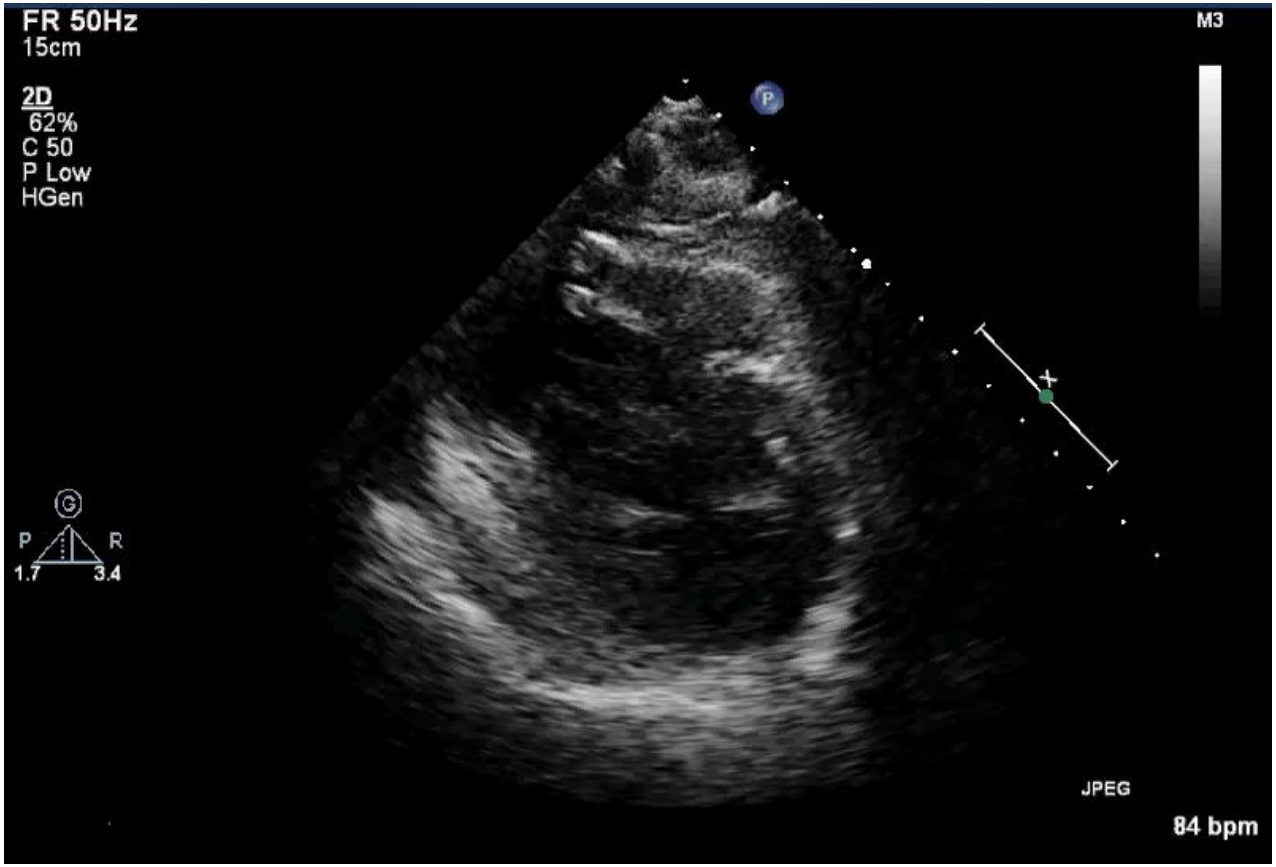
15cm
2D
58%
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
Dist 2.67 cm
96bpm


FR 22Hz
15cm
2D
54%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
G
P
R
1.7
3.4
M3 M4
+61.6
-61.6
cm/s
JPEG
78 bpm


FR 50Hz
15cm
2D
55%
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
JPEG
60 bpm


FR 22Hz
15cm
2D
54%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
P
R
1.7
3.4
M3 M4
+61.6
-61.6
cm/s
JPEG
79 bpm


FR 50Hz
15cm
2D
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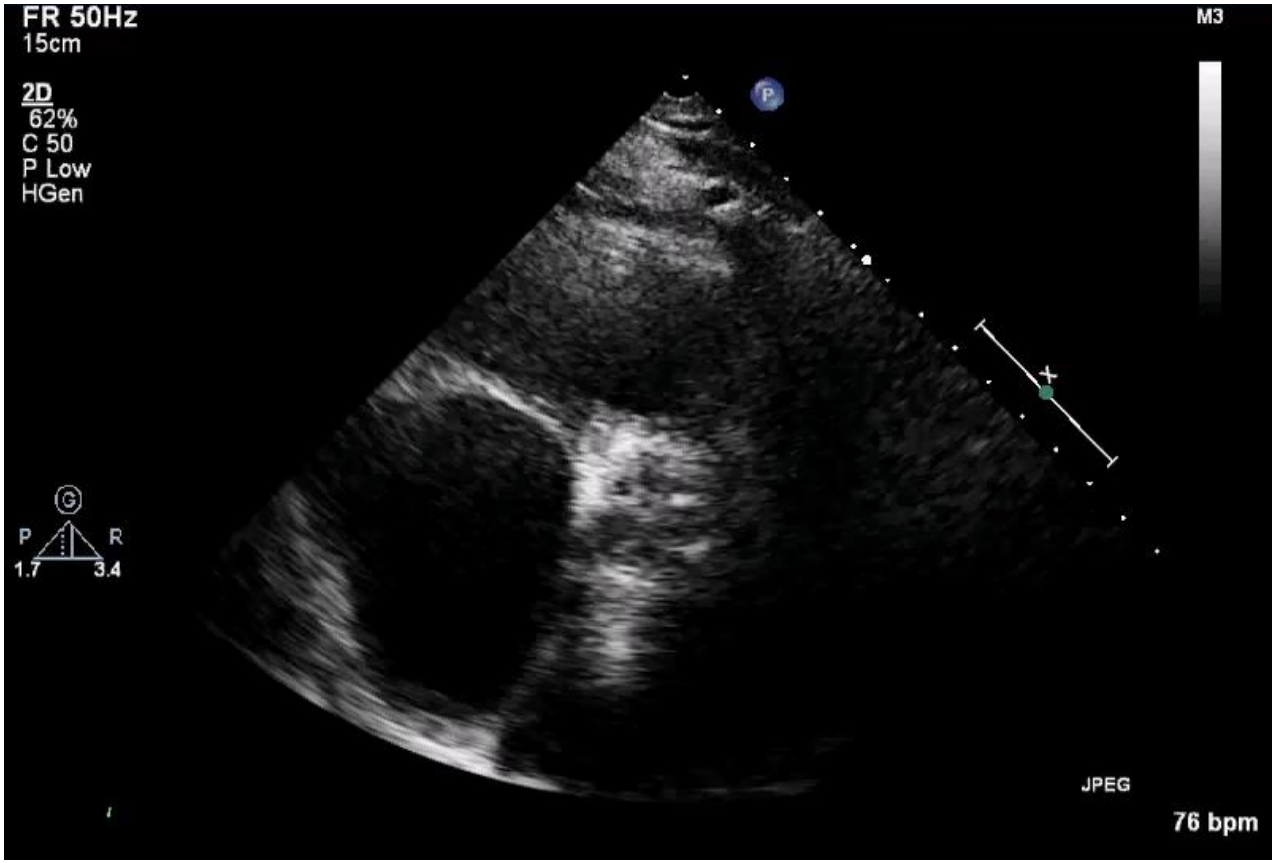
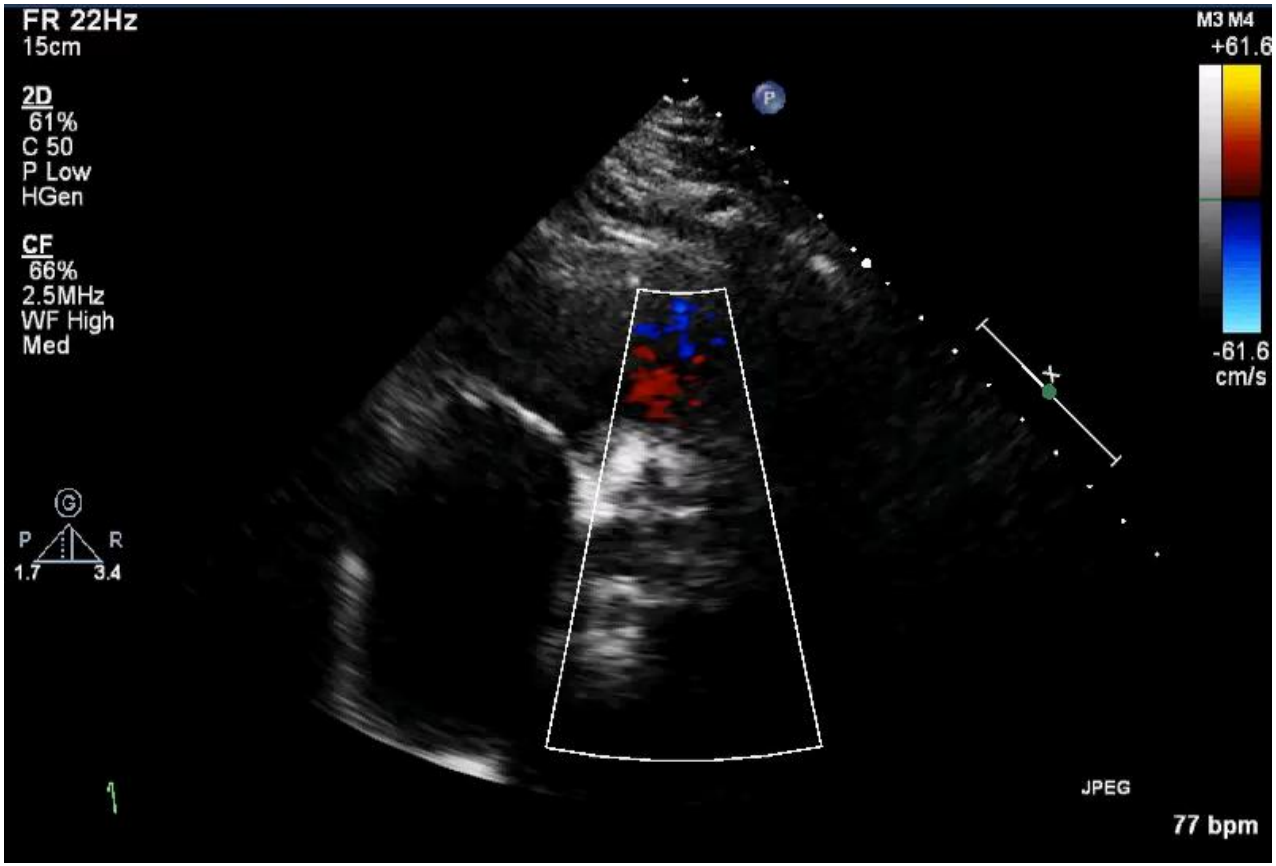
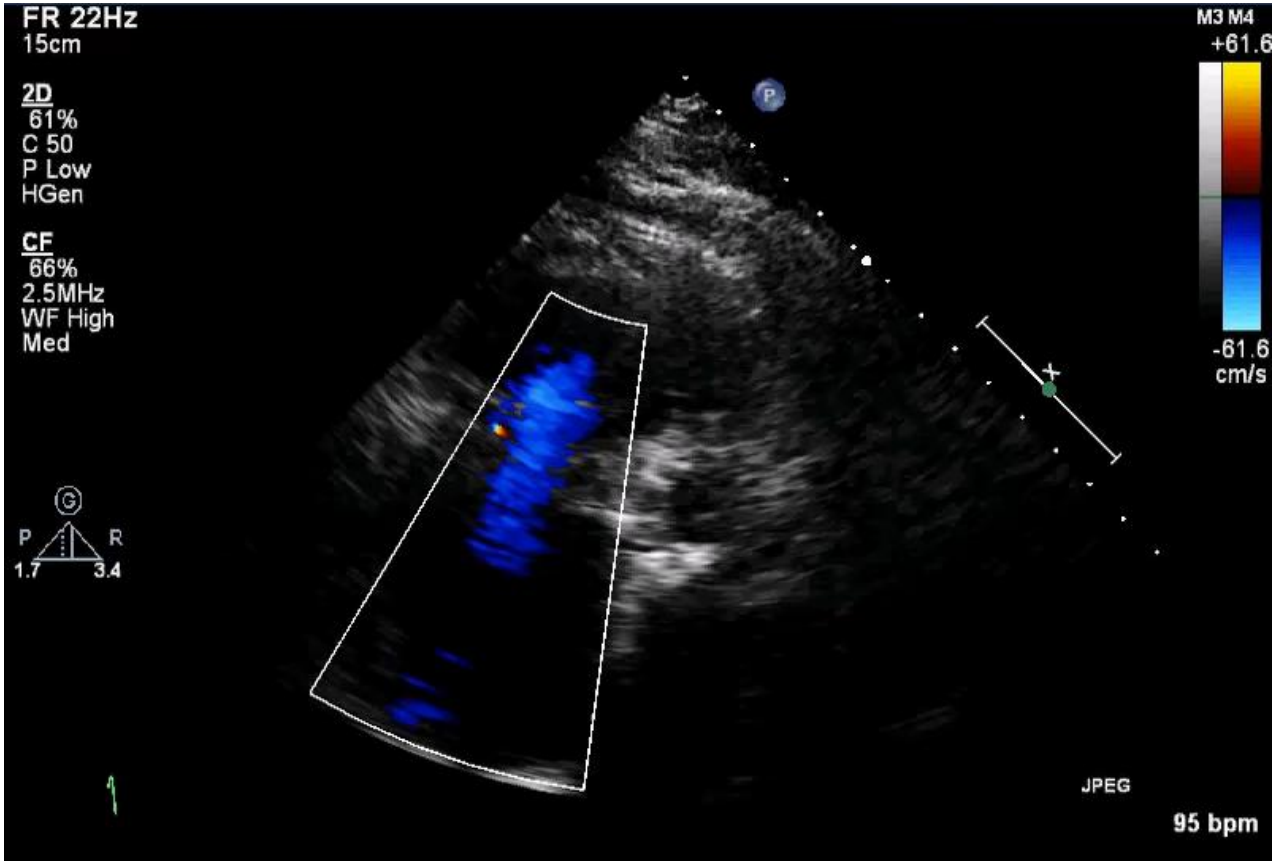
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
JPEG
84 bpm


FR 50Hz
15cm
2D
62%
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
JPEG
76 bpm


