10° CONGRESSO NAZIONALE

Quello che le Linee Guida Non Dicono

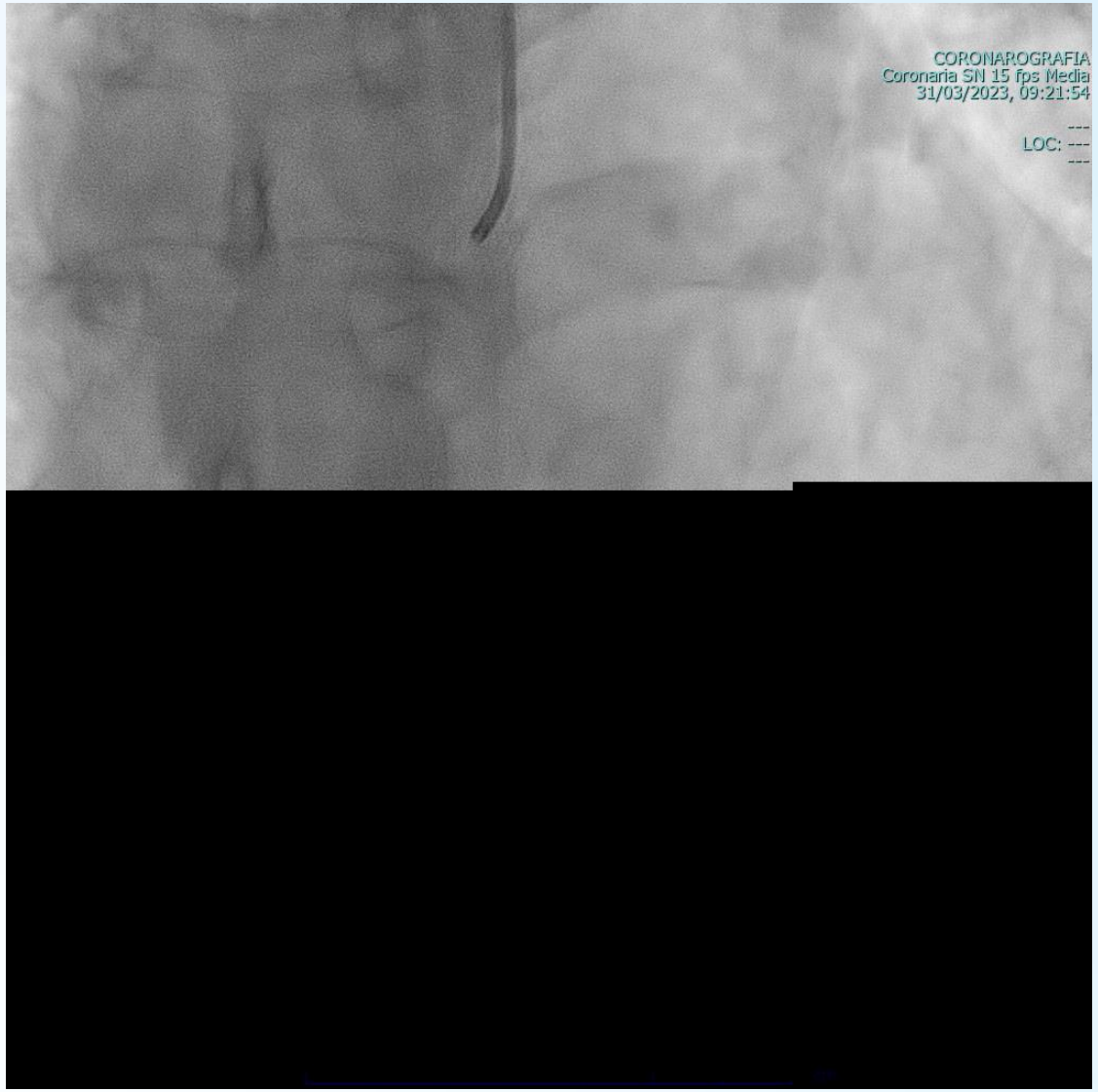
Napoli
Hotel Excelsior
14-15 aprile 2023

ECOCARDIOGRAFIA NELLA SINDROME CORONARICA CRONICA - ECOSTRESS

Ercole Tagliamonte, FESC, FACC, FEACVI

CASO CLINICO

- RG, maschio, 61 anni
- Fattori di rischio: Dislipidemia, tabagismo, familiarità per CAD
- Asintomatico
- Ricovero per sospetta coronaropatia
- Esami ematochimici:
  - Colesterolo LDL 112 mg/dl
- Esame ecocardiografico basale nella norma
- Esame coronarografico…….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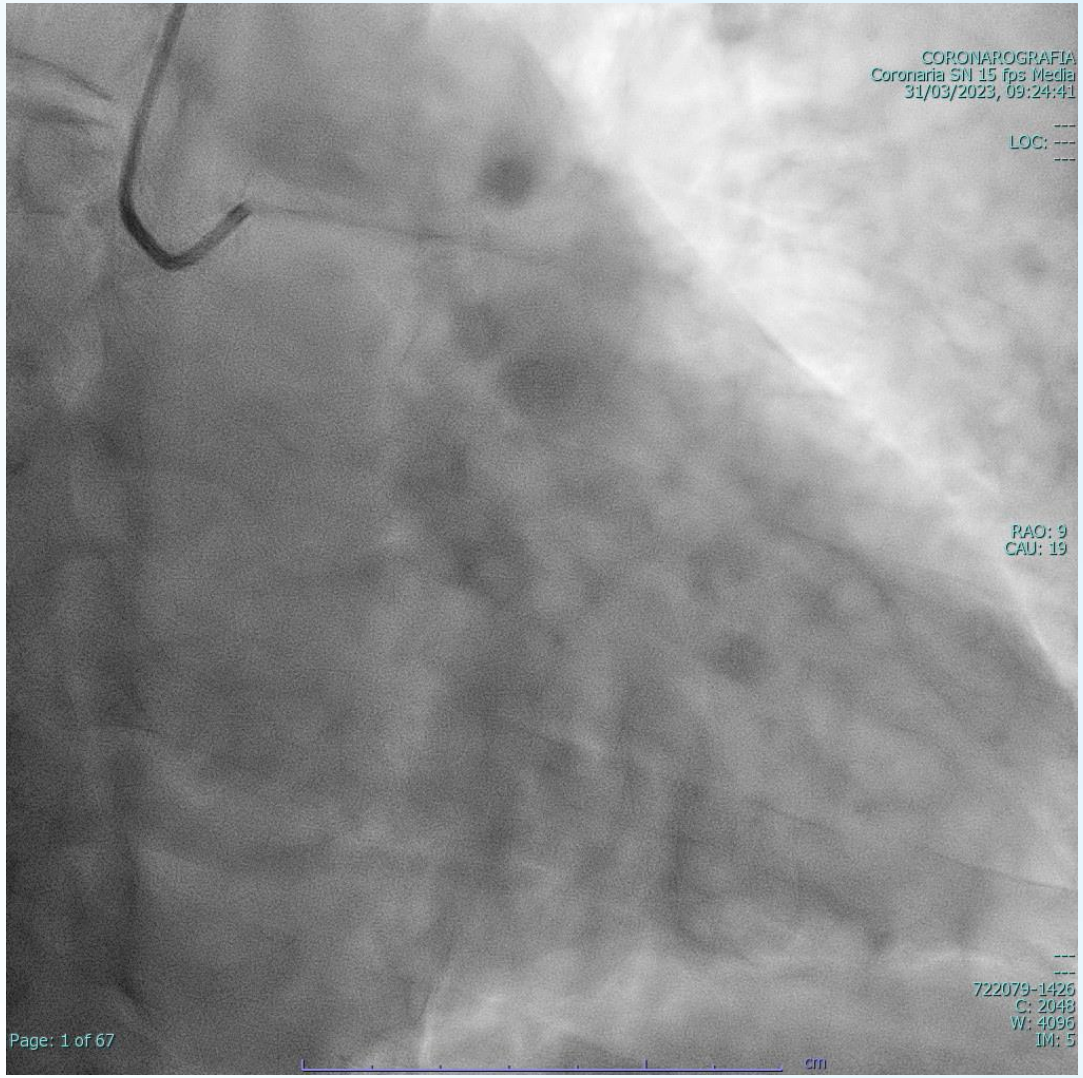
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Page: 1 of 67
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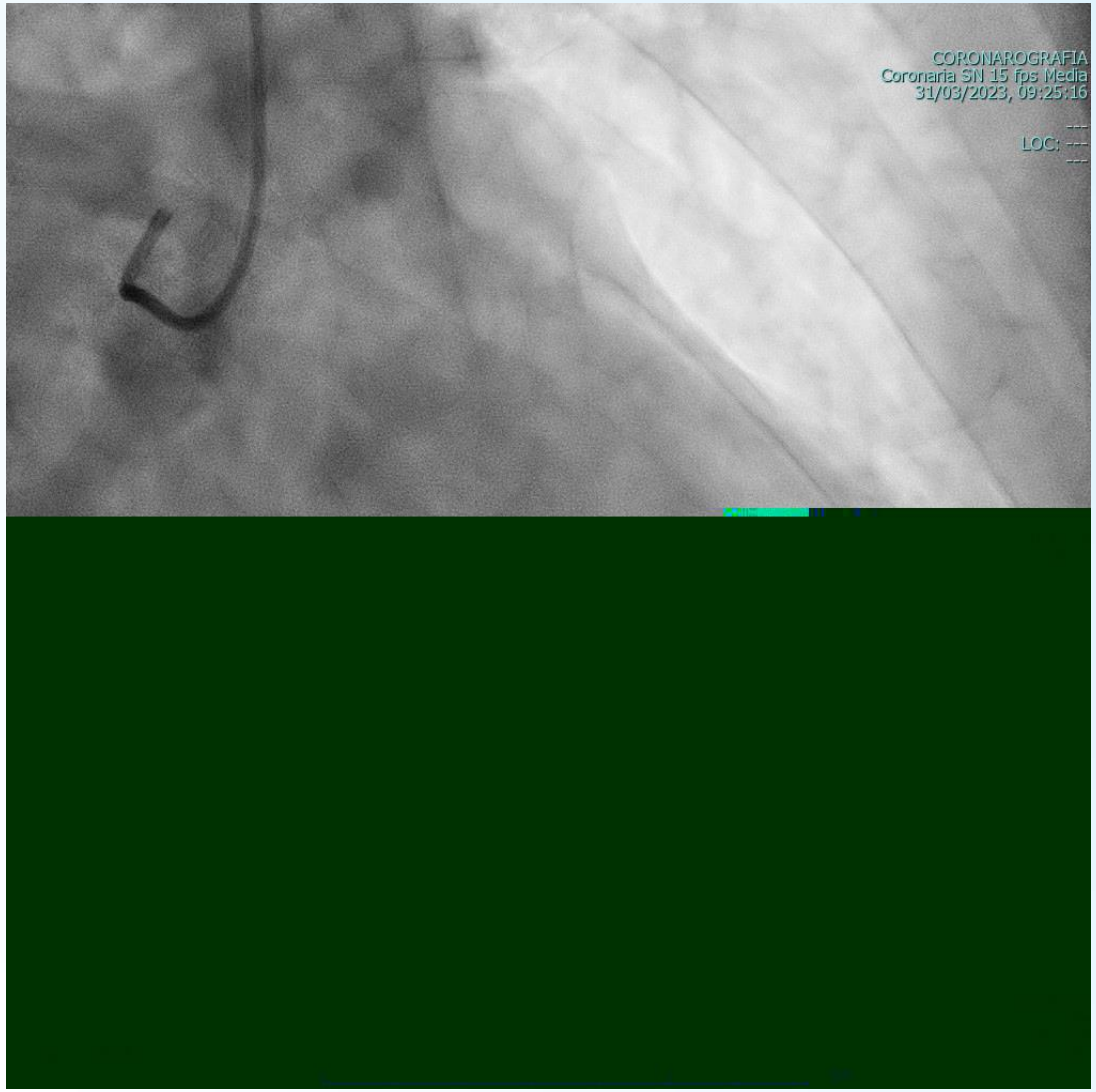
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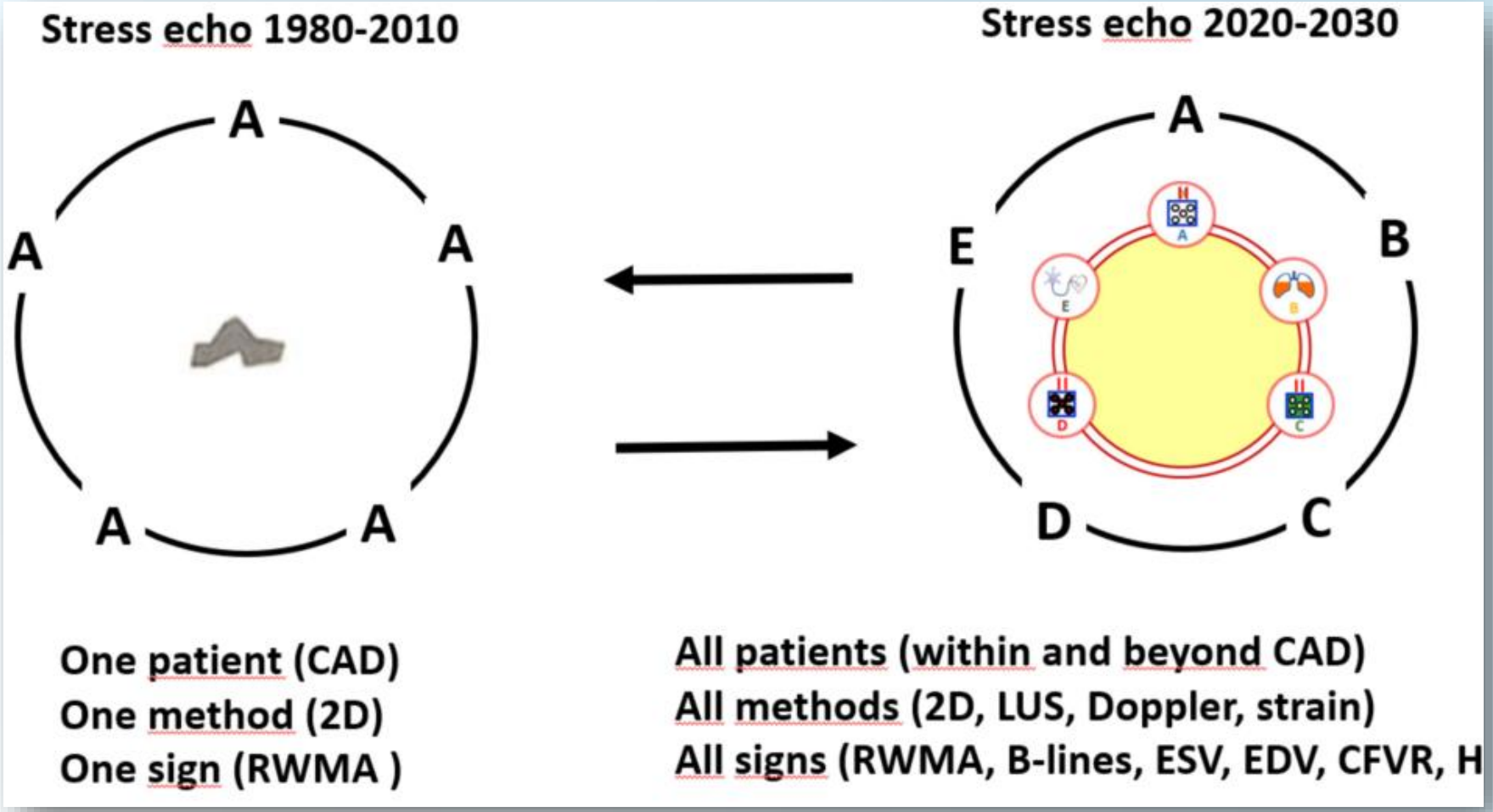
Questo è un lavoro per...