FR 22Hz
15cm
2D
61%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
G
P
R
1.7
3.4
M3 M4
+61.6
-61.6
cm/s
JPEG
77 bpm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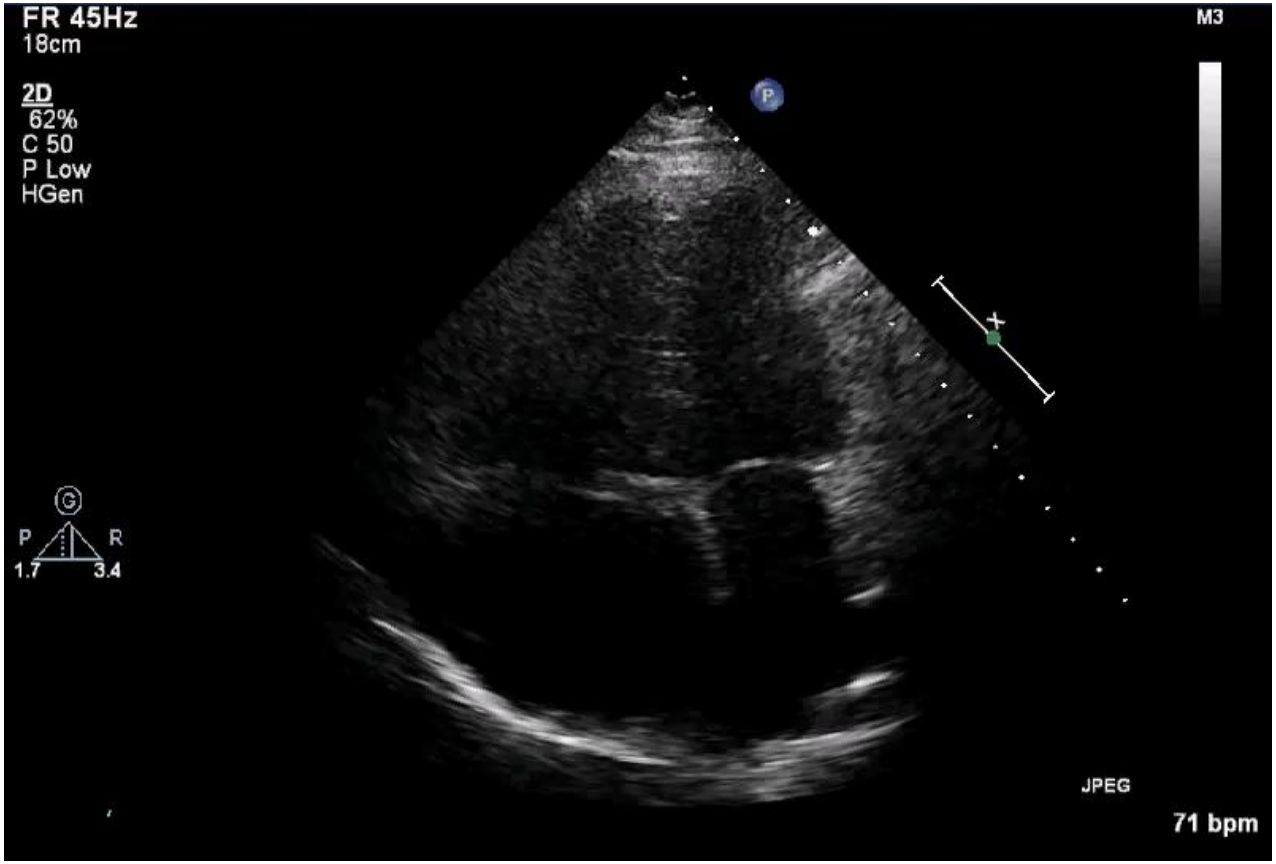
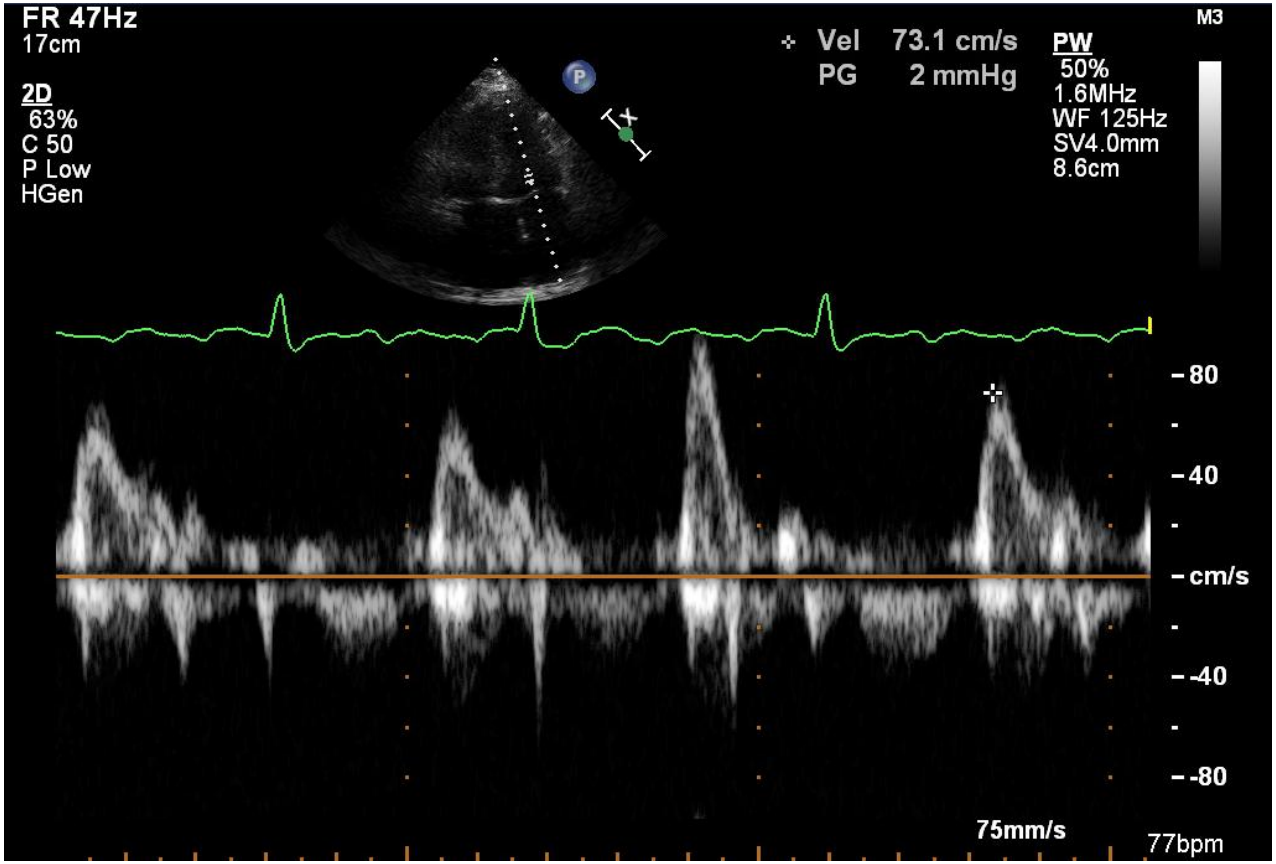
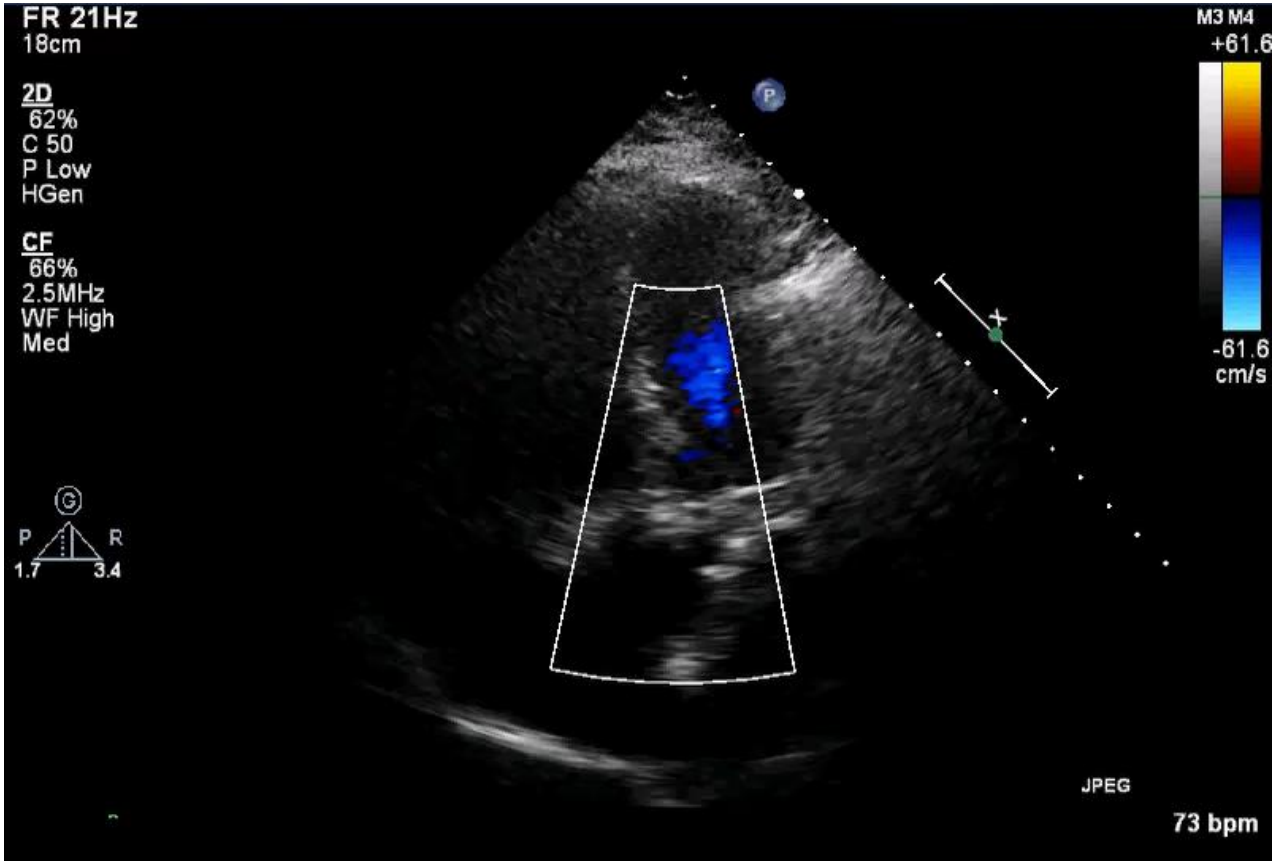
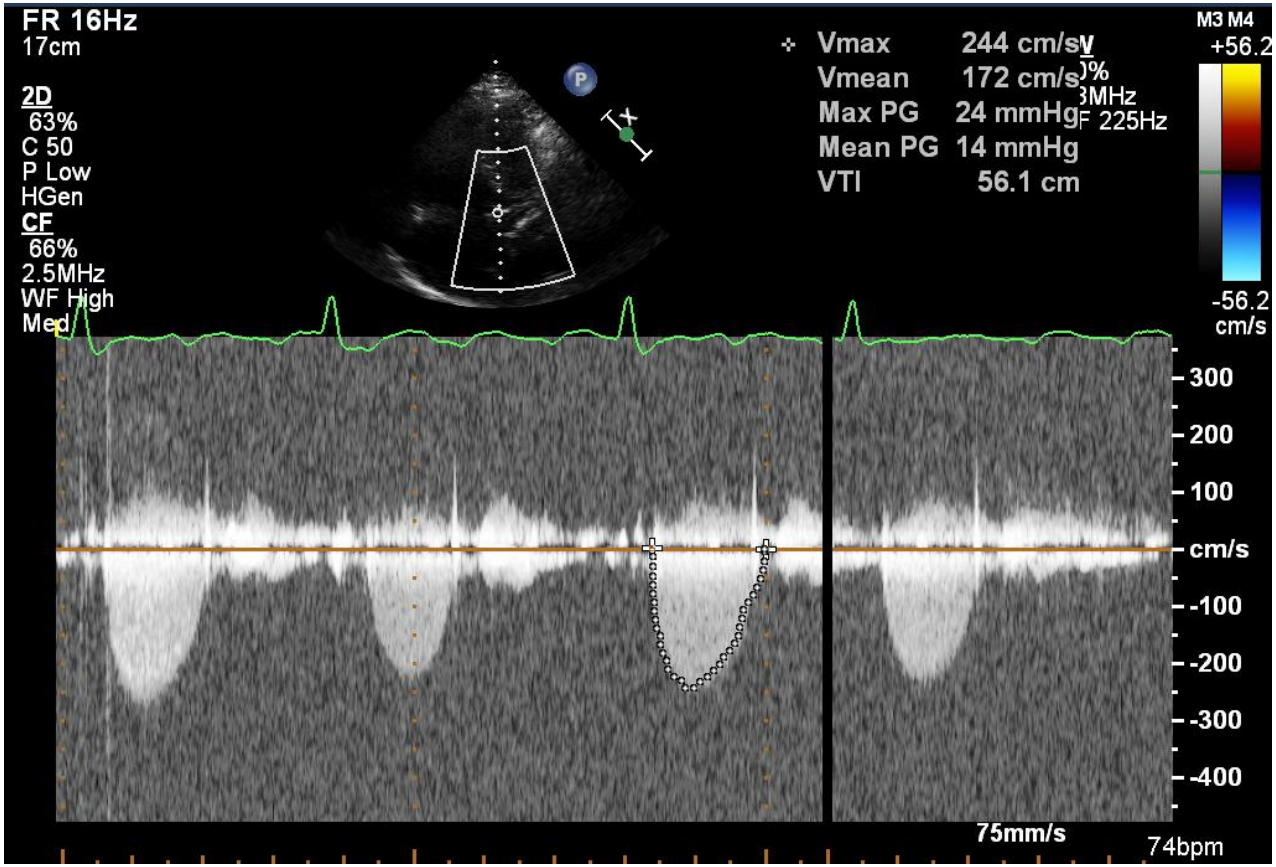
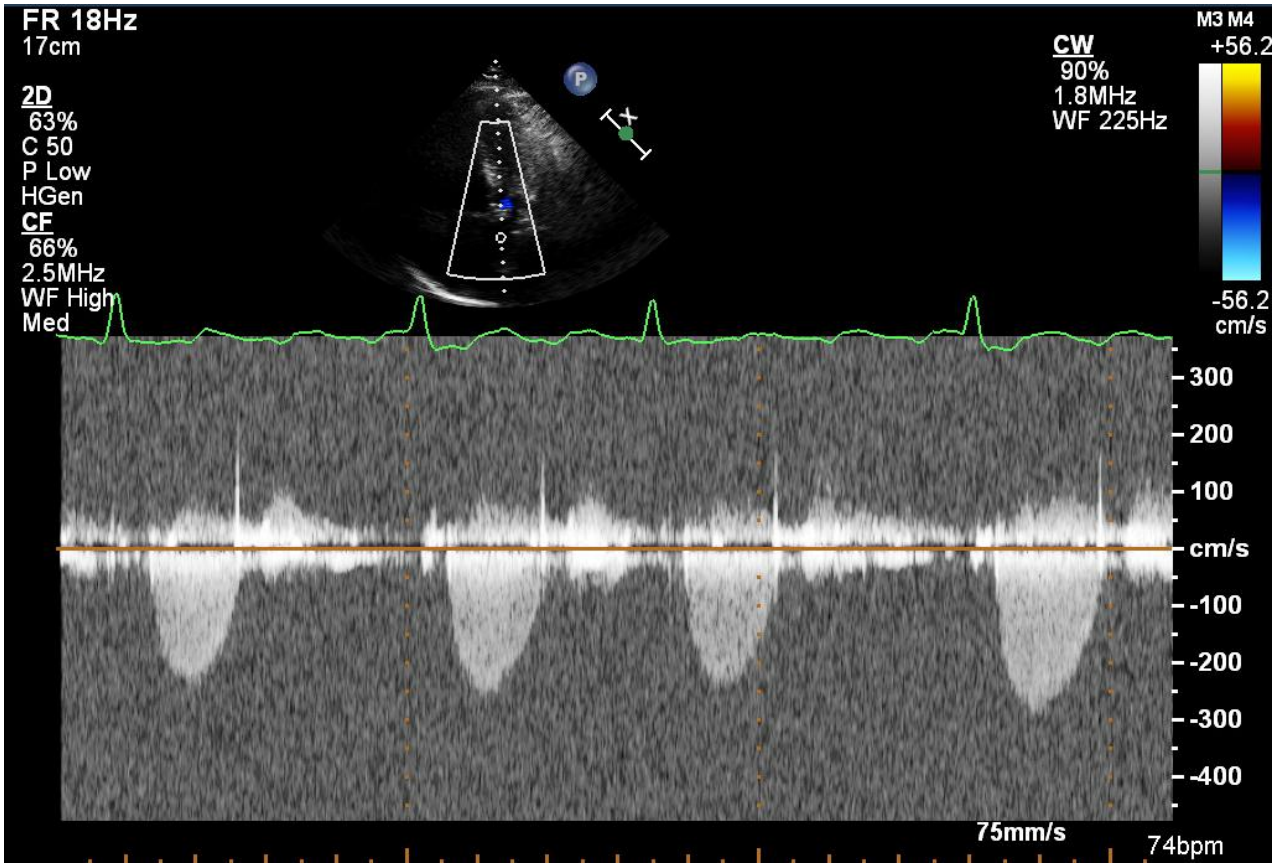
15cm
2D
61%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
M3 M4
+61.6
-61.6
cm/s
P
R
1.7
3.4
JPEG
95 bpm

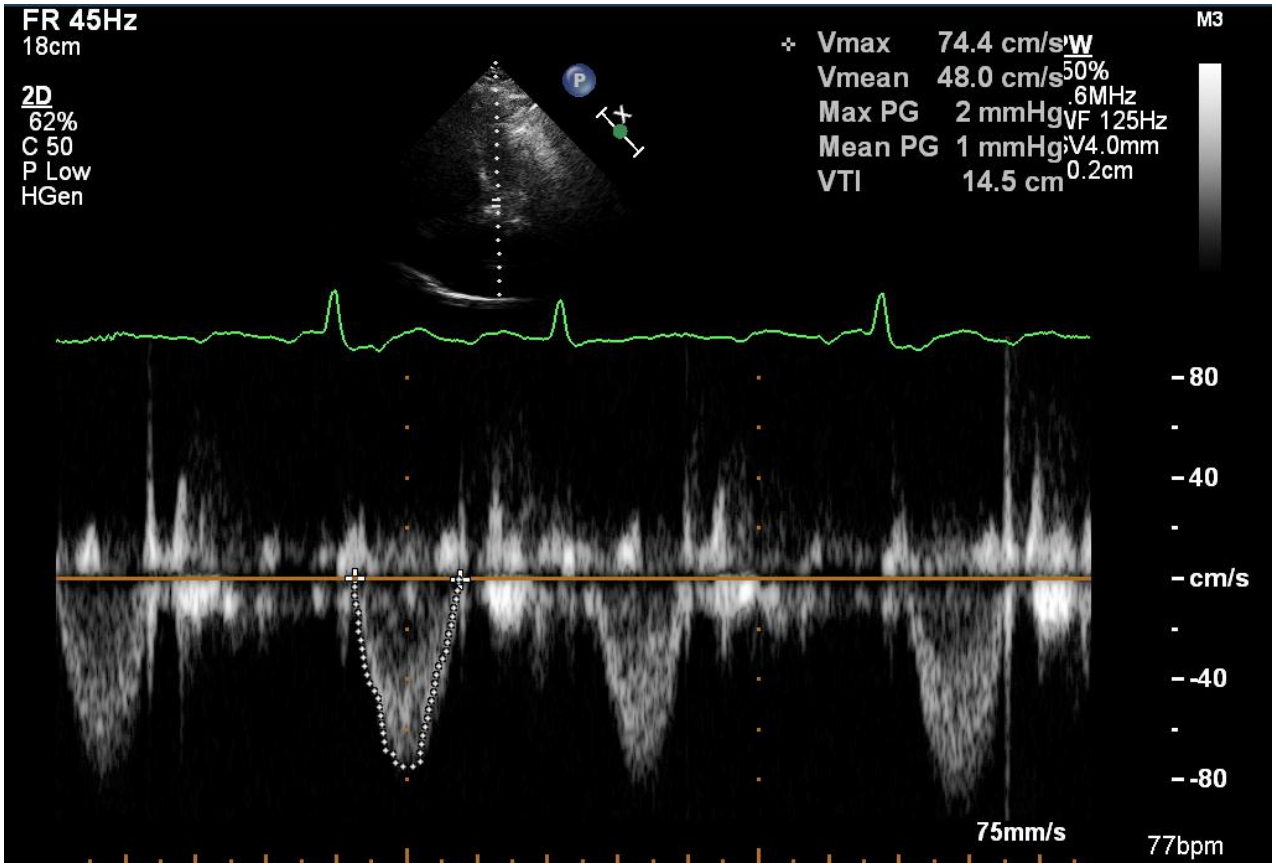

FR 45Hz
18cm
2D
62%
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
JPEG
71 bpm

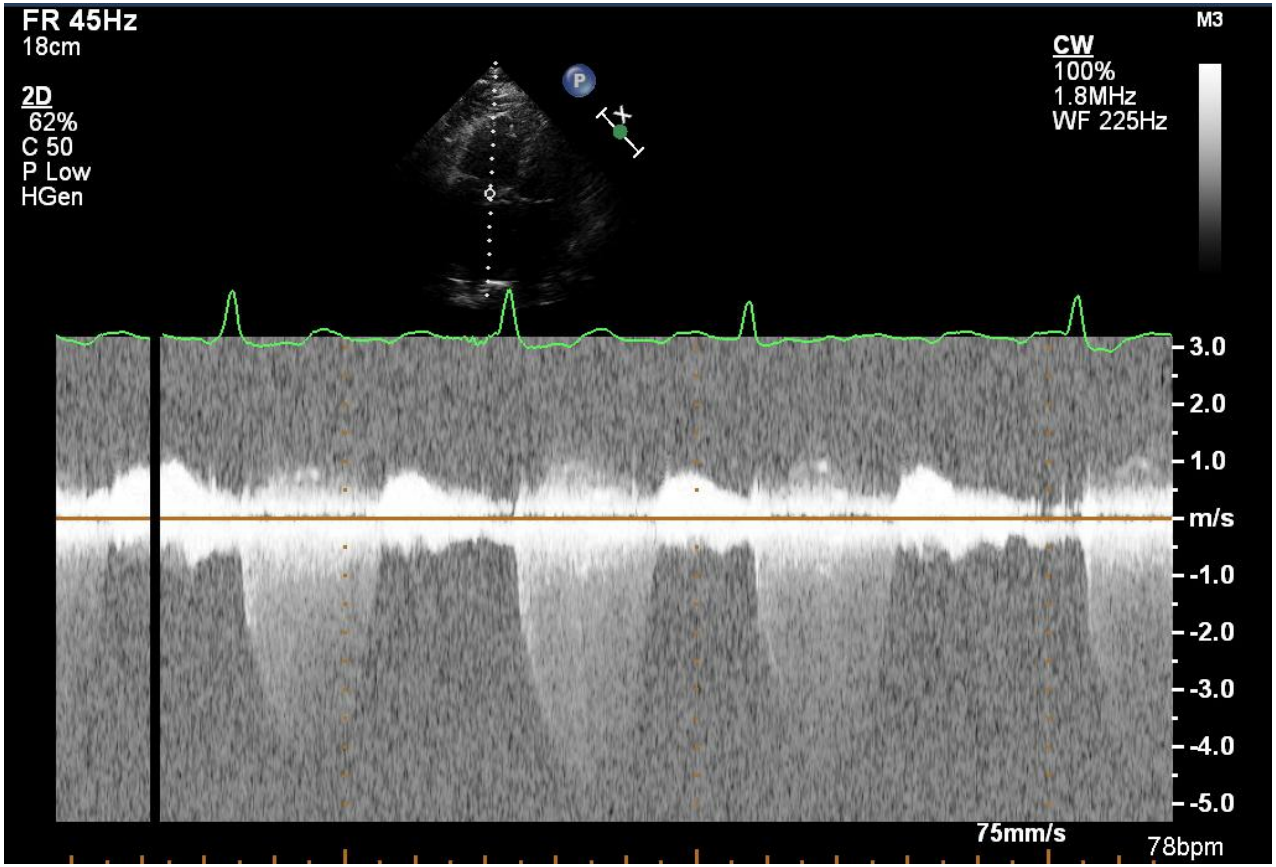

FR 47Hz
17cm
2D
63%
C 50
P Low
HGen
Vel 73.1 cm/s
PG 2 mmHg
PW
50%
1.6MHz
WF 125Hz
SV4.0mm
8.6cm
M3
80
40
cm/s
-40
-80
75mm/s
77bpm