S tress-Echo

The evolution of Stress Echo



Stress echocardiography assessed by the ABCDE protocol

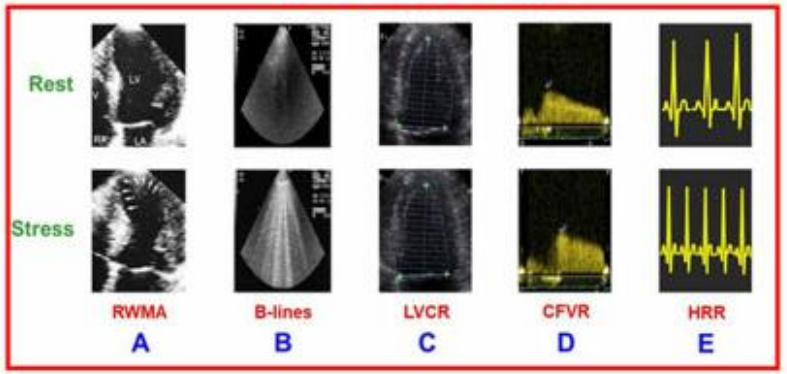
3,574 patients with known or suspected chronic coronary syndromes

13 centers from 5 countries enrolling after web-based quality control of each of the 5 steps (A B C D and E) of stress echo reading

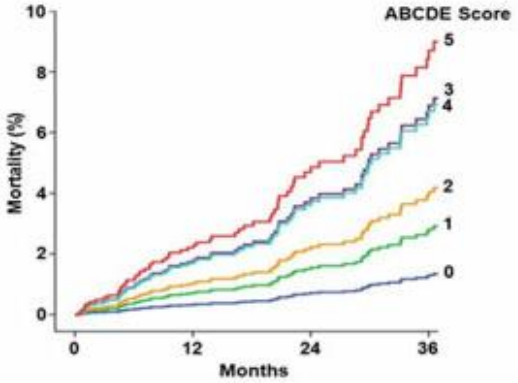
Median follow-up time 21 months

Outcome measure 73 all-cause deaths

ABCDE Stress Echo

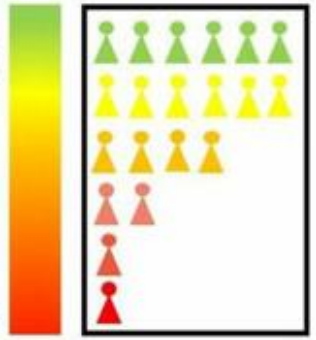


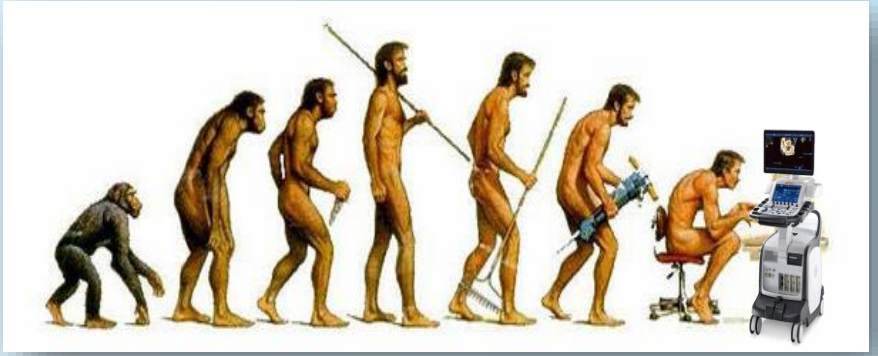
All 5 parameters were normal (score 0) in 31%; score 1 to 4 in 44%; all abnormal (score 5) in 5% of patients