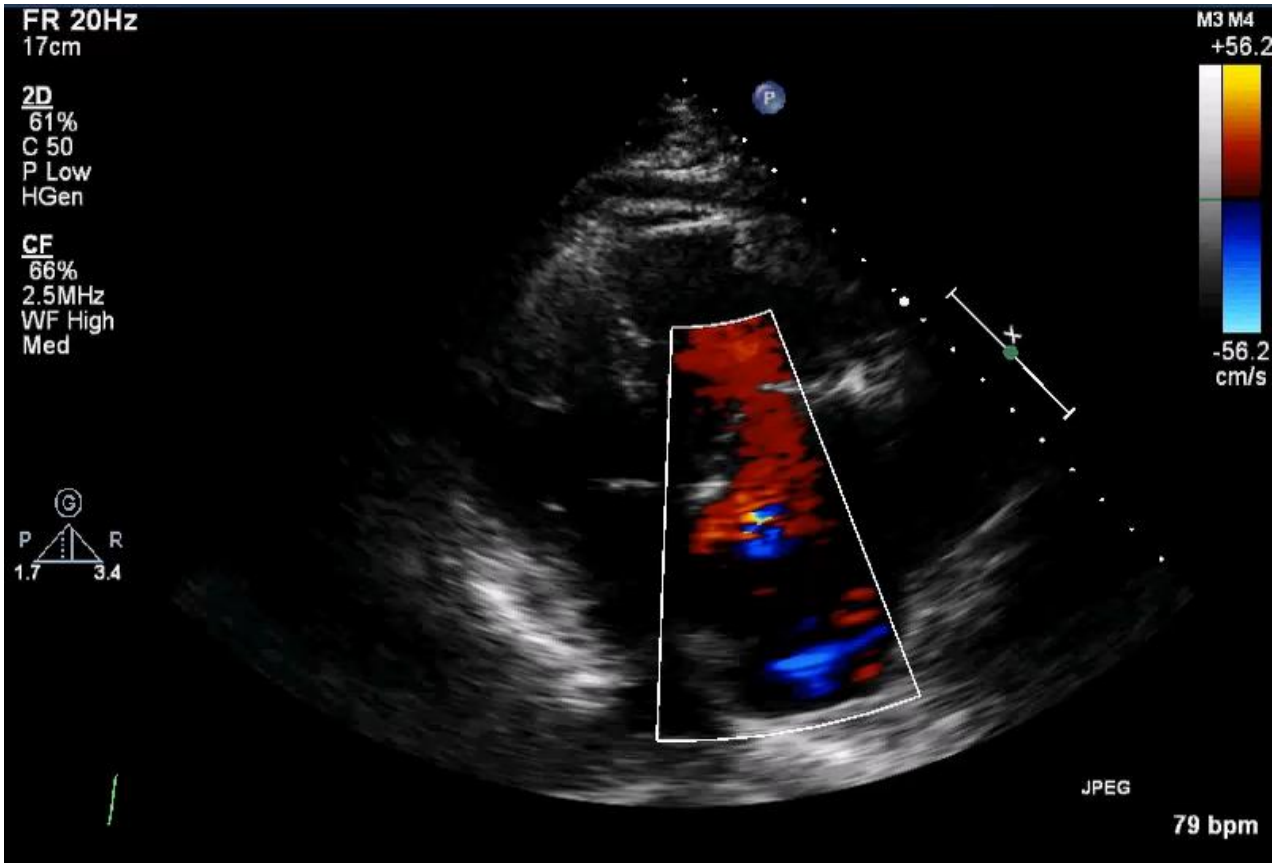

FR 21Hz
18cm
2D
62%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
G
P
R
1.7
3.4
M3 M4
+61.6
-61.6
cm/s
JPEG
73 bpm

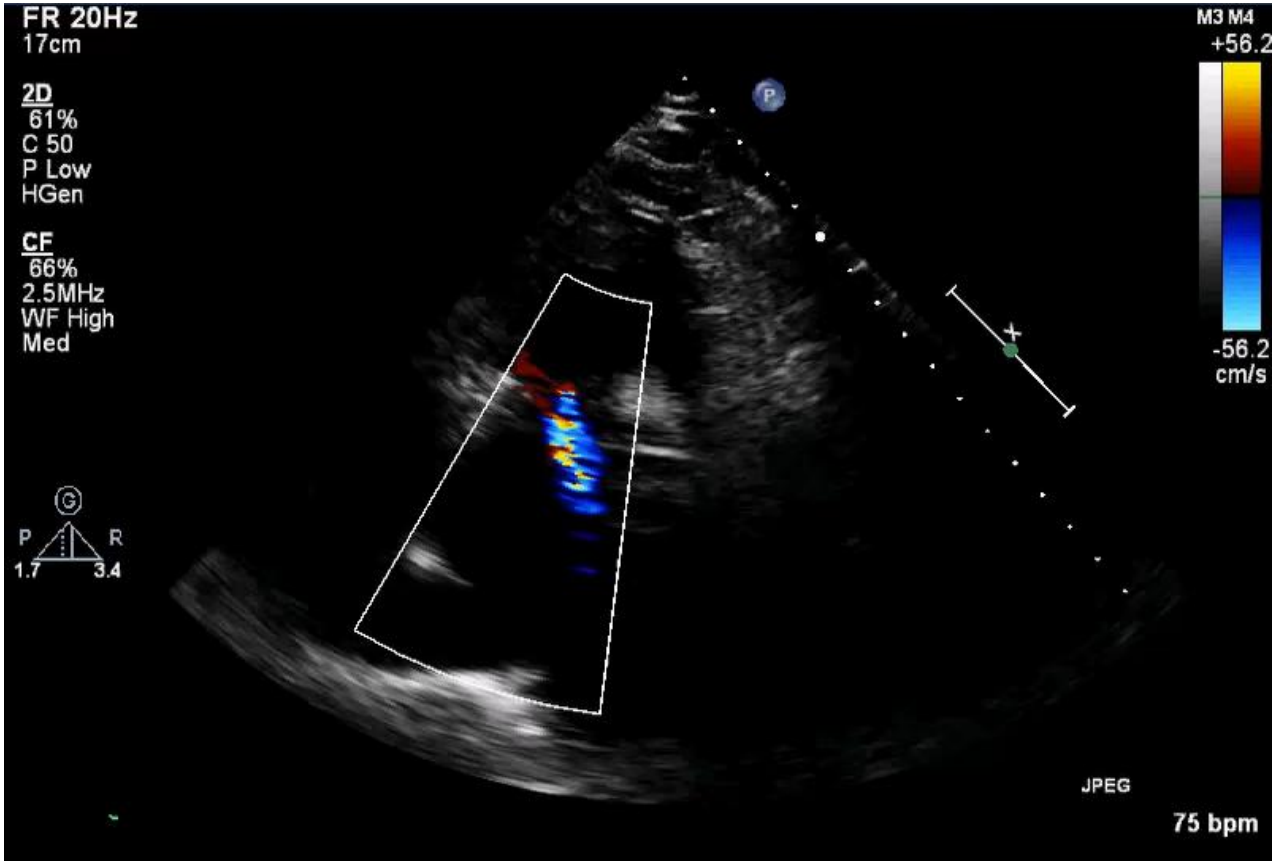

FR 16Hz
17cm
2D
63%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
Vmax 244 cm/s
Vmean 172 cm/s
Max PG 24 mmHg
Mean PG 14 mmHg
VTI 56.1 cm
M3 M4
+56.2
-56.2
cm/s
300
200
100
cm/s
-100
-200
-300
-400
75mm/s
74bpm

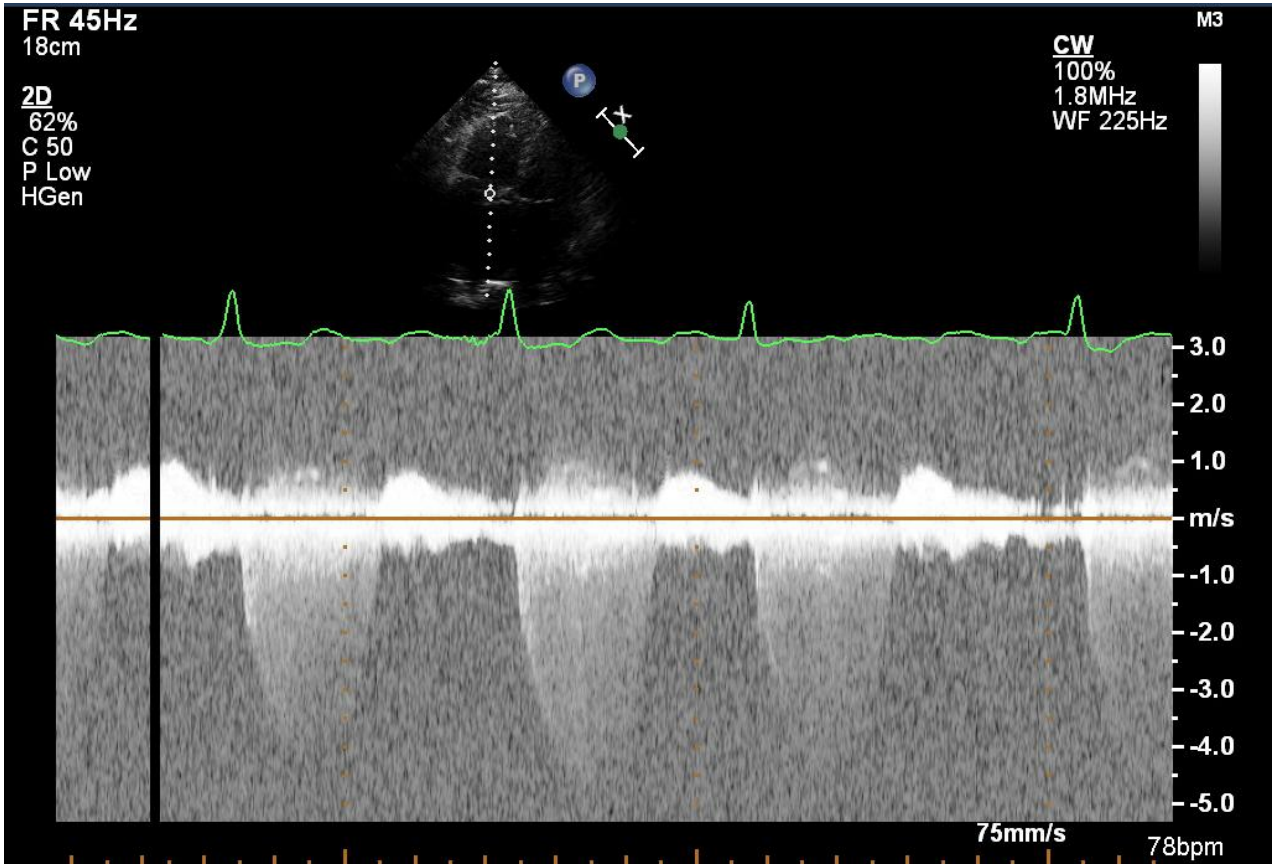

FR 18Hz
17cm
2D
63%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
CW
90%
1.8MHz
WF 225Hz
M3 M4
+56.2
-56.2
cm/s
300
200
100
cm/s
-100
-200
-300
-400
75mm/s
74bpm

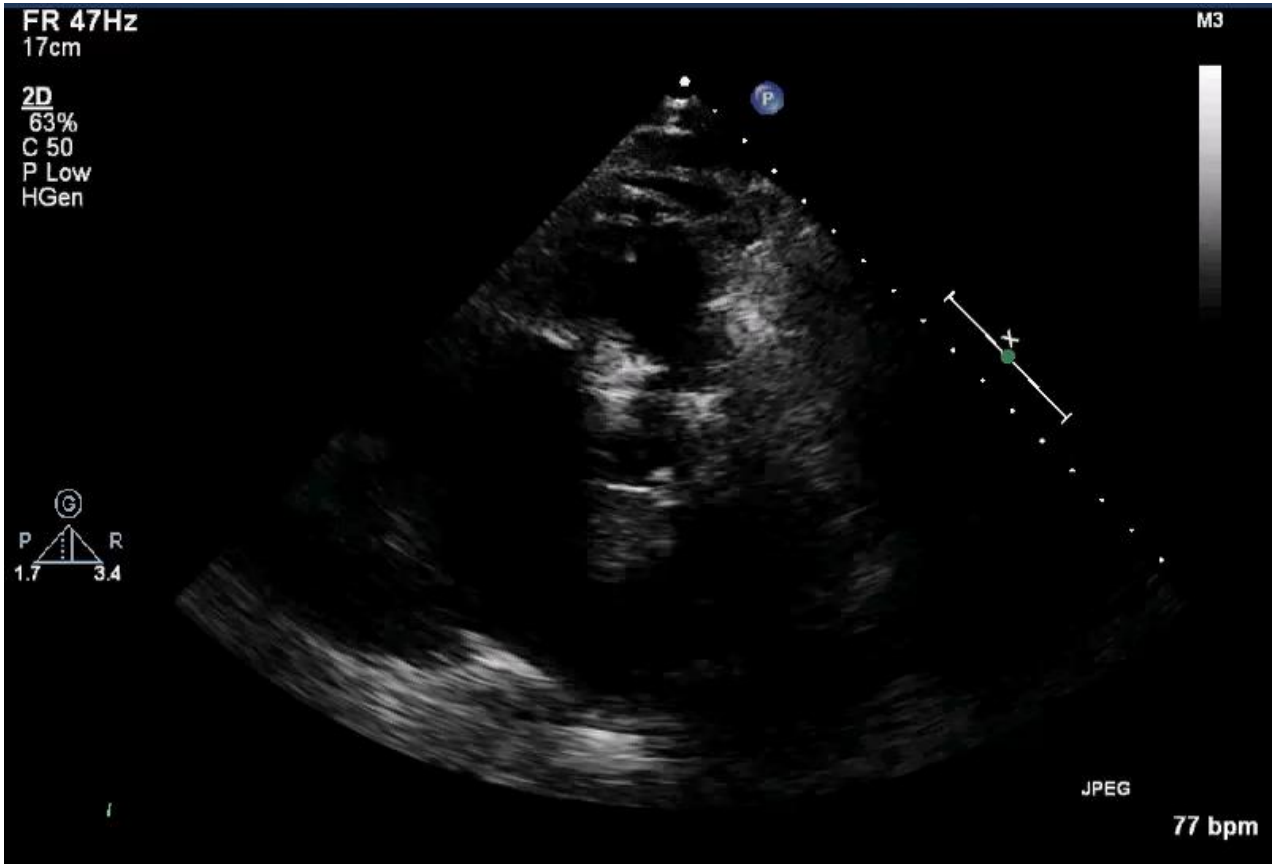

FR 45Hz
18cm
2D
62%
C 50
P Low
HGen
Vmax 74.4 cm/s
Vmean 48.0 cm/s
Max PG 2 mmHg
Mean PG 1 mmHg
VTI 14.5 cm
W
50%
.6MHz
VF 125Hz
V4.0mm
0.2cm
M3
80
40
cm/s
-40
-80
75mm/s
77bpm

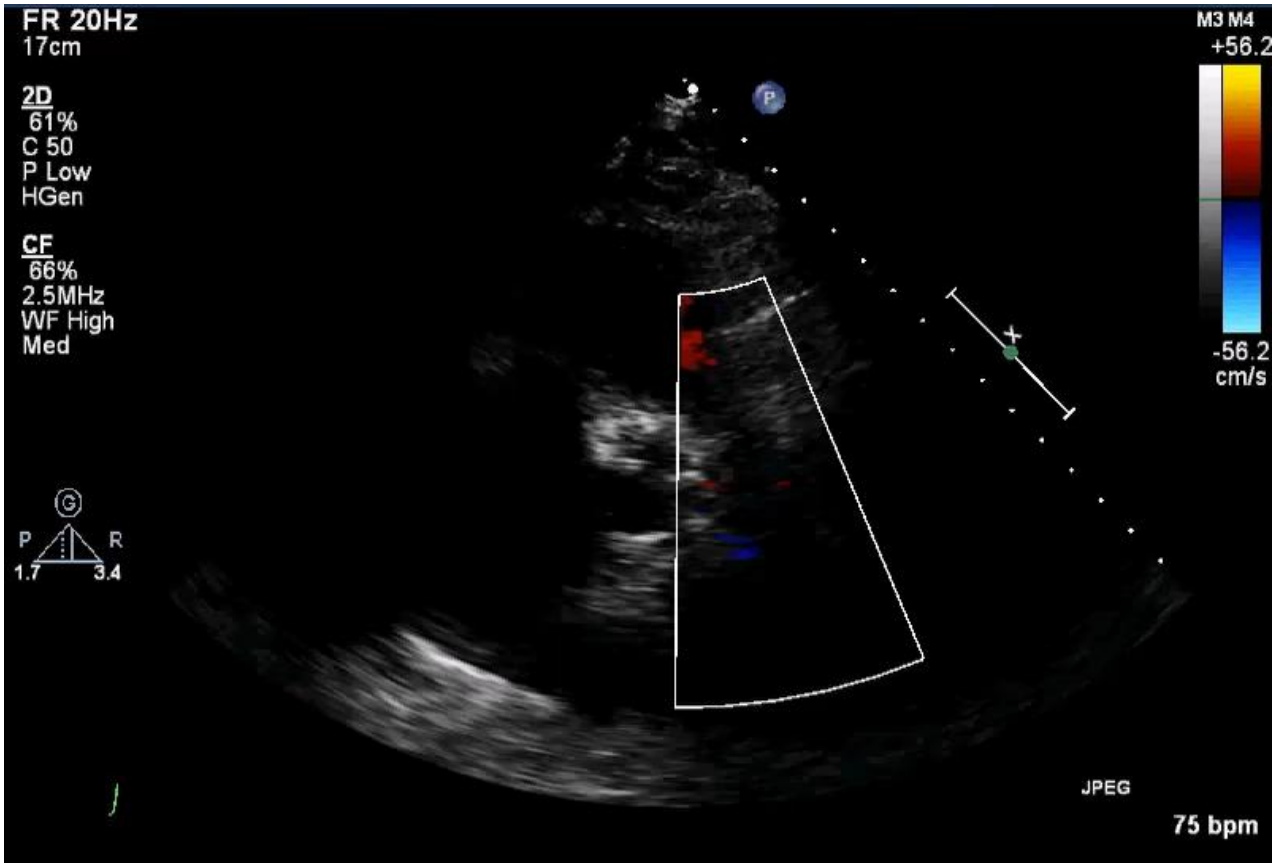

FR 45Hz
18cm
2D
62%
C 50
P Low
HGen
CW
100%
1.8MHz
WF 225Hz
M3
3.0
2.0
1.0
m/s
-1.0
-2.0
-3.0
-4.0
-5.0
75mm/s
78bpm

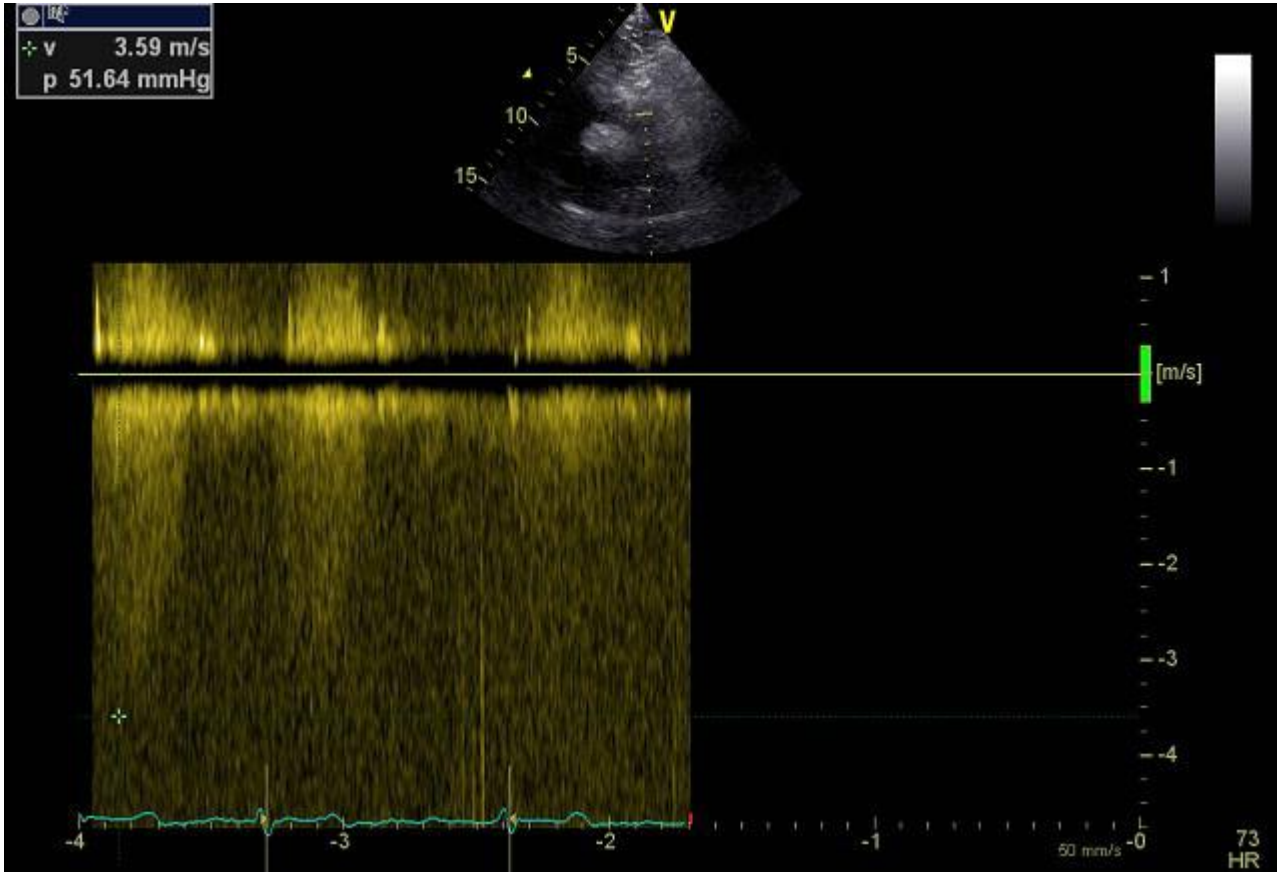

FR 20Hz
17cm
2D
61%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
G
P
R
1.7
3.4
M3 M4
+56.2
-56.2
cm/s
JPEG
79 bpm

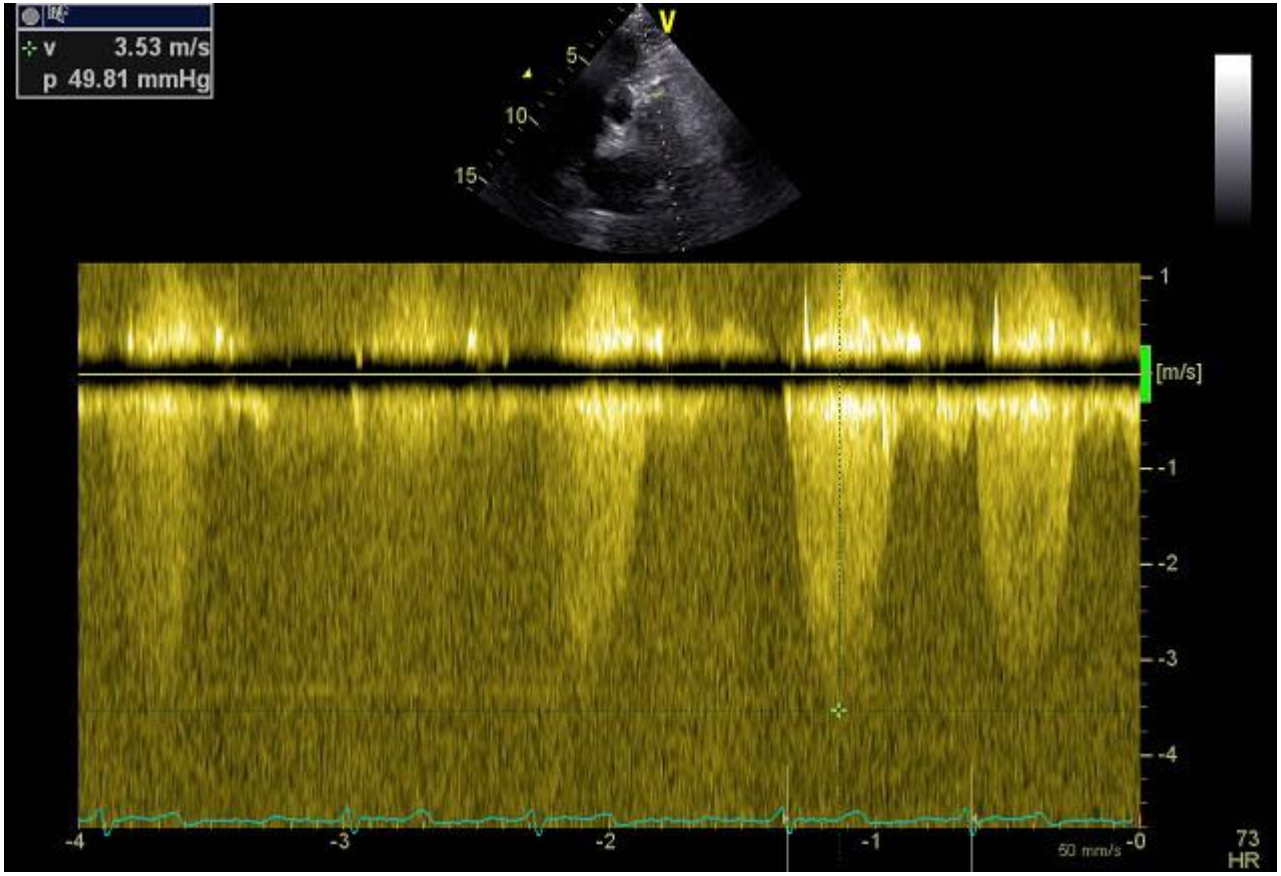

FR 20Hz
17cm
2D
61%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
G
P
R
1.7
3.4
M3 M4
+56.2
-56.2
cm/s
JPEG
75 bpm


FR 45Hz
18cm
2D
62%
C 50
P Low
HGen
CW
100%
1.8MHz
WF 225Hz
M3
3.0
2.0
1.0
m/s
-1.0
-2.0
-3.0
-4.0
-5.0
75mm/s
78bpm

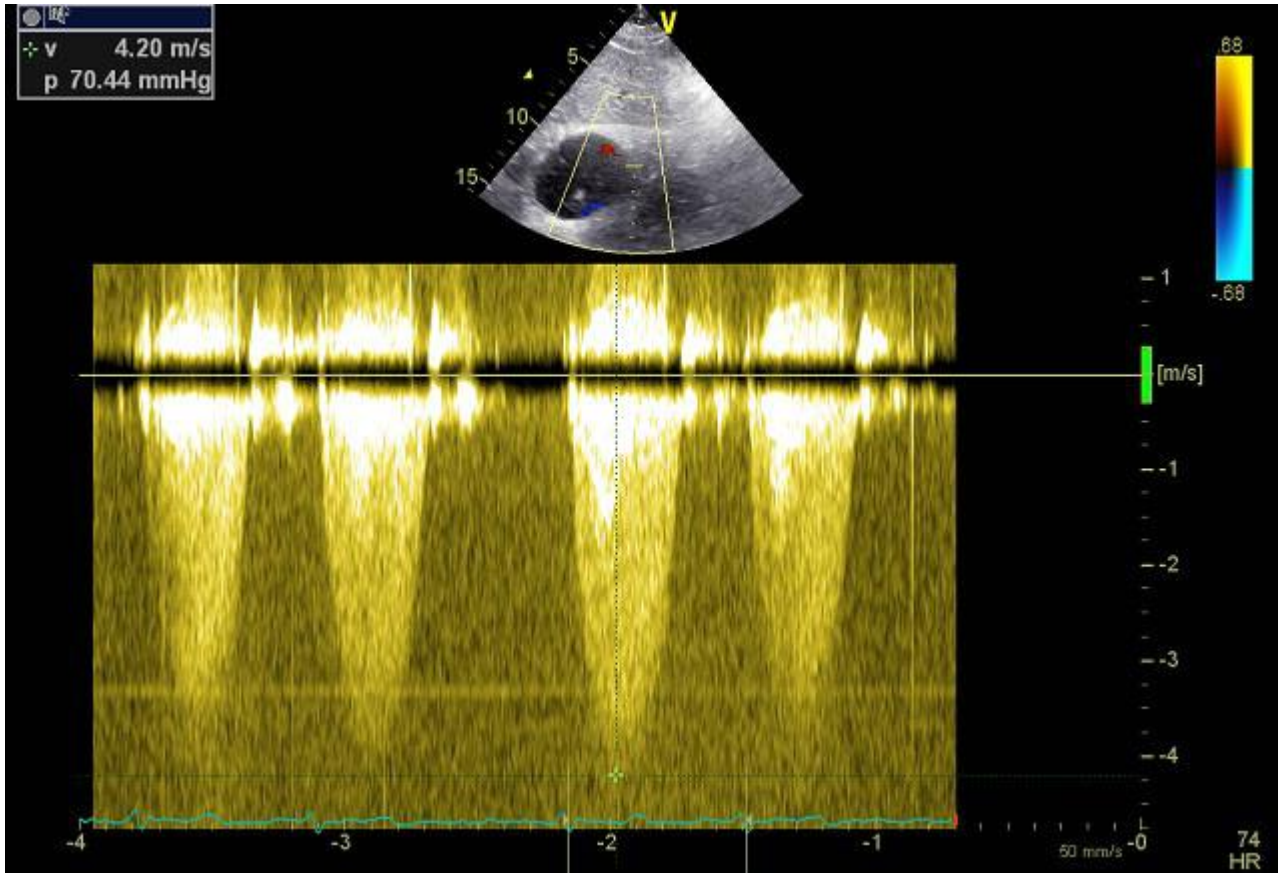

FR 47Hz
17cm
2D
63%
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
JPEG
77 bpm

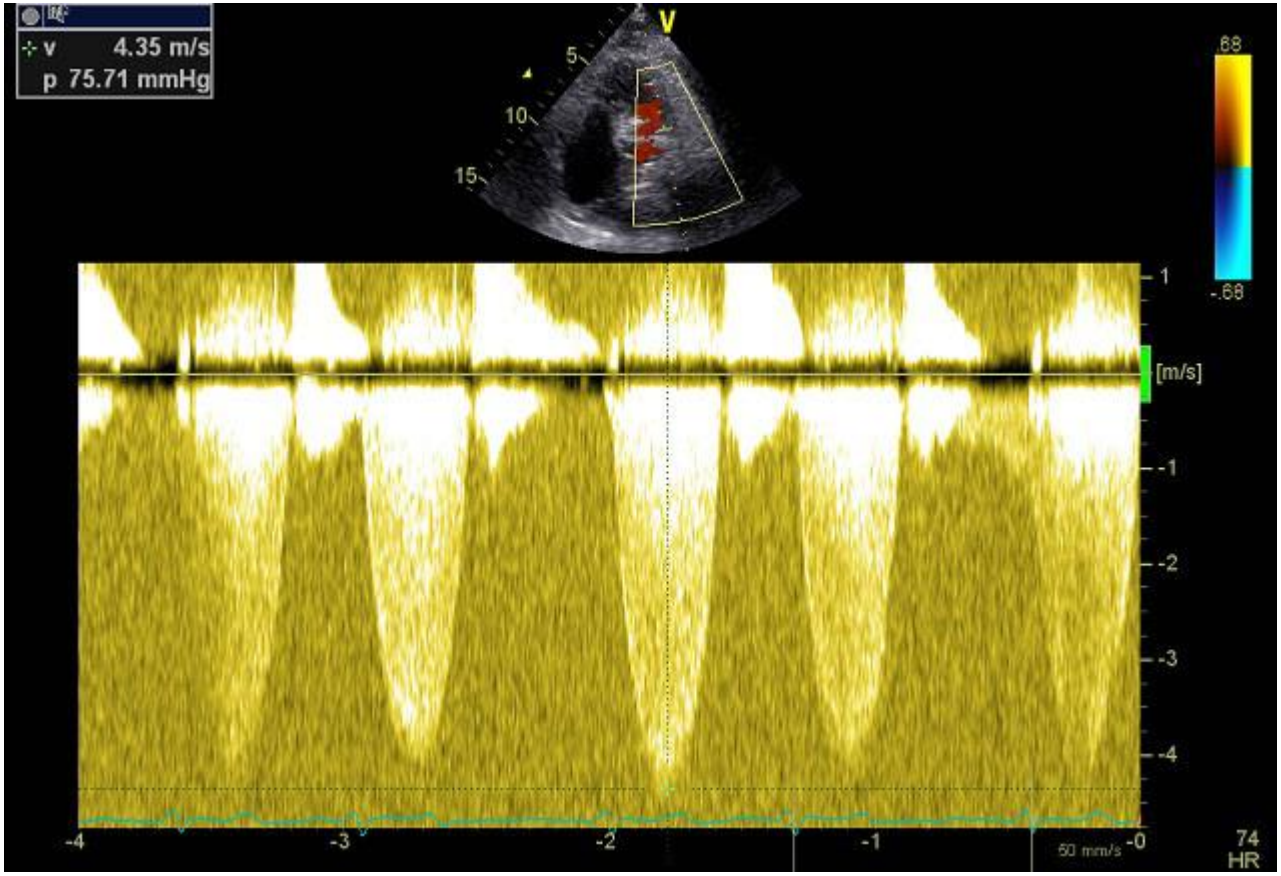

FR 20Hz
17cm
2D
61%
C 50
P Low
HGen
CF
66%
2.5MHz
WF High
Med
M3 M4
+56.2
-56.2
cm/s
P
R
1.7
3.4
JPEG
75 bpm

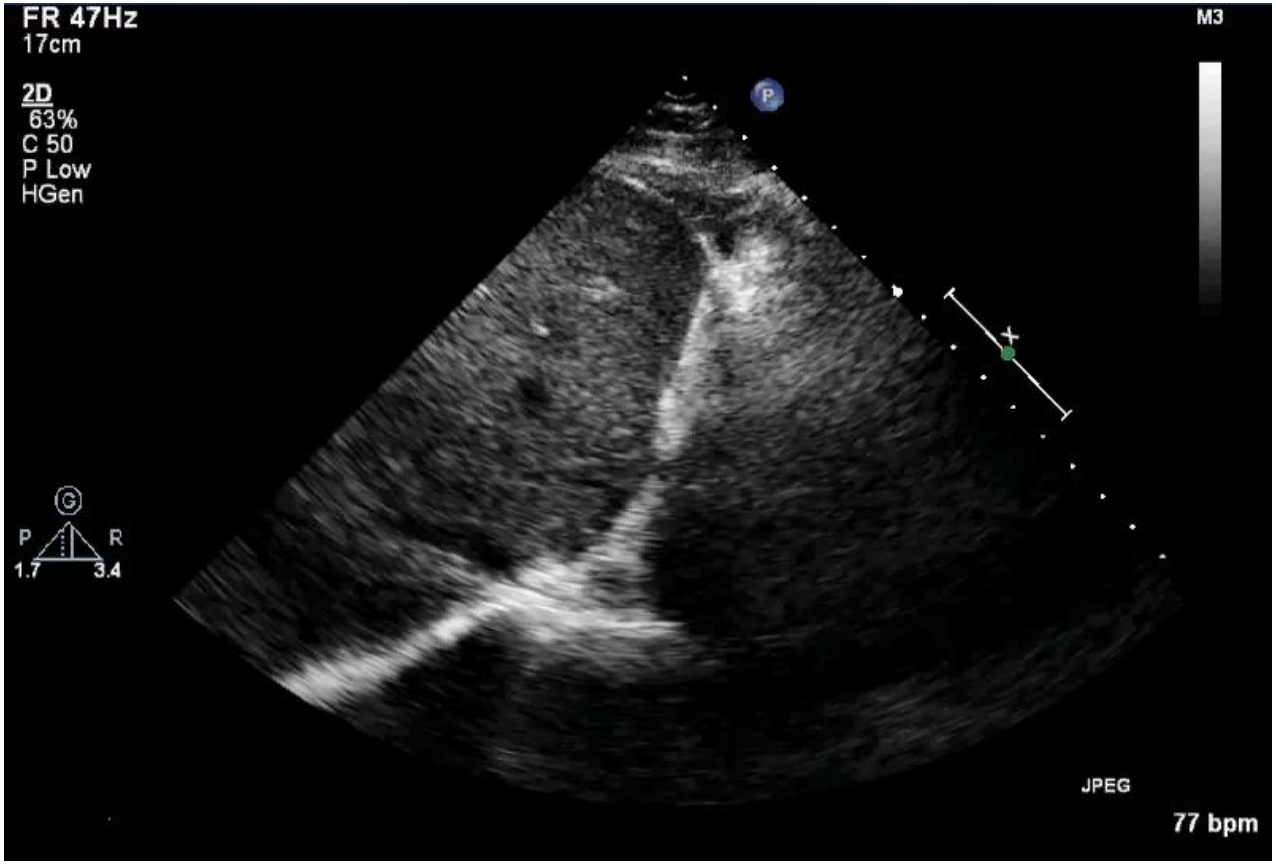

v 3.59 m/s
p 51.64 mmHg
V
5
10
15
1
[m/s]
-1
-2
-3
-4
-4
-3
-2
-1
-0
50 mm/s
73
HR


v 3.53 m/s
p 49.81 mmHg
V
5
10
15
[m/s]
1
-1
-2
-3
-4
-4
-3
-2
-1
-0
50 mm/s
73
HR