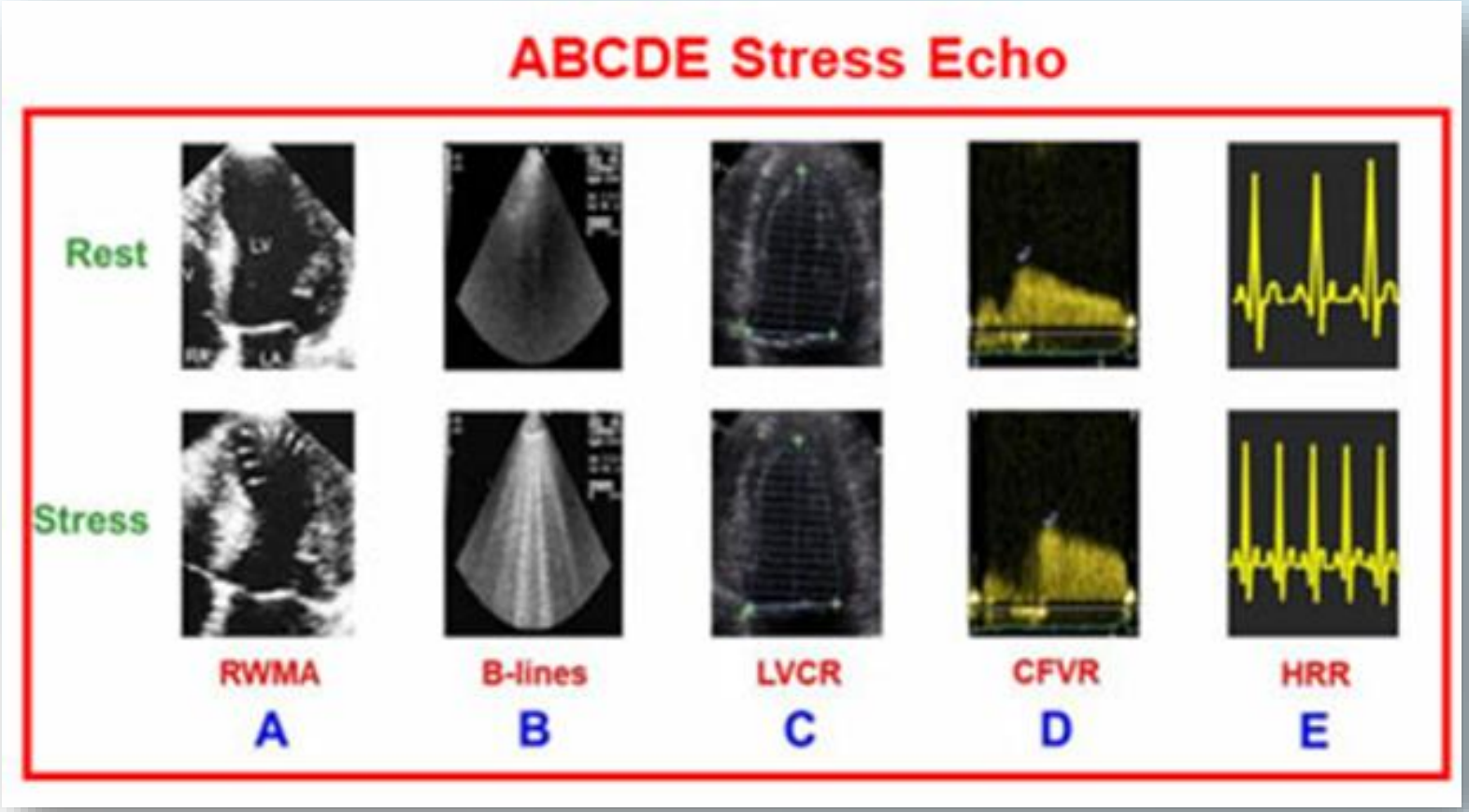


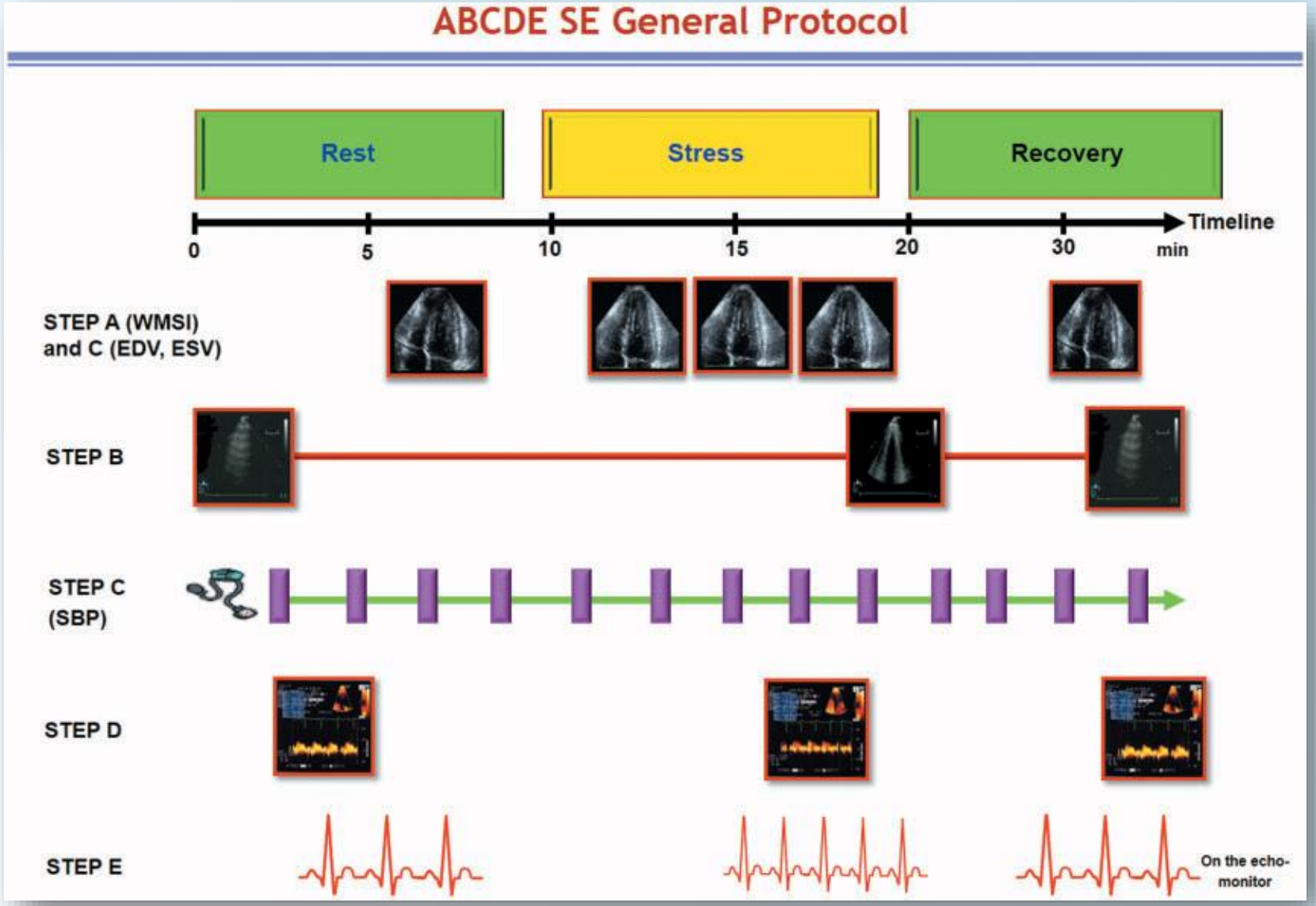
Low Risk
Nonischemic-dry-strong-warm-fast heart (*ABCDE score = 0*)

High Risk
Ischemic-wet-weak-cold-slow heart (*ABCDE score = 5*)