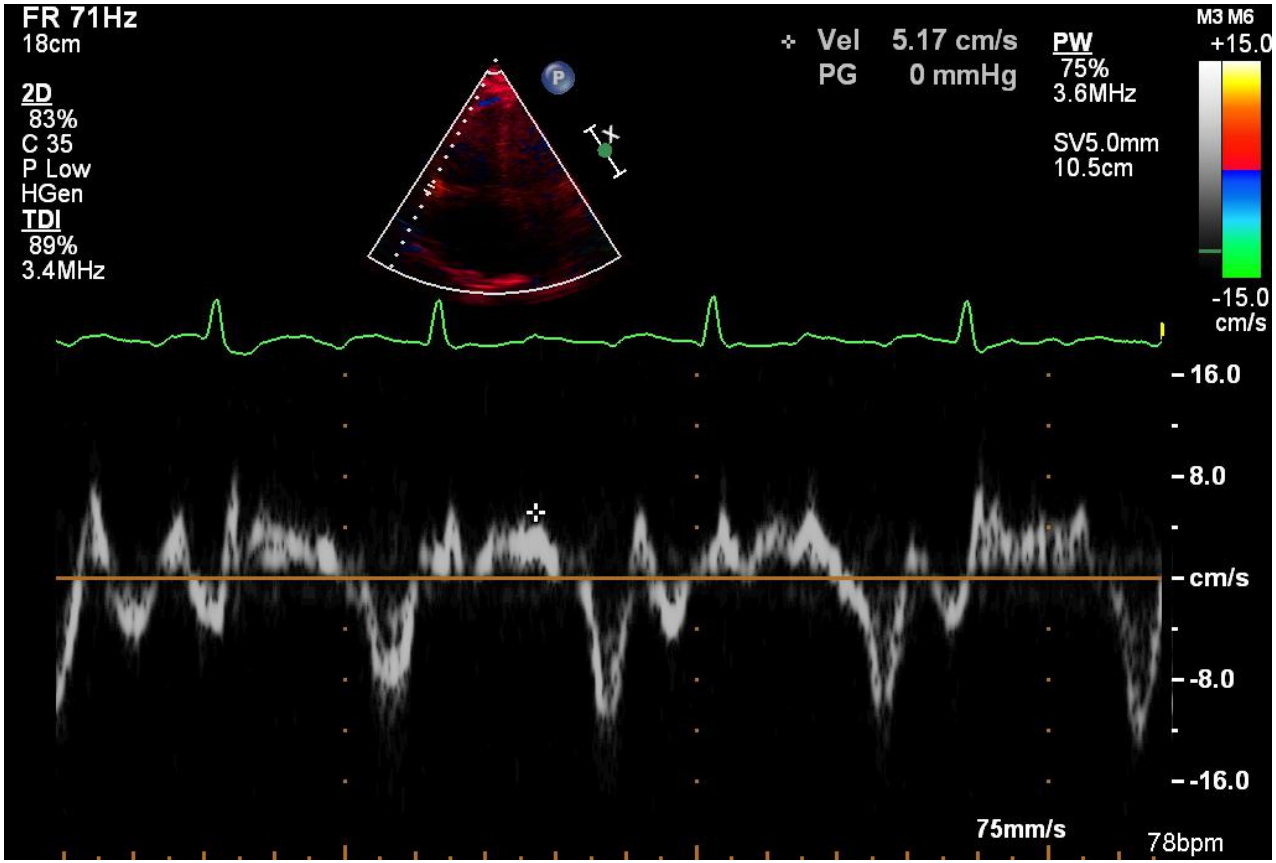

v 3.90 m/s
p 60.87 mmHg
V
5
10
15
[m/s]
1
-1
-2
-3
-4
-4
-3
-2
-1
-0
50 mm/s
74
HR

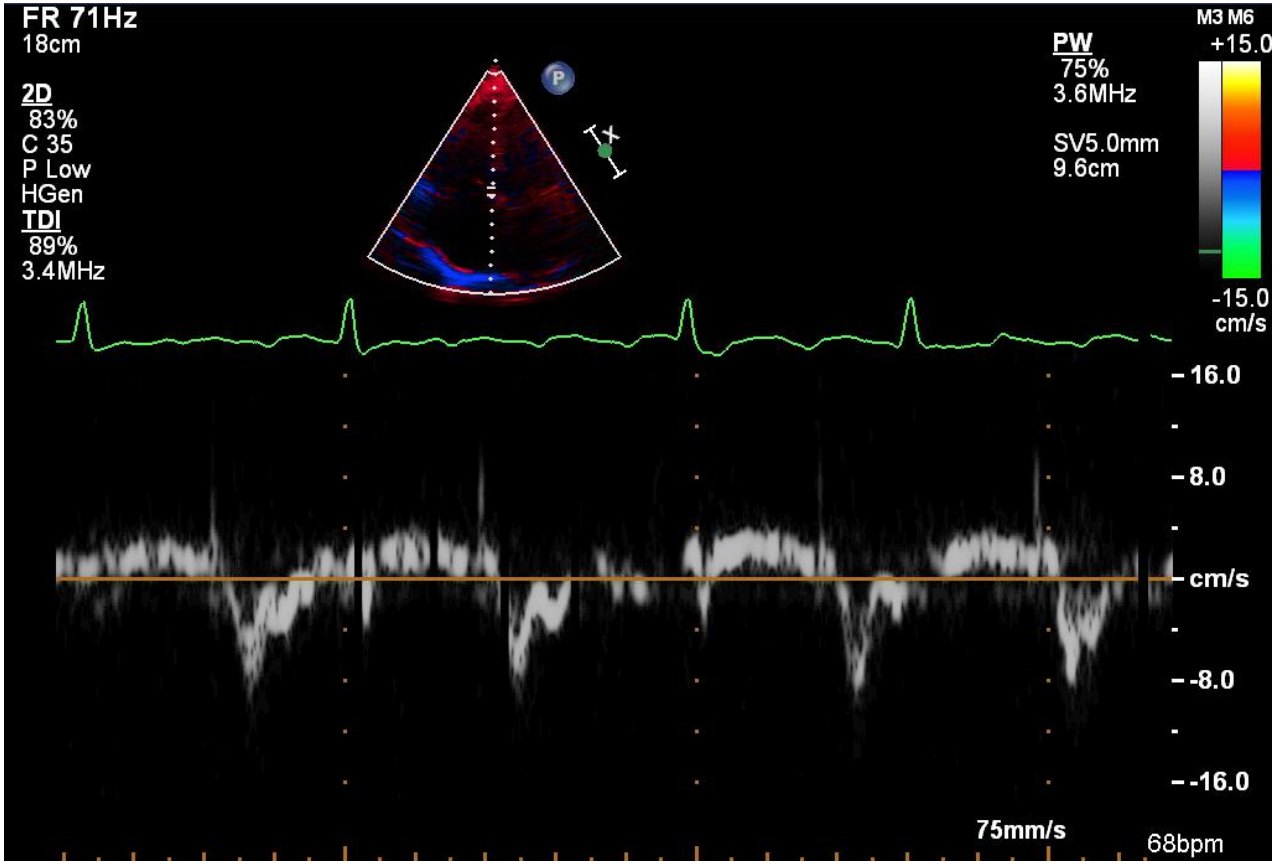

v 4.20 m/s
p 70.44 mmHg
5
10
15
V
68
-.68
[m/s]
1
-1
-2
-3
-4
-4
-3
-2
-1
-0
60 mm/s
74
HR

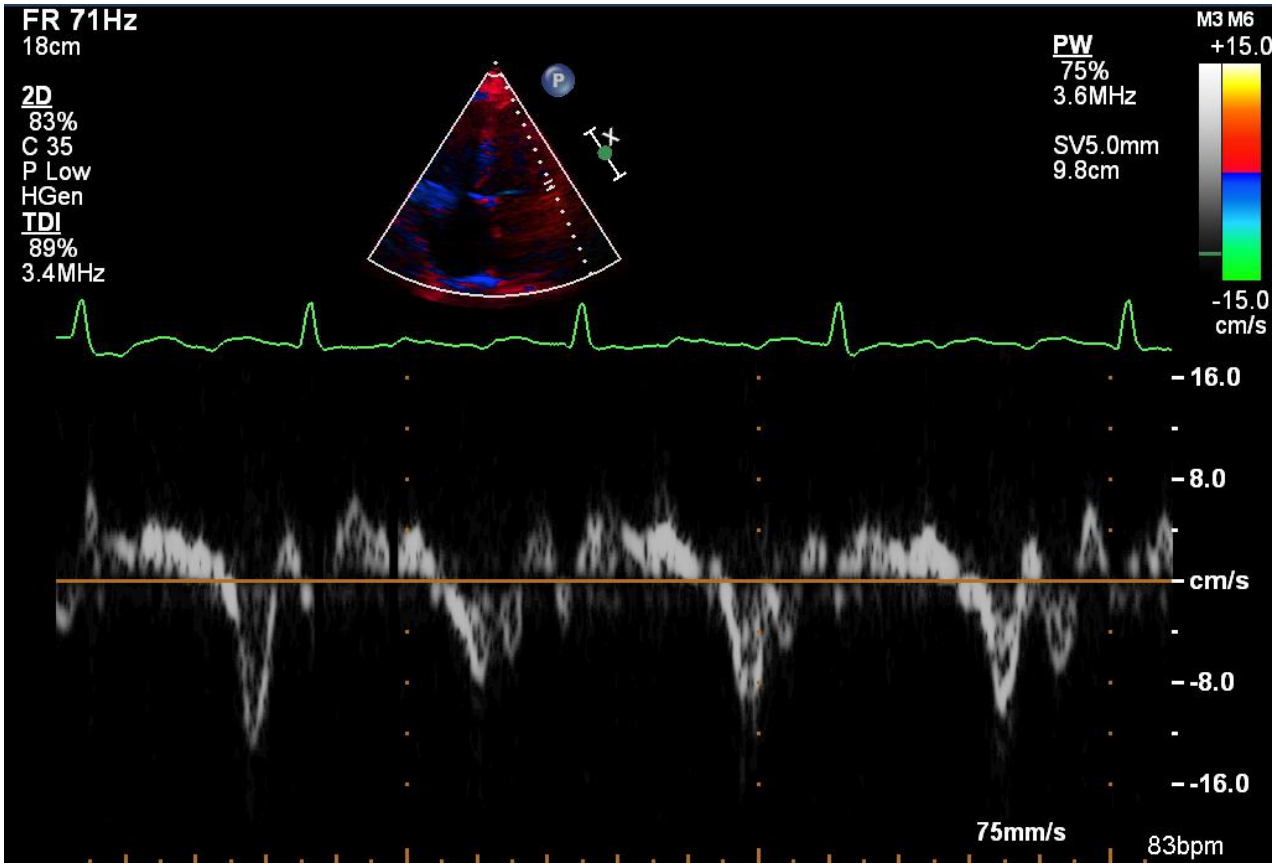

v 4.35 m/s
p 75.71 mmHg
V
5
10
15
68
-.68
[m/s]
1
-1
-2
-3
-4
-4
-3
-2
-1
-0
50 mm/s
74
HR


FR 47Hz
17cm
2D
63%
C 50
P Low
HGen
M3
P
G
P
R
1.7
3.4
JPEG
77 bpm


1 L 1.99 cm
V
5
10
15
74
HR


FR 71Hz
18cm
2D
83%
C 35
P Low
HGen
TDI
89%
3.4MHz
Vel 5.17 cm/s
PG 0 mmHg
PW
75%
3.6MHz
SV5.0mm
10.5cm
M3 M6
+15.0
-15.0
cm/s
16.0
8.0
cm/s
-8.0
-16.0
75mm/s
78bpm


FR 71Hz
18cm
2D
83%
C 35
P Low
HGen
TDI
89%
3.4MHz
PW
75%
3.6MHz
SV5.0mm
9.6cm
M3 M6
+15.0
-15.0
cm/s
16.0
8.0
cm/s
-8.0
-16.0
75mm/s
68bpm


FR 71Hz
18cm
2D
83%
C 35
P Low
HGen
TDI
89%
3.4MHz
PW
75%
3.6MHz
SV5.0mm
9.8cm
M3 M6
+15.0
-15.0
cm/s
16.0
8.0
cm/s
-8.0
-16.0
75mm/s
83bpm

Pulmonic stenosis

PS is primarily a congenital condition. Acquired cases can also occur, but are considerably less common. The latter etiologies include infectious endocarditis, carcinoid heart disease, rheumatic heart disease and iatrogenic causes

Mouhammad F, Krasuski R Curr Cardiol Rep (2017) 19: 108

Pulmonic stenosis

Stenosis can occur at the level of the PV, above the PV or below it. Typically, PS occurs as an isolated lesion, but it can also coexist with other congenital heart lesions. Importantly, it is one of the four cardinal features of tetralogy of Fallot (TOF). PS is also part of many syndromes that affect the in-utero development of the PV, including Noonan, 22q11 deletion and Williams syndromes

Mouhammad F, Krasuski R Curr Cardiol Rep (2017) 19: 108

Pulmonic stenosis

Valvular:

- Dome-shaped Dysplastic (part of Noonan syndrome)
- Bicuspid/quadricuspid
- Acquired causes

Mouhammad F, Krasuski R Curr Cardiol Rep (2017) 19: 108

Pulmonic stenosis

Supravalvular (pulmonary arterial stenosis):

I) Congenital; associated with:

- Alagille syndrome
- Keutel syndrome
- Congenital rubella
- Tetralogy of Fallot
- William syndrome

II) Acquired/iatrogenic

Mouhammad F, Krasuski R Curr Cardiol Rep (2017) 19: 108

Pulmonic stenosis

Subvalvular:

- Primary infundibular stenosis (part of double chambered right ventricle)
- Secondary infundibular hypertrophy (long-standing increase in right ventricular afterload)

Mouhammad F, Krasuski R Curr Cardiol Rep (2017) 19: 108

Pulmonic stenosis

Valvular stenosis is the most common form of PS, accounting for 80 to 90% of cases of right ventricular outflow tract (RVOT) obstruction

Mouhammad F, Krasuski R Curr Cardiol Rep (2017) 19: 108

Pulmonic stenosis

Dome-shaped PV morphology accounts for 40–60% of valvular PS.

Dysplastic PV morphology accounts for 20% of valvular PS, and is most commonly seen in patients with Noonan syndrome.

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Pulmonic stenosis

Patients with isolated, mild PS are usually asymptomatic and their probability of long-term survival is similar to the general population

Also, stenosis rarely progresses rapidly, with patients typically maintaining normal functional status through adulthood. With greater degrees of stenosis, symptoms may begin to appear resulting from the decrease in cardiac output.

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Pulmonic stenosis

Since the RV adapts poorly to hemodynamic burden, it usually hypertrophies with more than mild stenosis, and RV diastolic and eventually systolic dysfunction results if stenosis is not relieved

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Pulmonic stenosis

Pulmonic Valve Interventions

The first operative attempt to treat PS occurred in Paris in 1913. A tenatome was introduced into the RV to excise the stenotic PV, but unfortunately the patient died on the day following surgery.

The first pulmonic valvuloplasty via cardiac catheterization occurred in 1979.

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Pulmonic stenosis

Table 13 Indications for intervention in right ventricular outflow tract obstruction

Indications	Class[a]	Level[b]
RVOTO at any level should be repaired regardless of symptoms when Doppler peak gradient is >64 mmHg (peak velocity >4m/s), provided that RV function is normal and no valve substitute is required	I	C
In valvular PS, balloon valvotomy should be the intervention of choice	I	C
In asymptomatic patients in whom balloon valvotomy is ineffective and surgical valve replacement is the only option, surgery should be performed in the presence of a systolic RVP >80 mmHg (TR velocity >4.3 m/s)	I	C

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Pulmonic stenosis

Surgical Pulmonic Valve Replacement

Although mechanical valves offer higher durability, bioprosthetic valves are preferred in this anatomical position due to lower risk for thrombosis (no need for systemic anticoagulation) and the ease of access to the pulmonary vascular bed for future interventions.

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Pulmonic stenosis

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Pulmonic stenosis

Transcatheter Pulmonic Valve Replacement

	Melody Valve	Sapien XT Valve
Valve material	Bovine jugular vein	Bovine pericardium
Stent materials	Platinum 90% Iridium 10%	Stainless steel
Stent height	34 mm	14.5 mm, 16 mm
Available sizes	18-22 mm	20, 23, 26, 29 mm
Delivery sheath size	22 French	16, 18, 20 French

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Pulmonic stenosis

Transcatheter Pulmonic Valve Replacement

The Melody was FDA approved for failing conduits in 2010 and for failing bioprostheses (valve-in-valve) in 2017.

In 2016, the Edwards Sapien XT valve (Edwards Lifesciences, Irvine, CA) received FDA approval for use in failing pulmonary conduits.

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Σας ευχαριστώ για την προσοχή σας!

Pulmonic stenosis

Table 13 Indications for intervention in right ventricular outflow tract obstruction

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Pulmonic stenosis

balloon pulmonary valvuloplasty (BPV)

BPV is currently recommended for asymptomatic patients with domed valve morphology and peak echo gradient >60 mmHg (mean > 40) with ≤moderate PR and for symptomatic patients with peak echo gradient >50 mmHg (mean > 30) with ≤moderate PR

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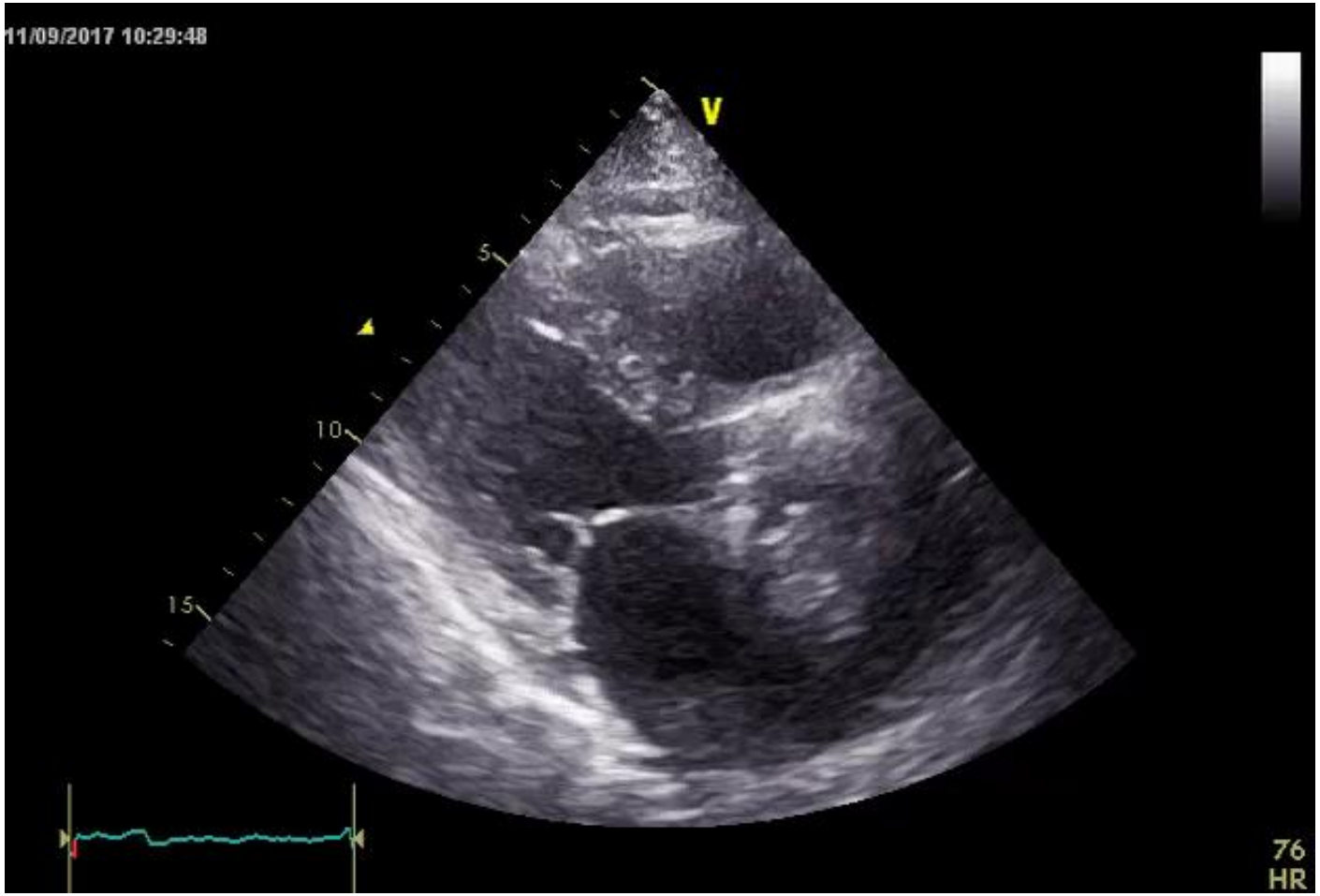
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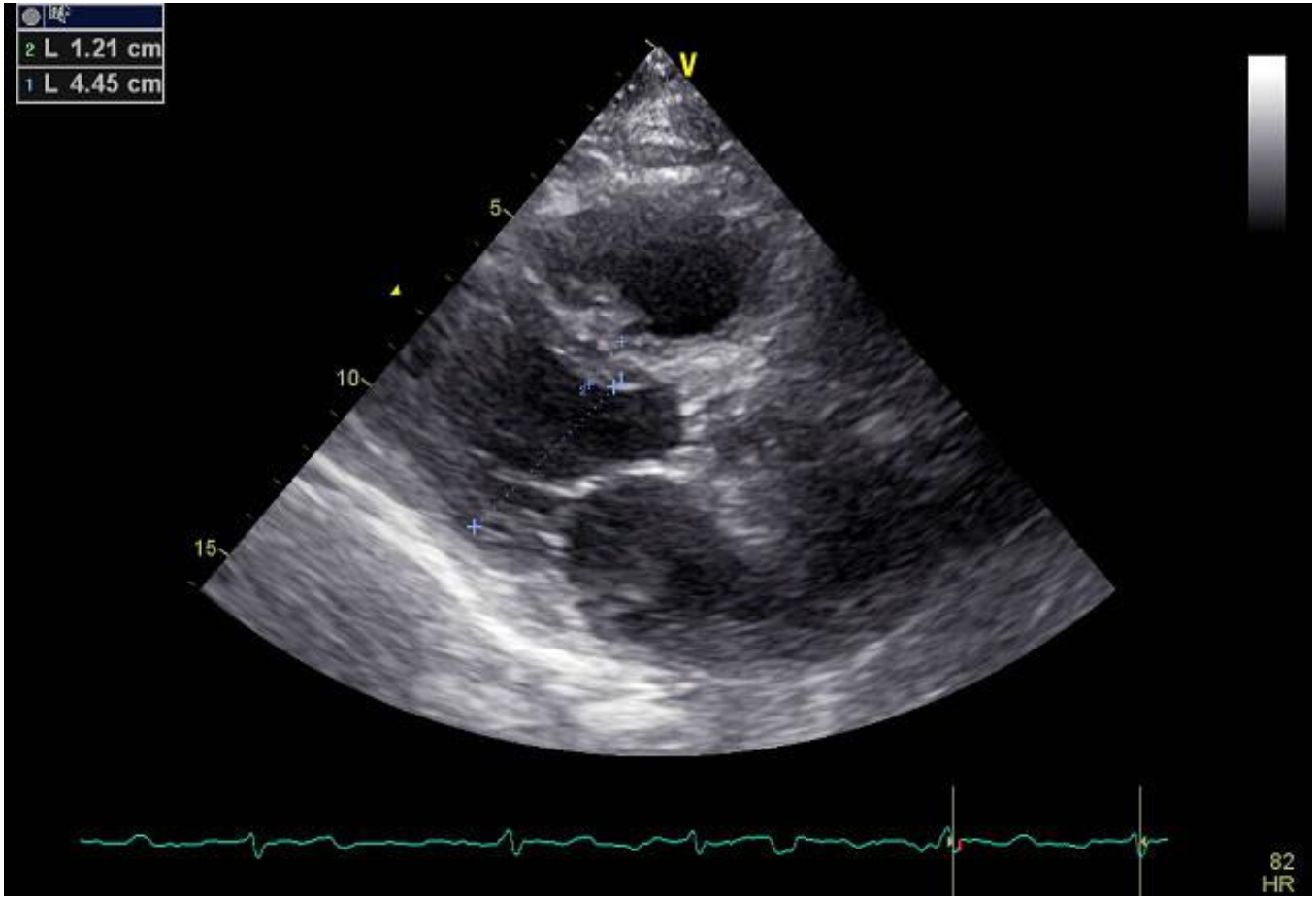
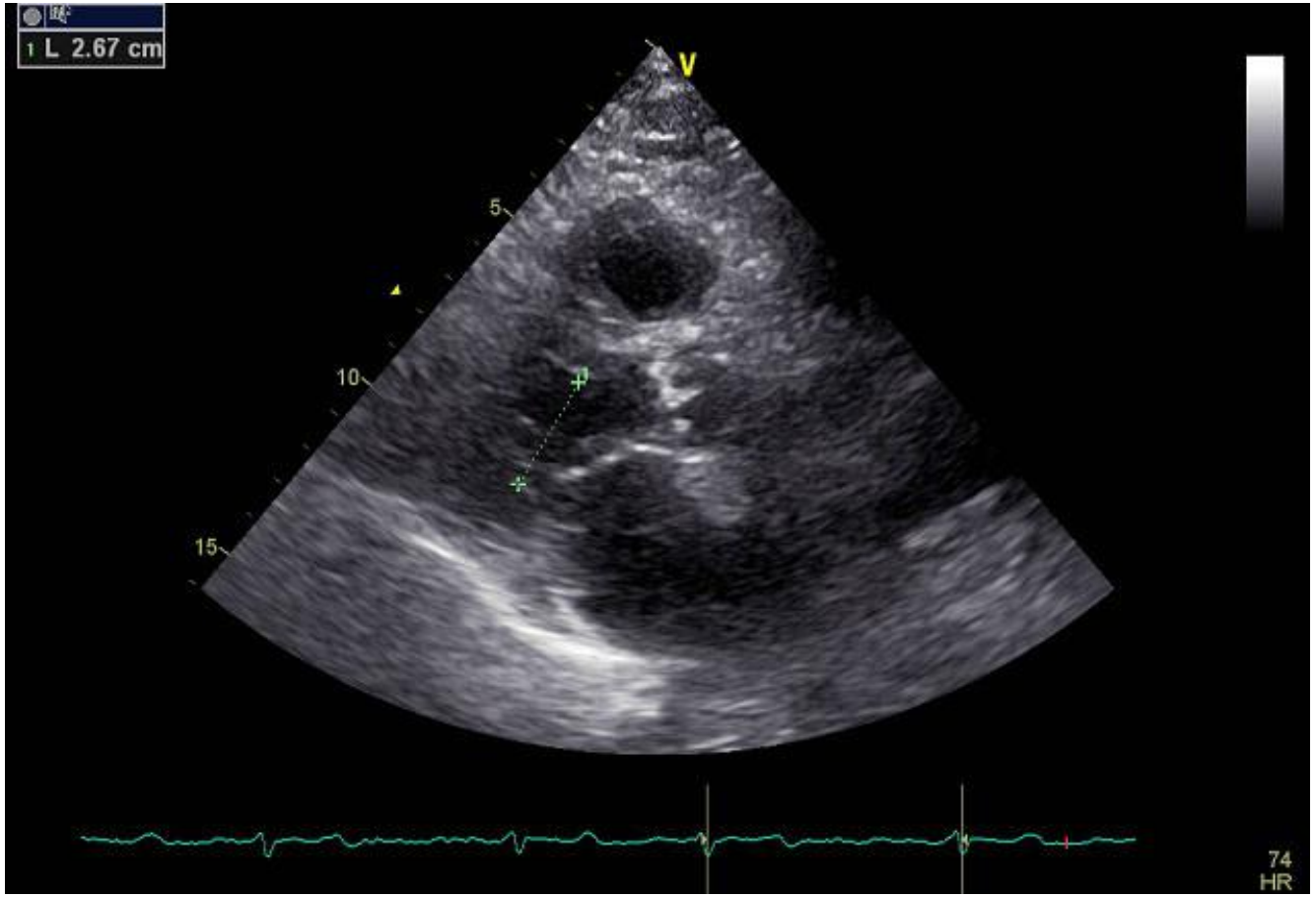
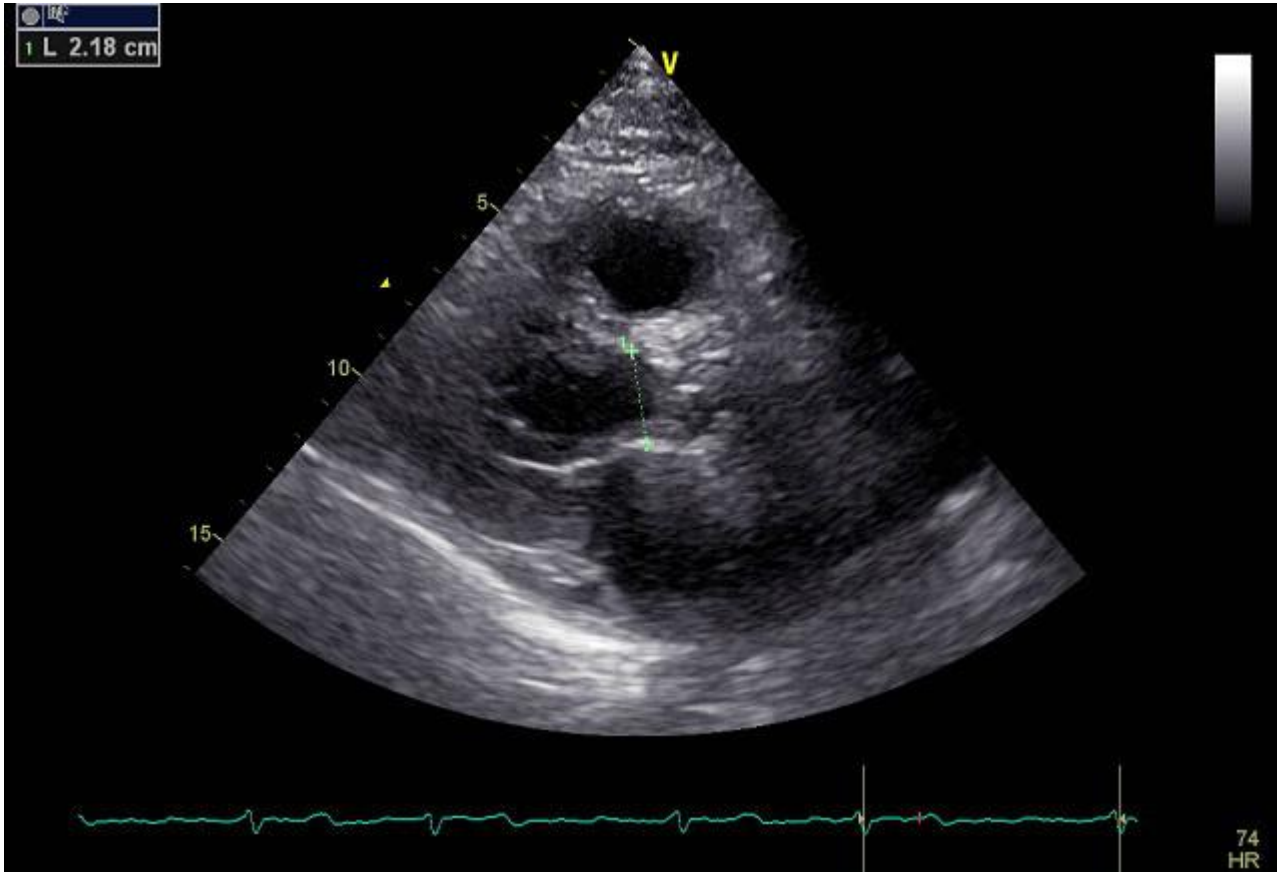
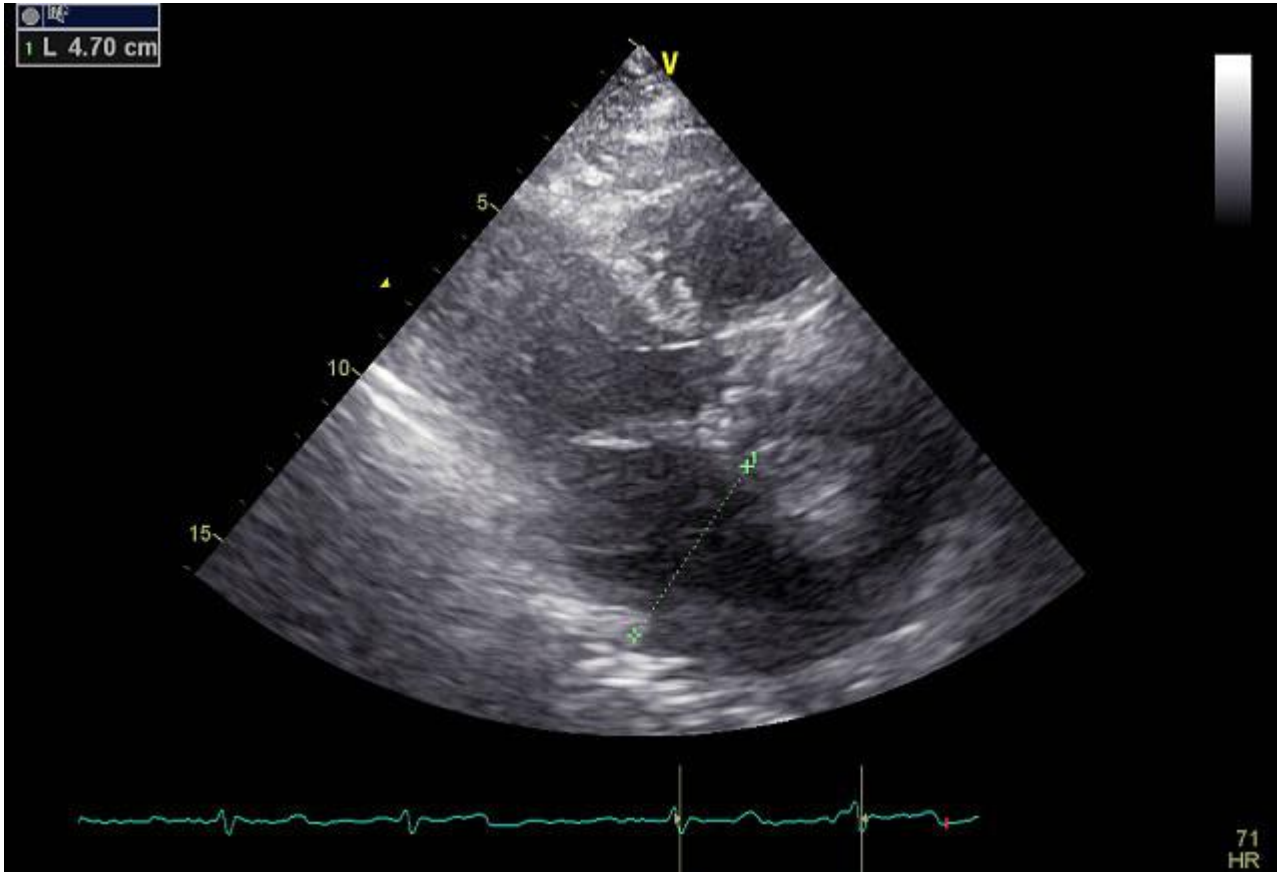
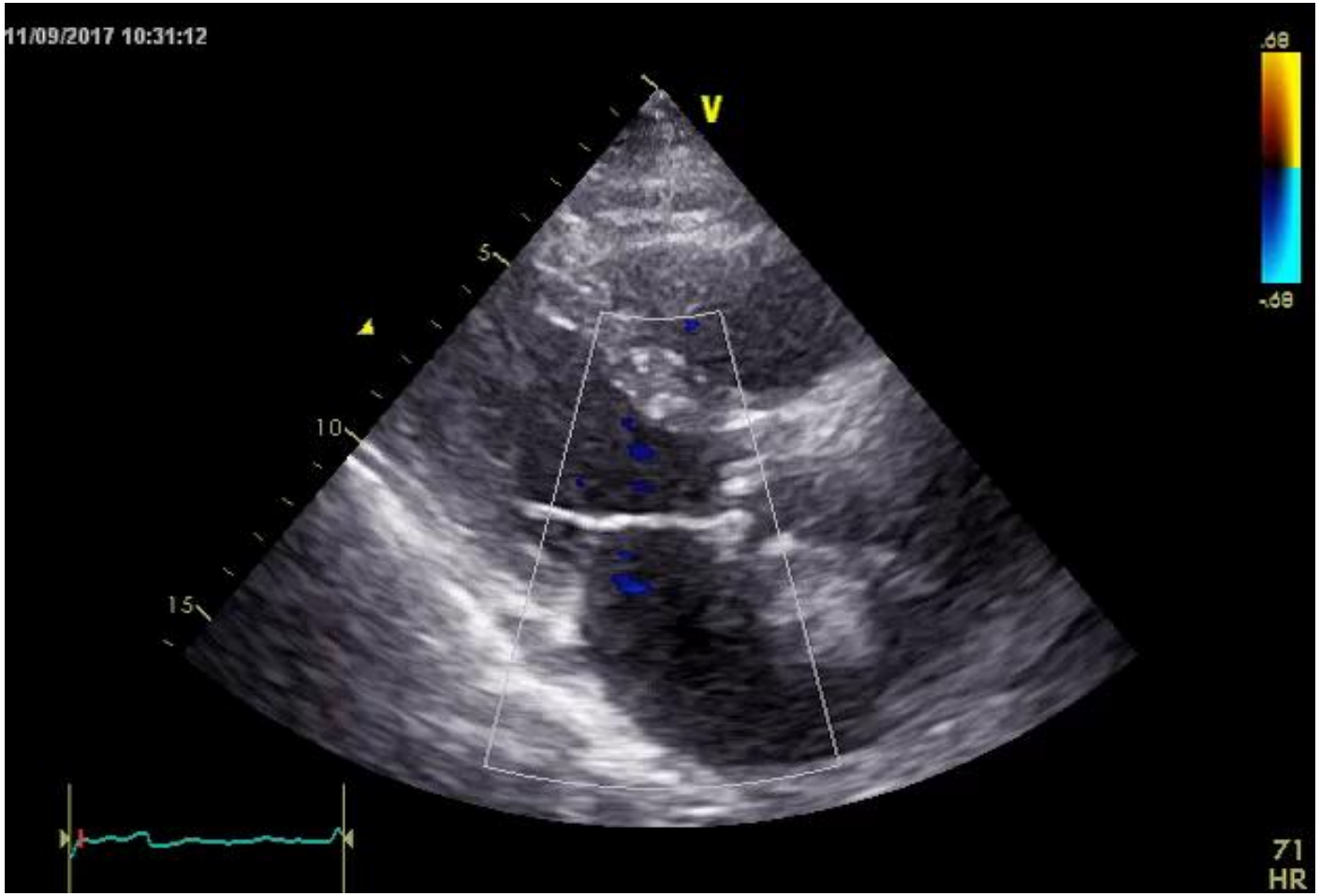
V
5
10
15
76
HR