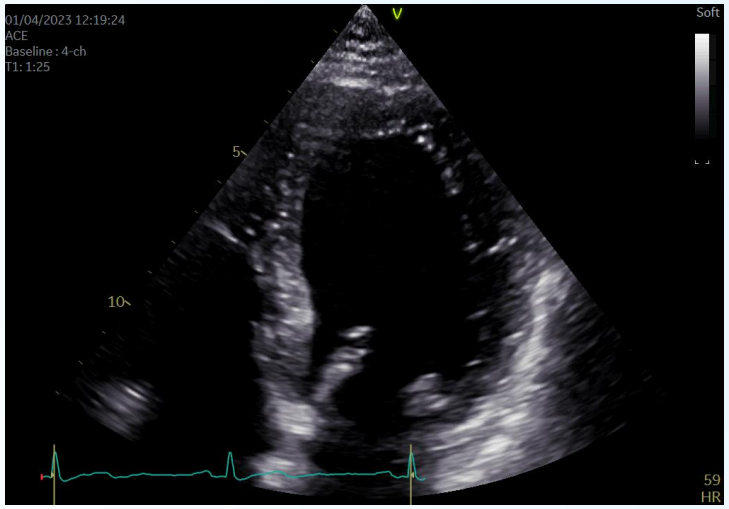


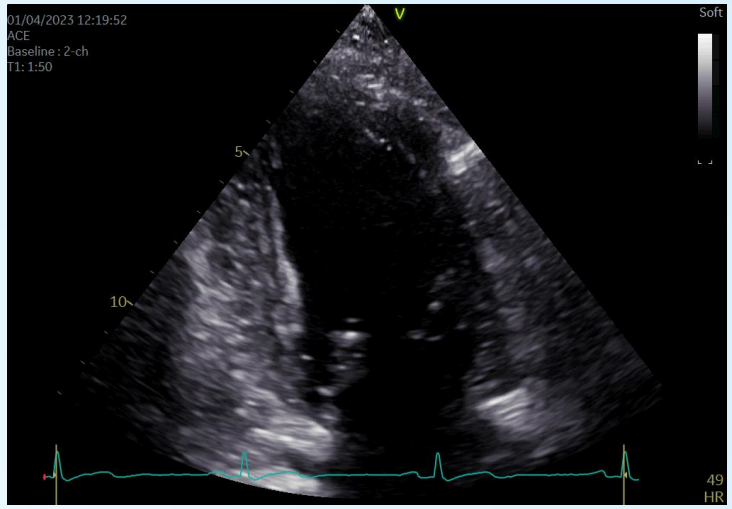

ABCDE Stress Echo
Rest
Stress
RWMA
B-lines
LVCR
CFVR
HRR
A
B
C
D
E

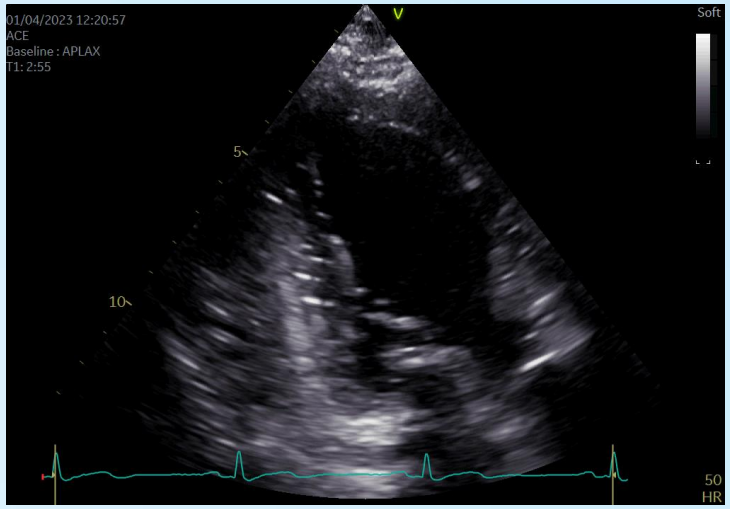

ABCDE SE General Protocol
Rest
Stress
Recovery
0
5
10
15
20
30
Timeline
min
STEP A (WMSI)
and C (EDV, ESV)
STEP B
STEP C
(SBP)
STEP D
STEP E
On the echo-monitor

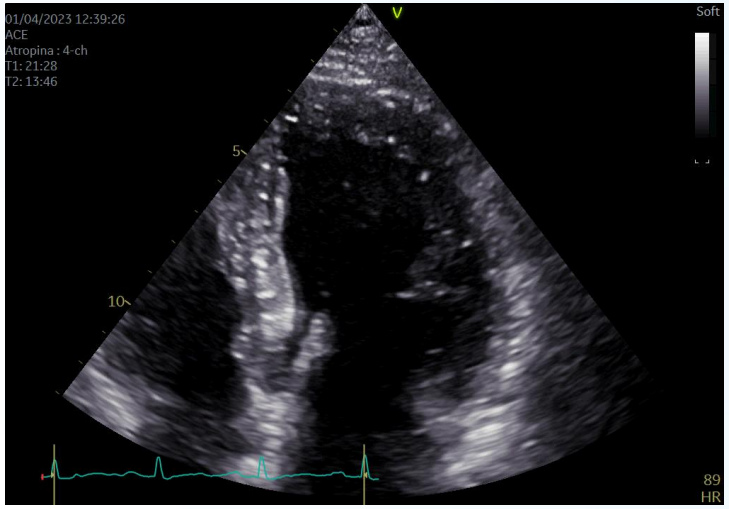
Stress Echo (baseline)

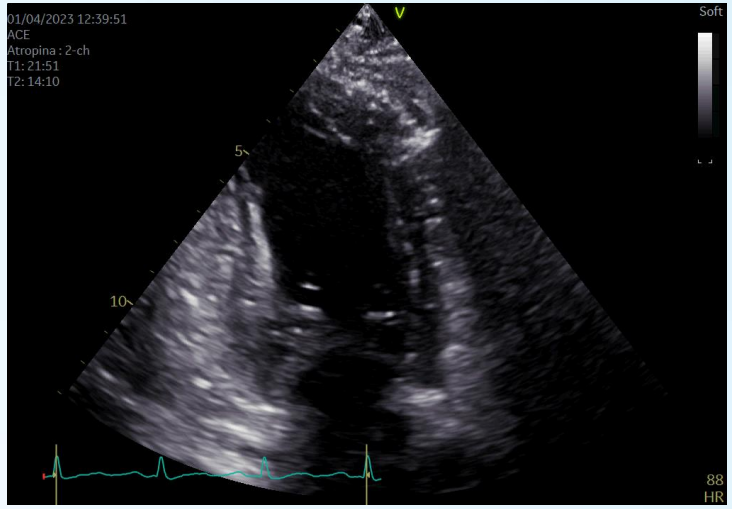
Stress Echo (Step A – RWMA)

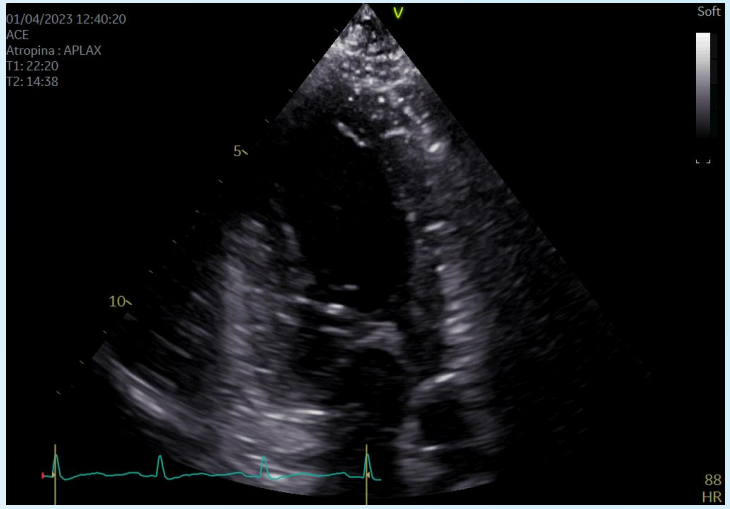










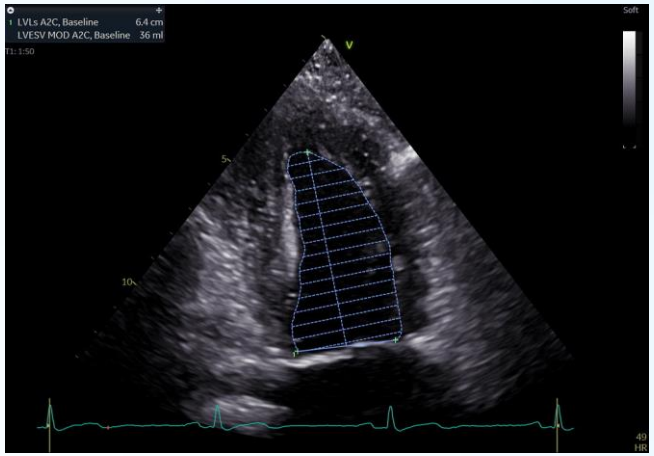


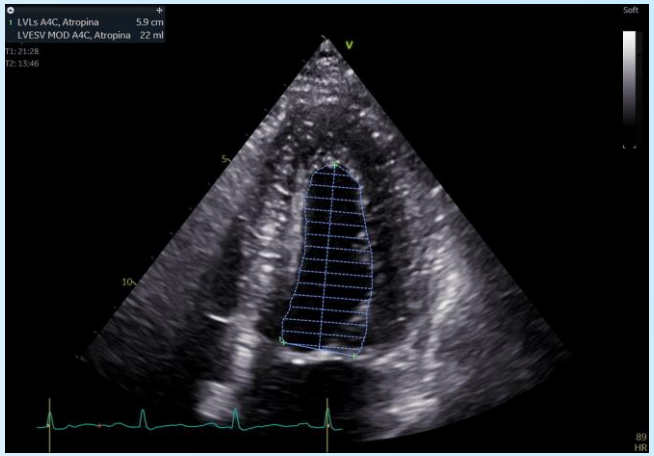
LEFT VENTRICULAR CONTRACTILE RESERVE

- Left ventricular contractility reflects the force of myocardial muscle
- The relationship between end-systolic pressure and volume is regarded as a correct index of contractility
- Left ventricular contractile reserve (LVCR) is a global left ventricular response to exercise, and can be assessed by stress echocardiography

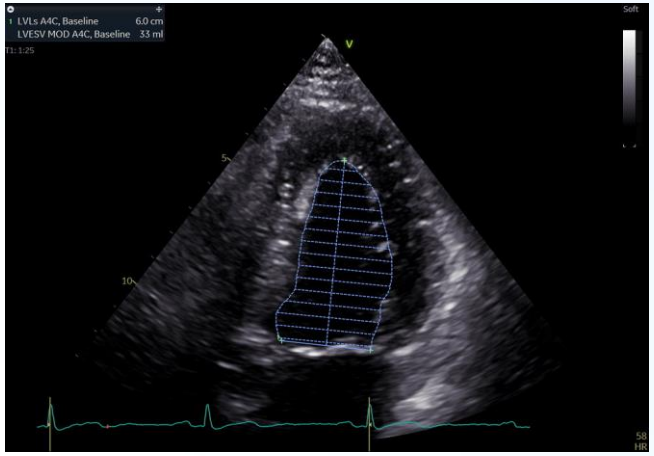
- The stress/rest ratio of a non-invasive pressure-volume relationship, between systolic blood pressure and left ventricular end-systolic volume, is independent from preload and afterload changes, and has demonstrated to be prognostically powerful

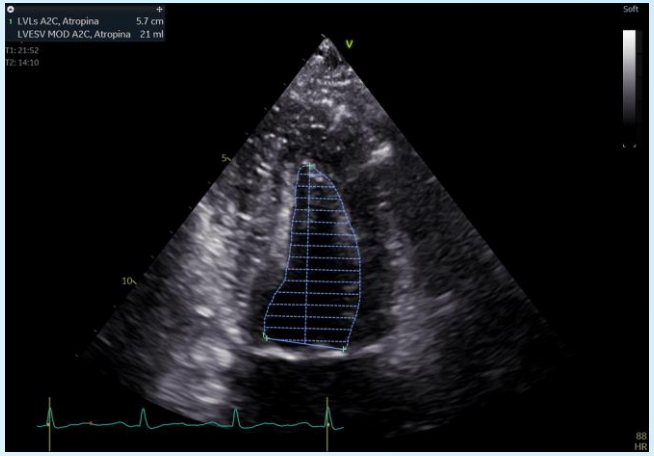
Stress Echo (Step C – Left Ventricular Contractile Reserve)