2 L 1.21 cm
1 L 4.45 cm
V
5
10
15
82
HR


1 L 2.67 cm
V
5
10
15
74
HR


1 L 2.18 cm
V
5
10
15
74
HR


1 L 4.70 cm
V
5
10
15
71
HR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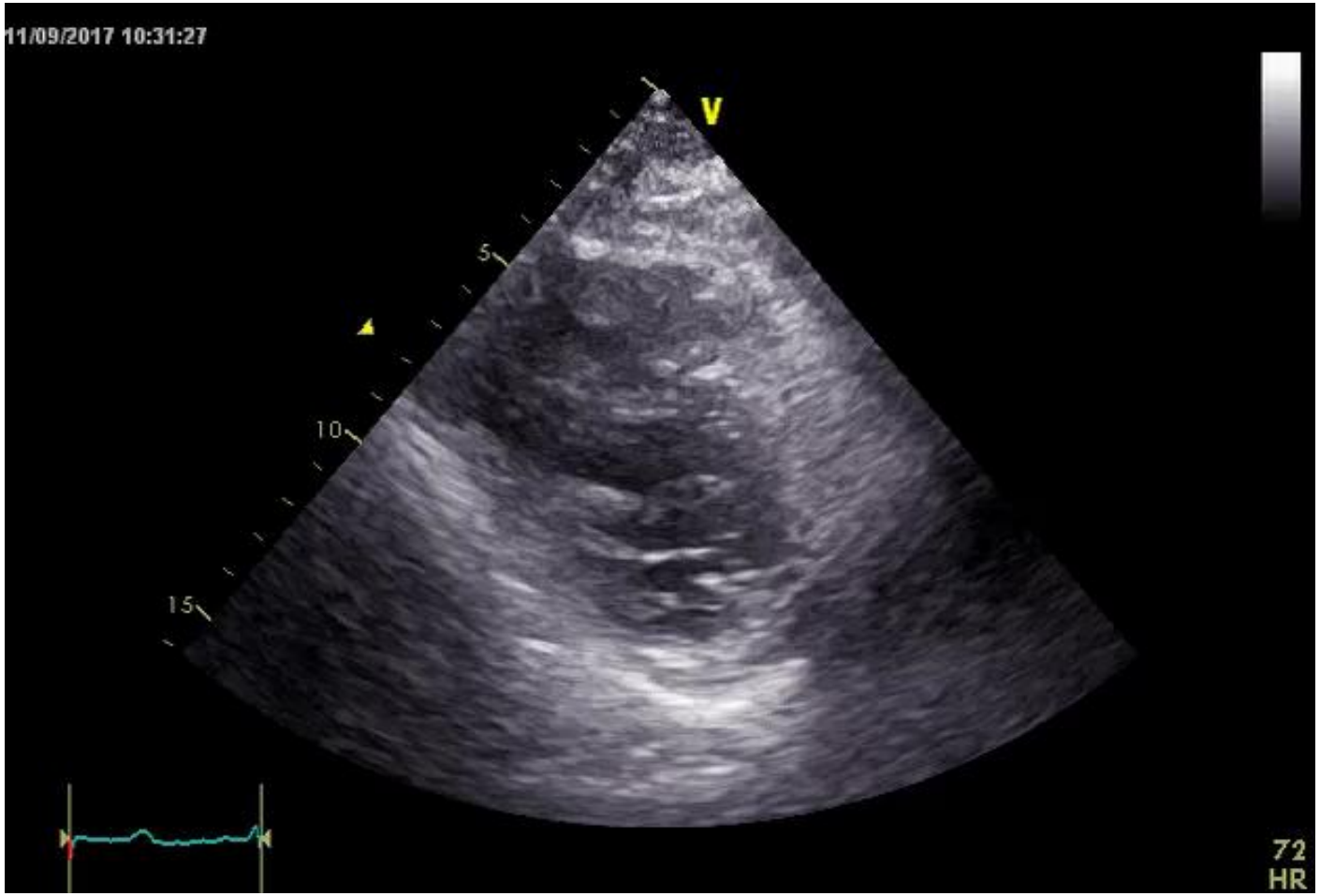
V
5
10
15
71
HR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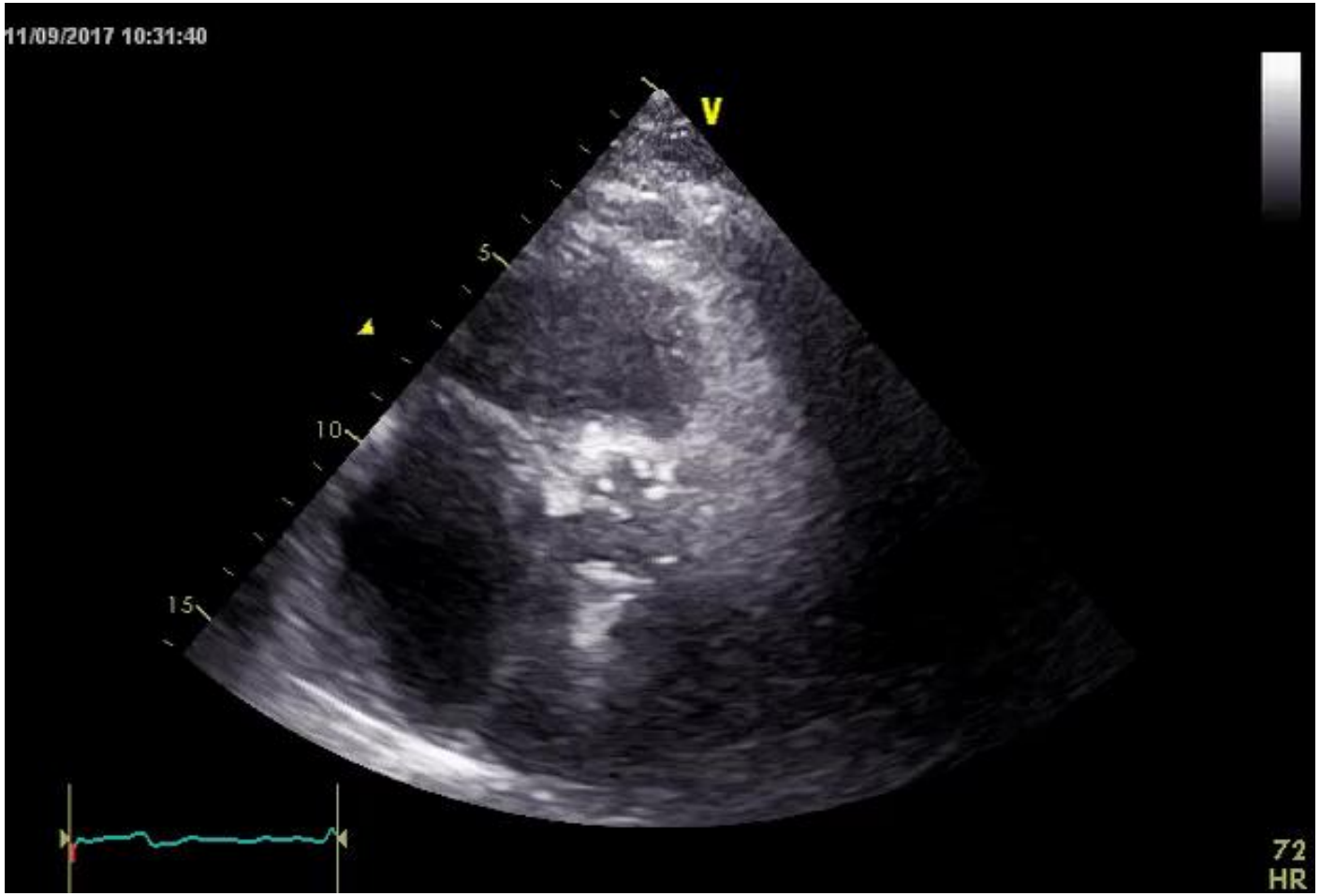
V
5
10
15
72
HR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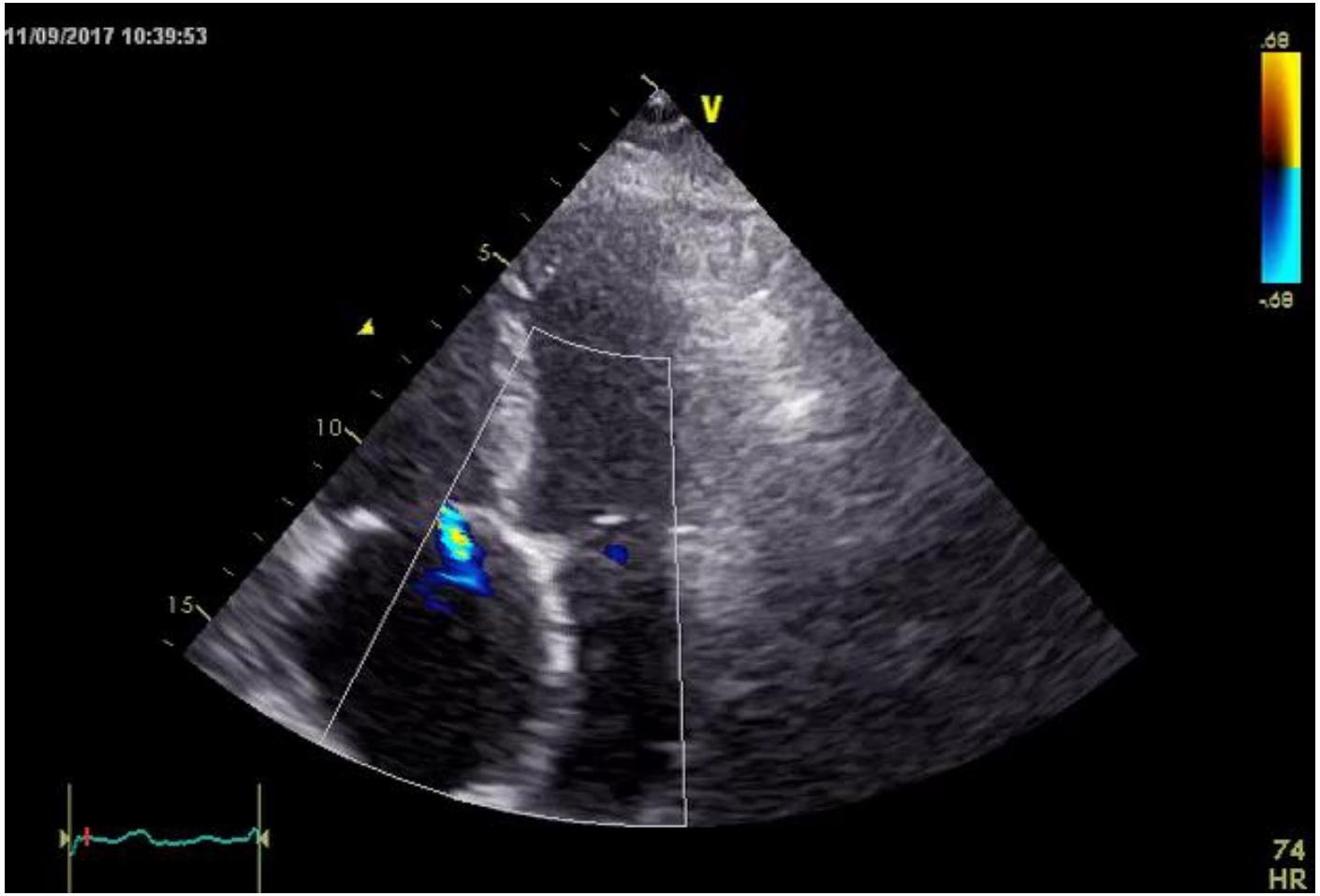
V
5
10
15
72
HR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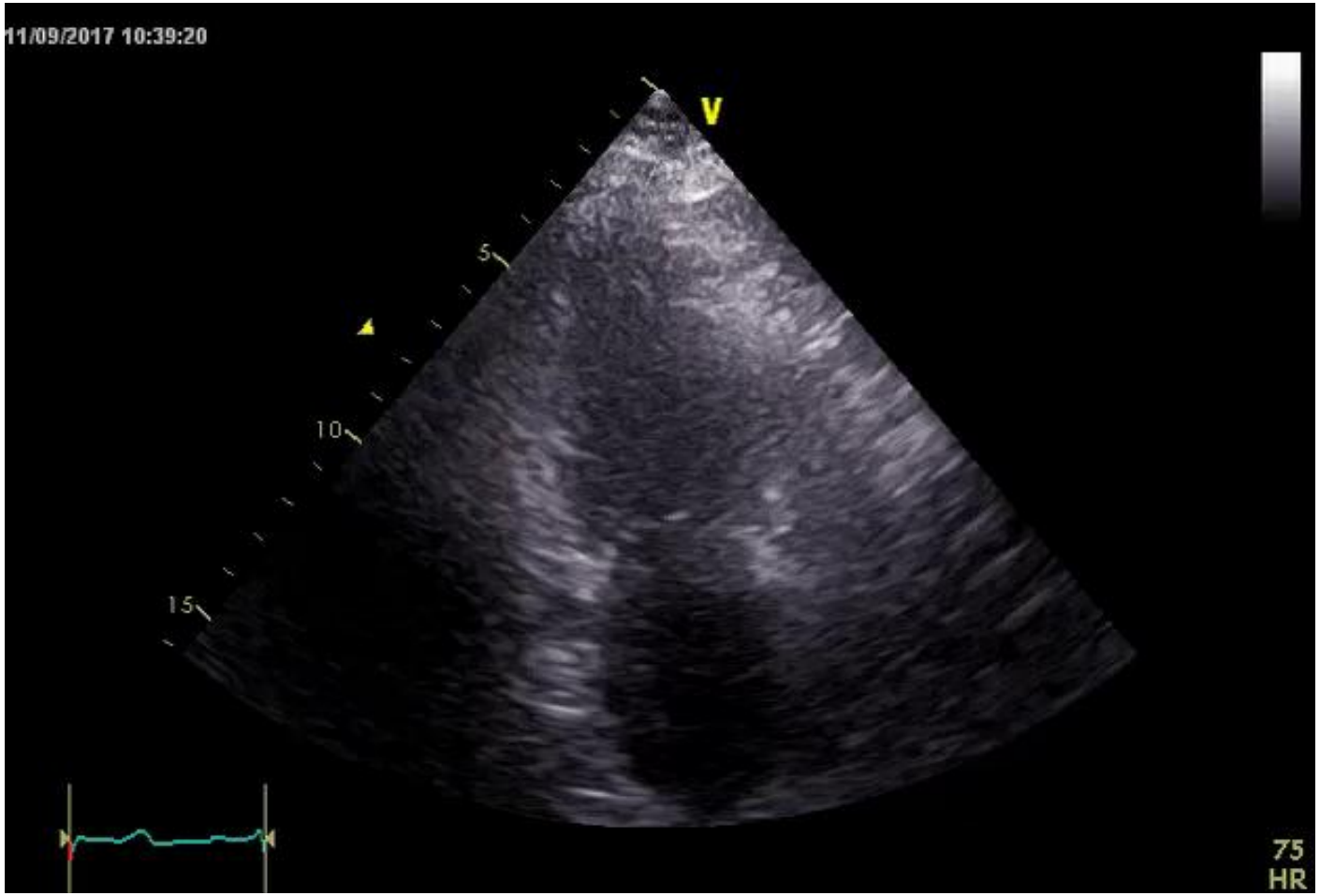
V
5
10
15
74
HR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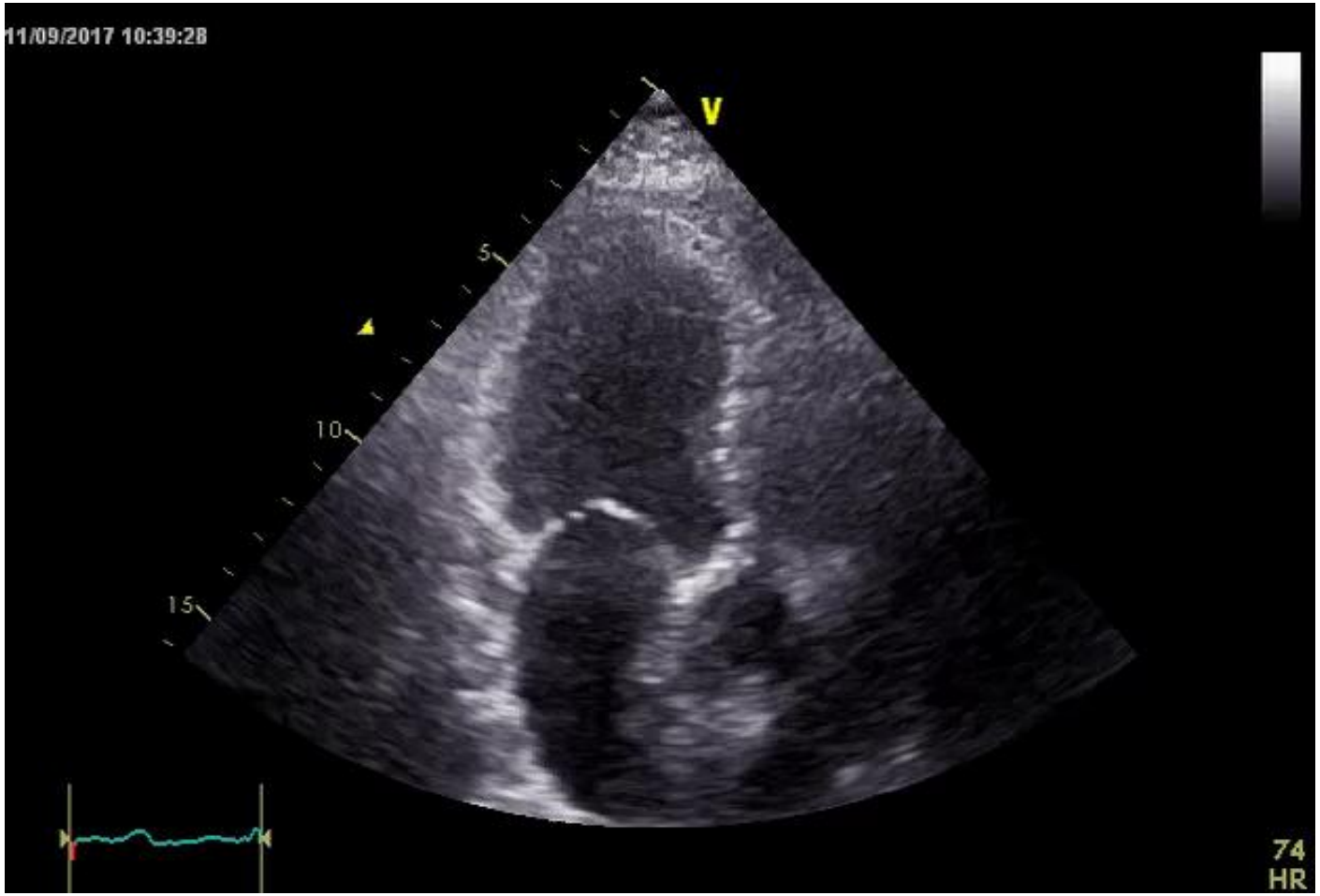
V
5
10
15
75
HR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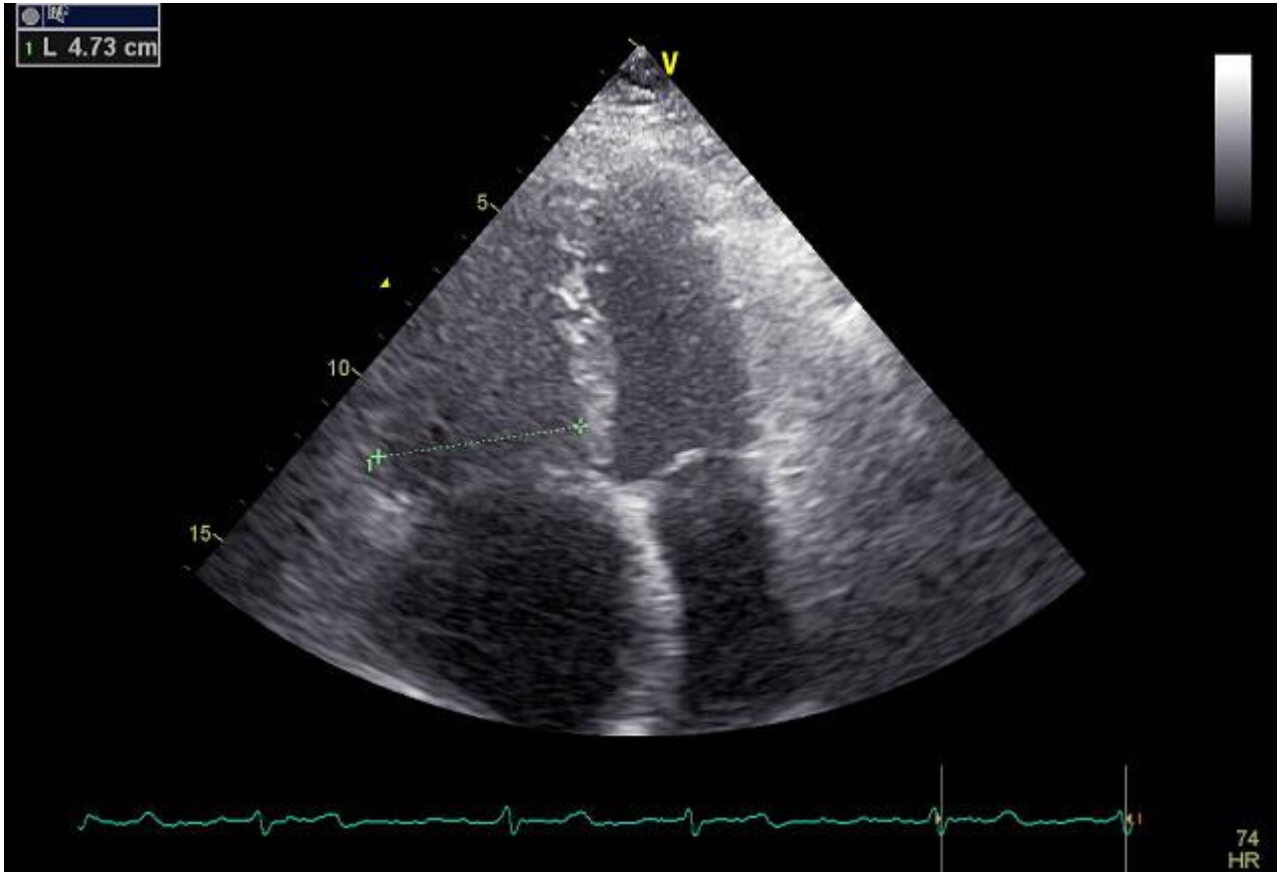
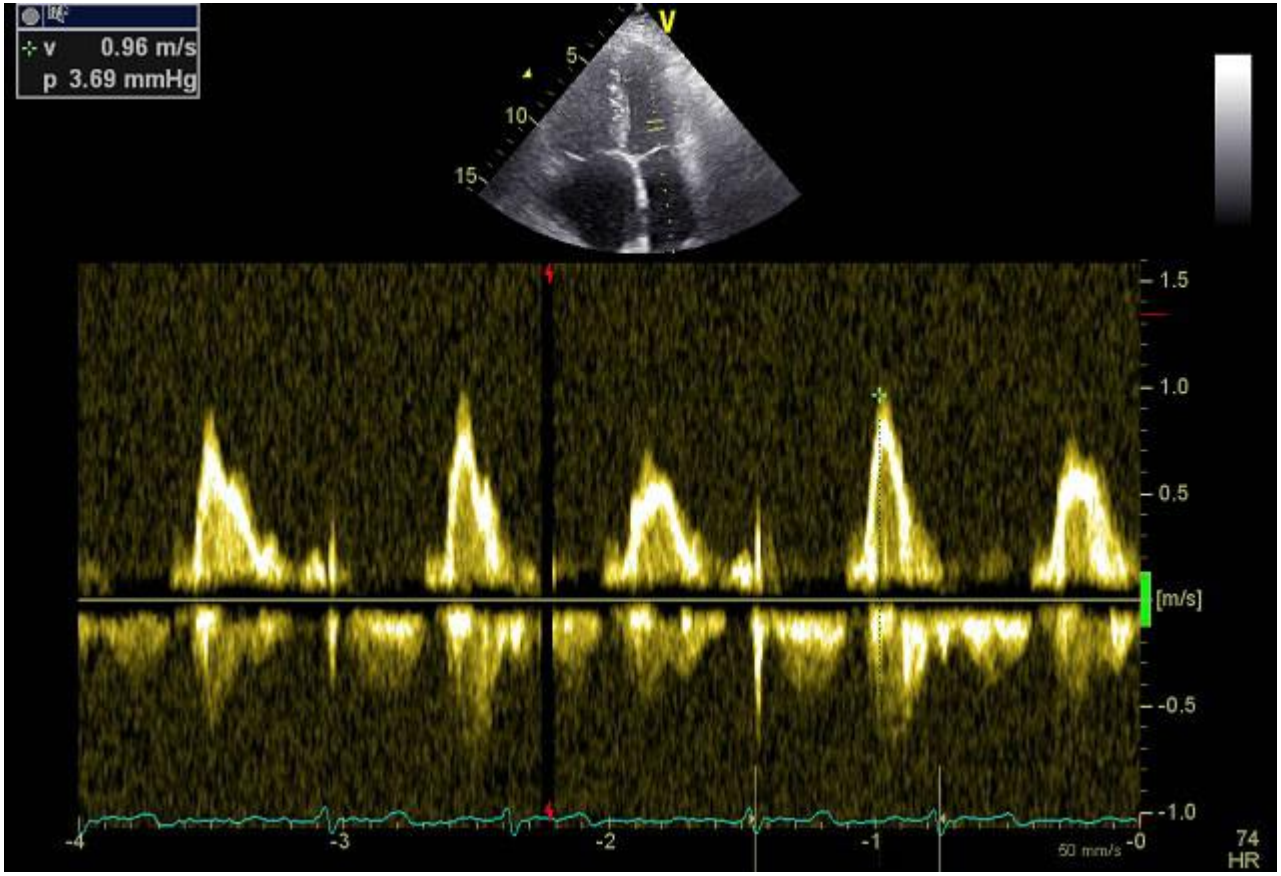