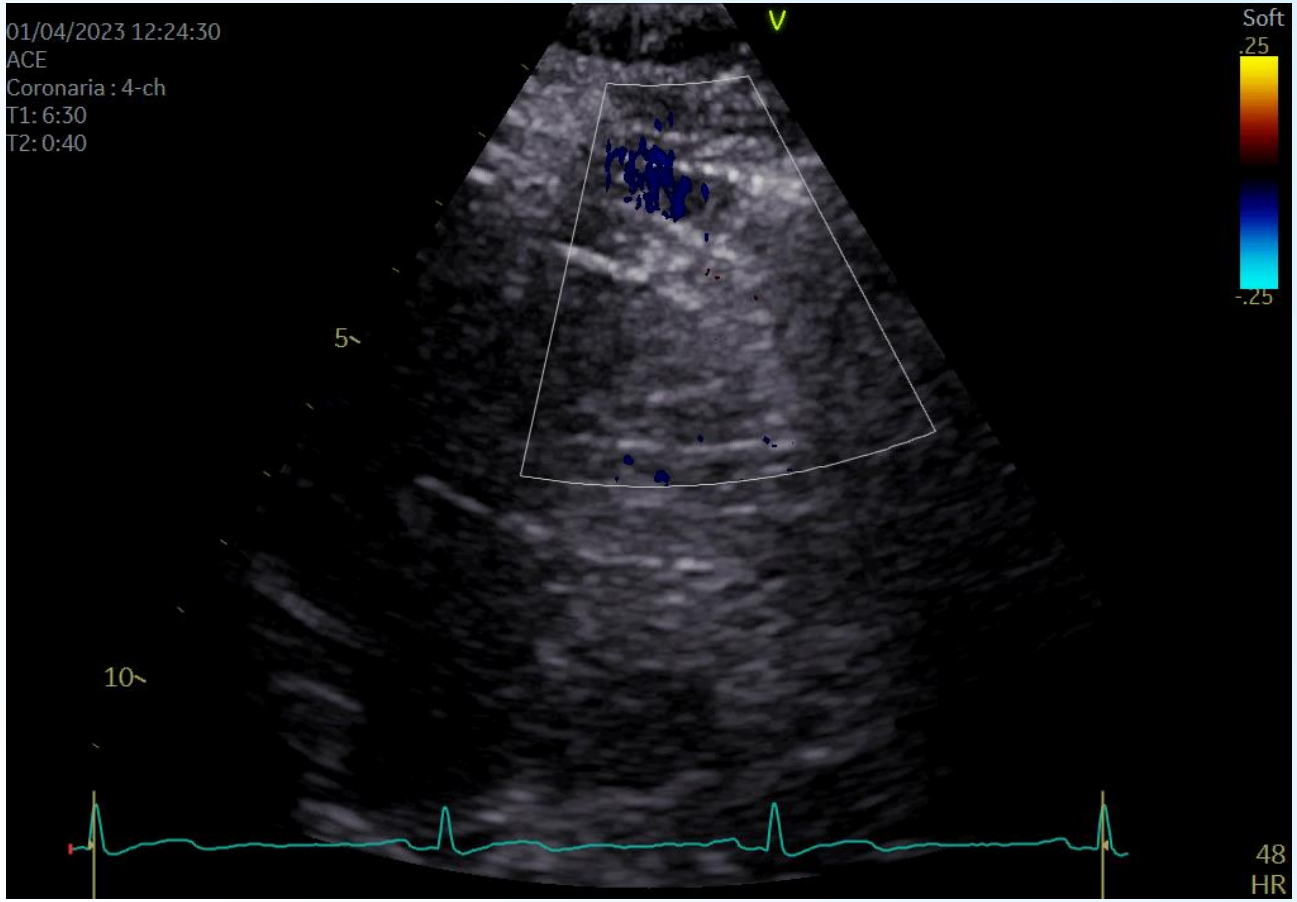


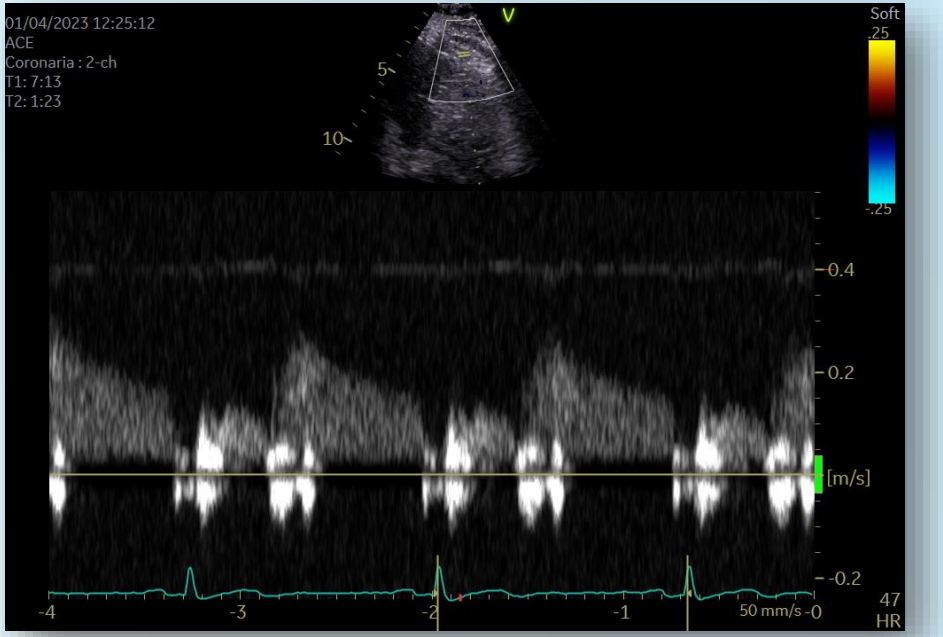
- Step C of protocol included the force-based assessment of LVCR
- Force = Systolic blood pressure/end-systolic volume
- LVCR = Stress/rest ratio of force
- Normal range
  - > 2.0 (Dobutamine)
  - > 1.1 (Dipyridamole/Adenosine)



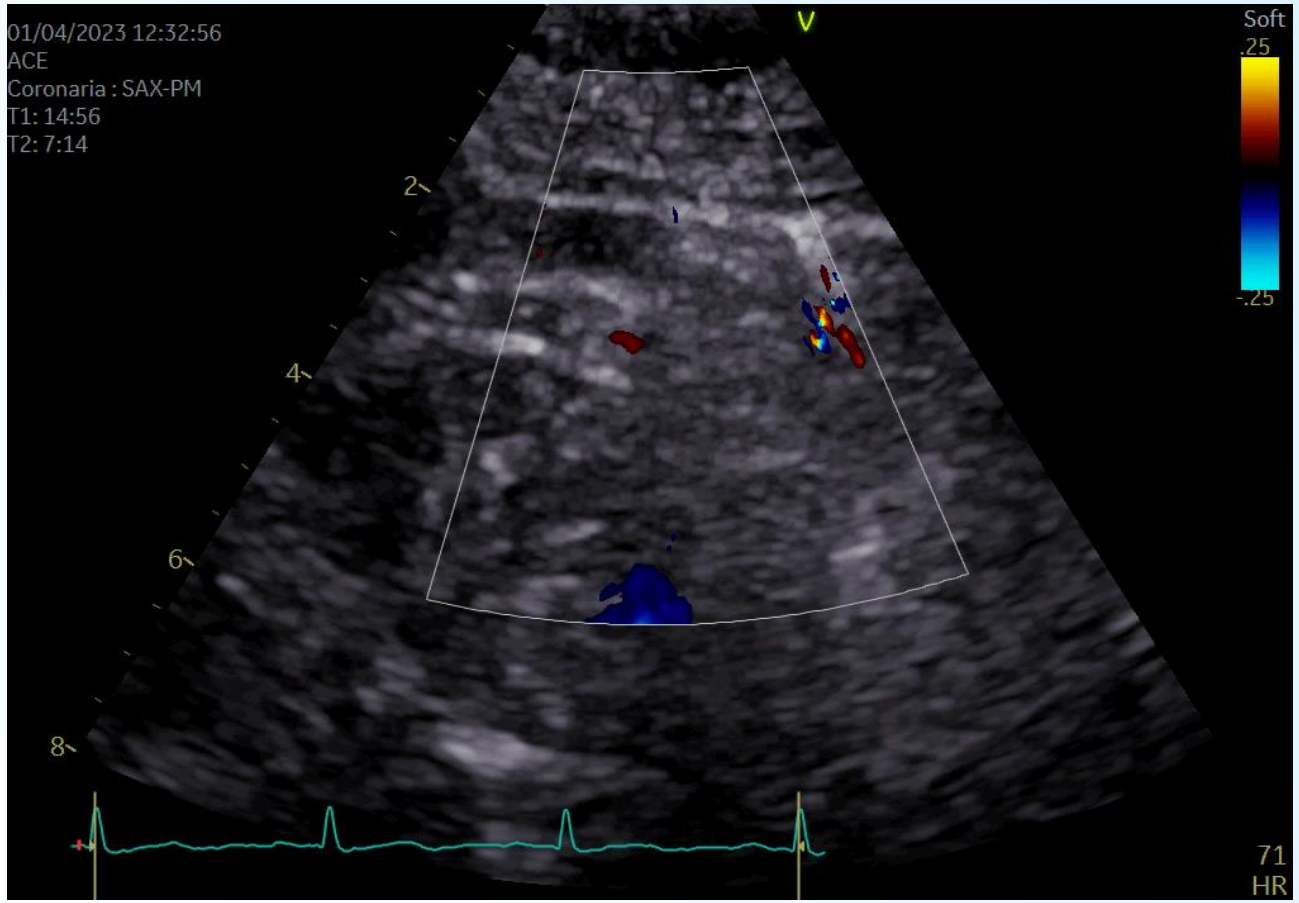


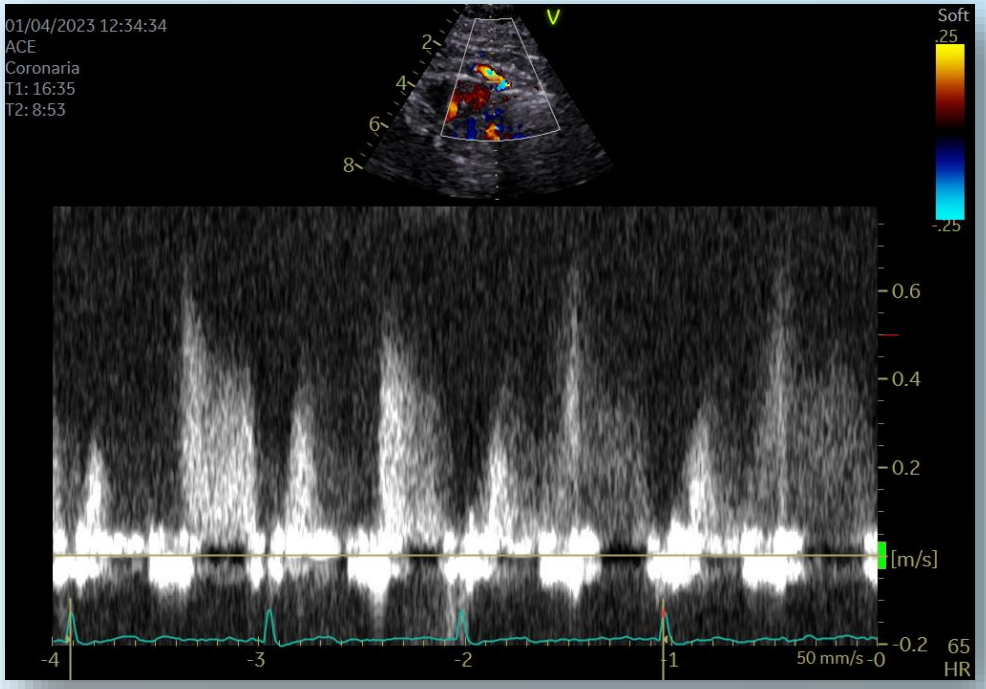
Stress Echo (Step D – Coronary Flow Velocity Reserve)