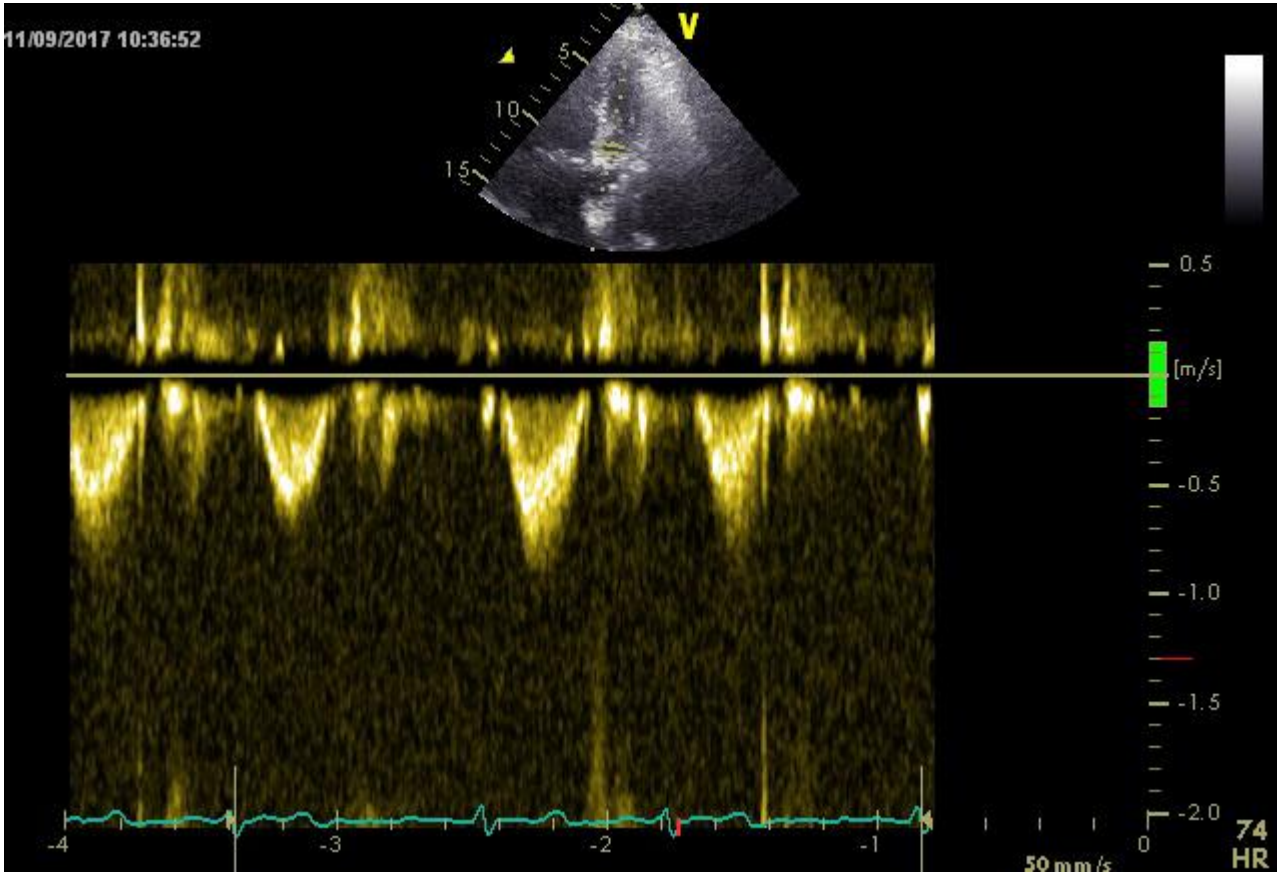
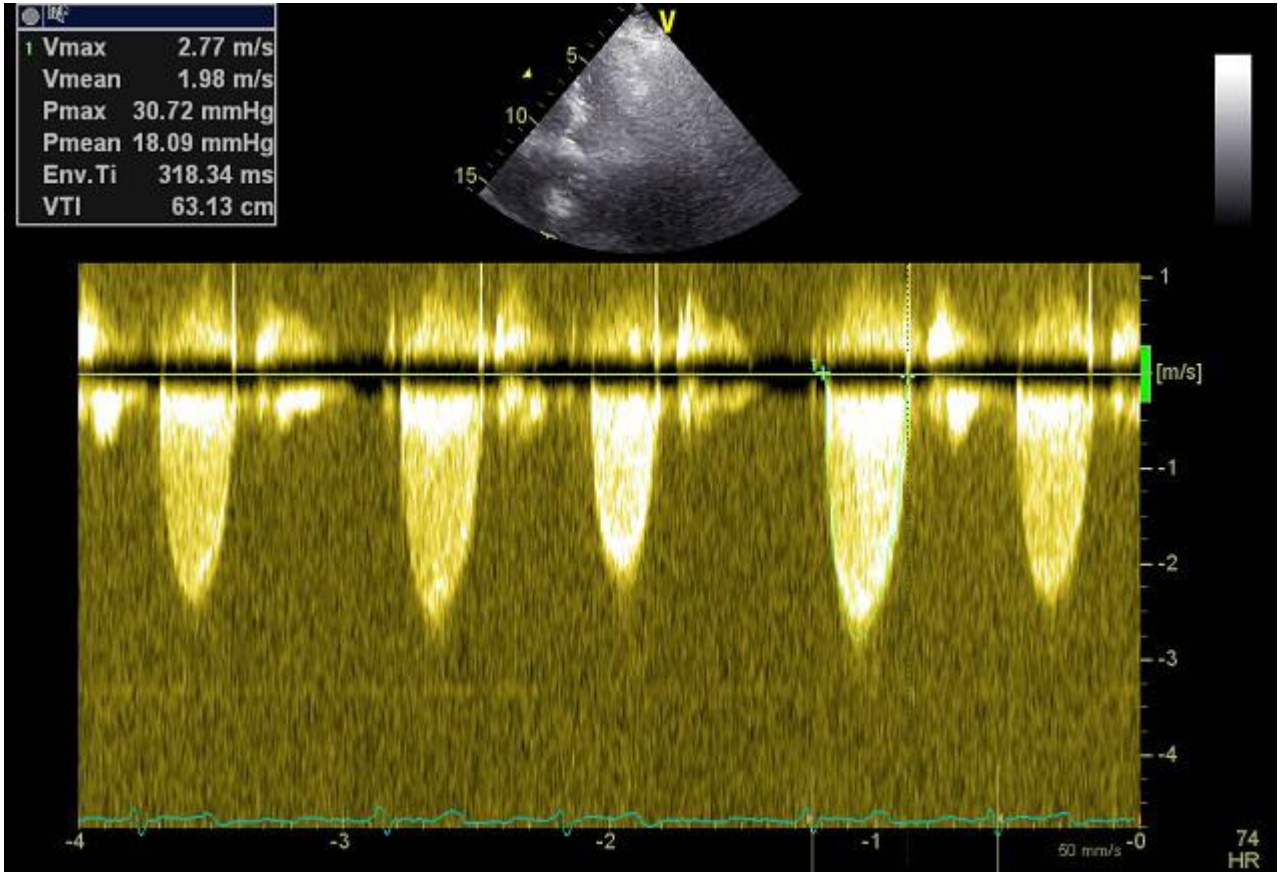
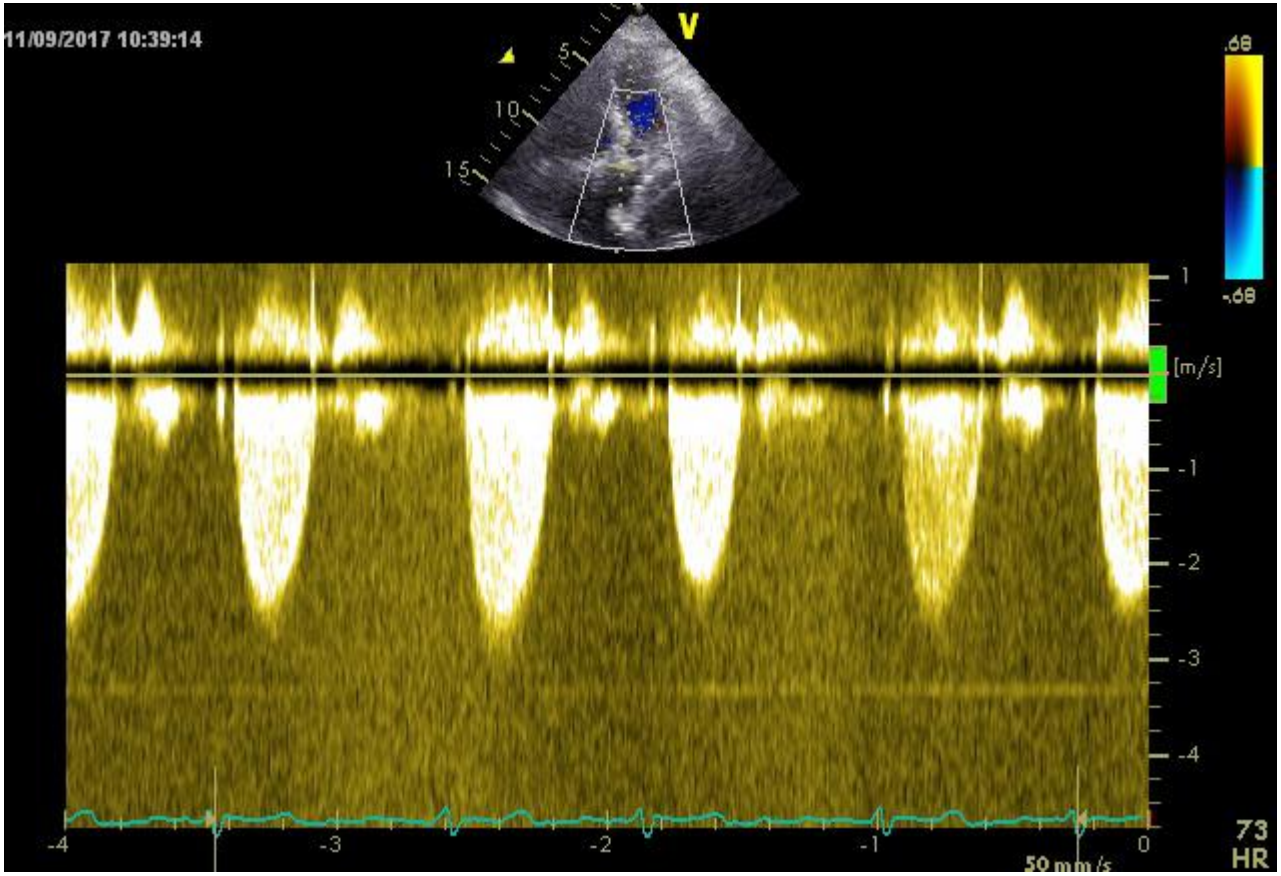
V
5
10
15
74
HR


1 L 4.73 cm
V
5
10
15
74
HR


v 0.96 m/s
p 3.69 mmHg
V
5
10
15
1.5
1.0
0.5
[m/s]
-0.5
-1.0
-4
-3
-2
-1
-0
50 mm/s
74
HR


11/09/2017 10:36:52
V
5
10
15
0.5
[m/s]
-0.5
-1.0
-1.5
-2.0
-4
-3
-2
-1
0
50 mm/s
74
HR


1 Vmax 2.77 m/s
Vmean 1.98 m/s
Pmax 30.72 mmHg
Pmean 18.09 mmHg
Env.Ti 318.34 ms
VTI 63.13 cm
V
5
10
15
[m/s]
1
-1
-2
-3
-4
-4
-3
-2
-1
-0
50 mm/s
74
HR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V
5
10
15
.68
-.68
1
[m/s]
-1
-2
-3
-4
-4
-3
-2
-1
0
50 mm/s
73
HR

Pulmonic stenosis

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Pulmonic stenosis

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