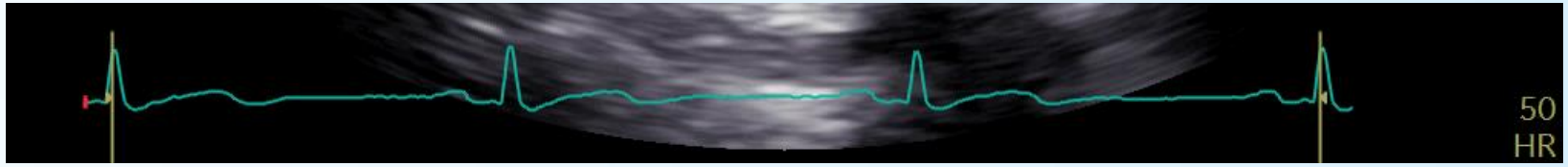
Stress Echo (Step D – Coronary Flow Velocity Reserve)

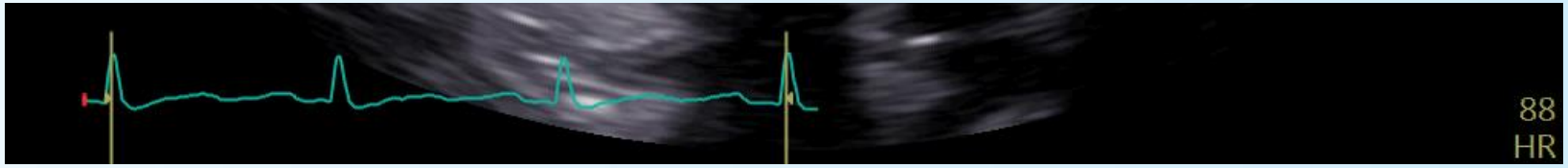




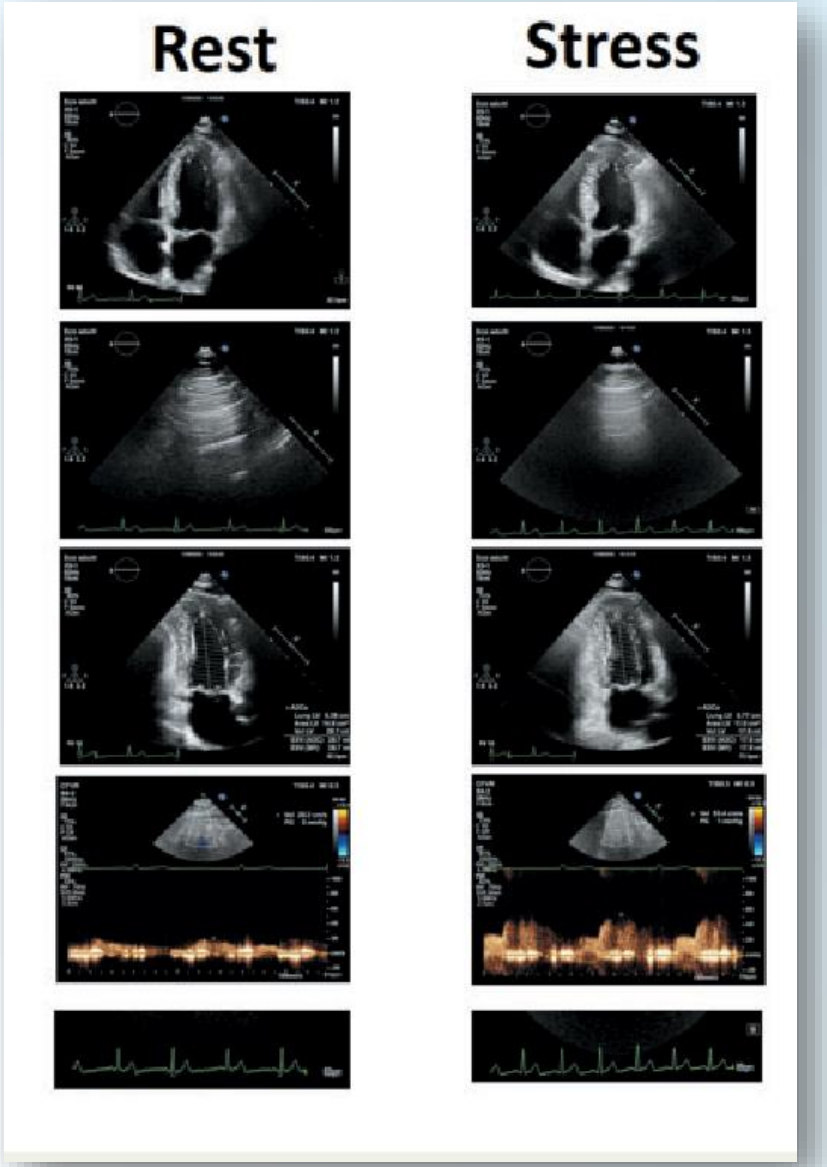
- LVCR = stress/rest ratio of peak diastolic velocity
- **Normal range: > 2**

Stress Echo (Step E – Heart Rate Reverve)





- HRR = stress/rest ratio of Heart Rate
- Normal range
  - > 1.8 (Dobutamine)
  - > 1.22 (Dipyridamole/Adenosine)

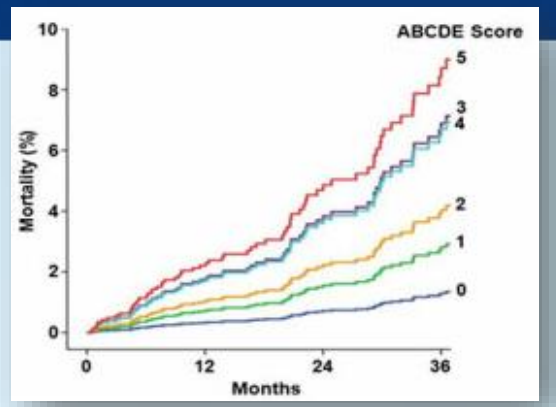


Step A

RWMSI = 1

RWMSI = 1

Δ WMSI = 0



Step B

Rest B-lines = 0

Stress B-lines = 0

Δ B-lines = 0

Step C

Rest Force = 3,48 mmHg/ml

Peak Force = 5,12 mmHg/ml

LVCR = 1.47

Step D

Rest Coronary Flow = 27 cm/sec

Peak Coronary Flow = 76 cm/sec

CFVR = 2.8

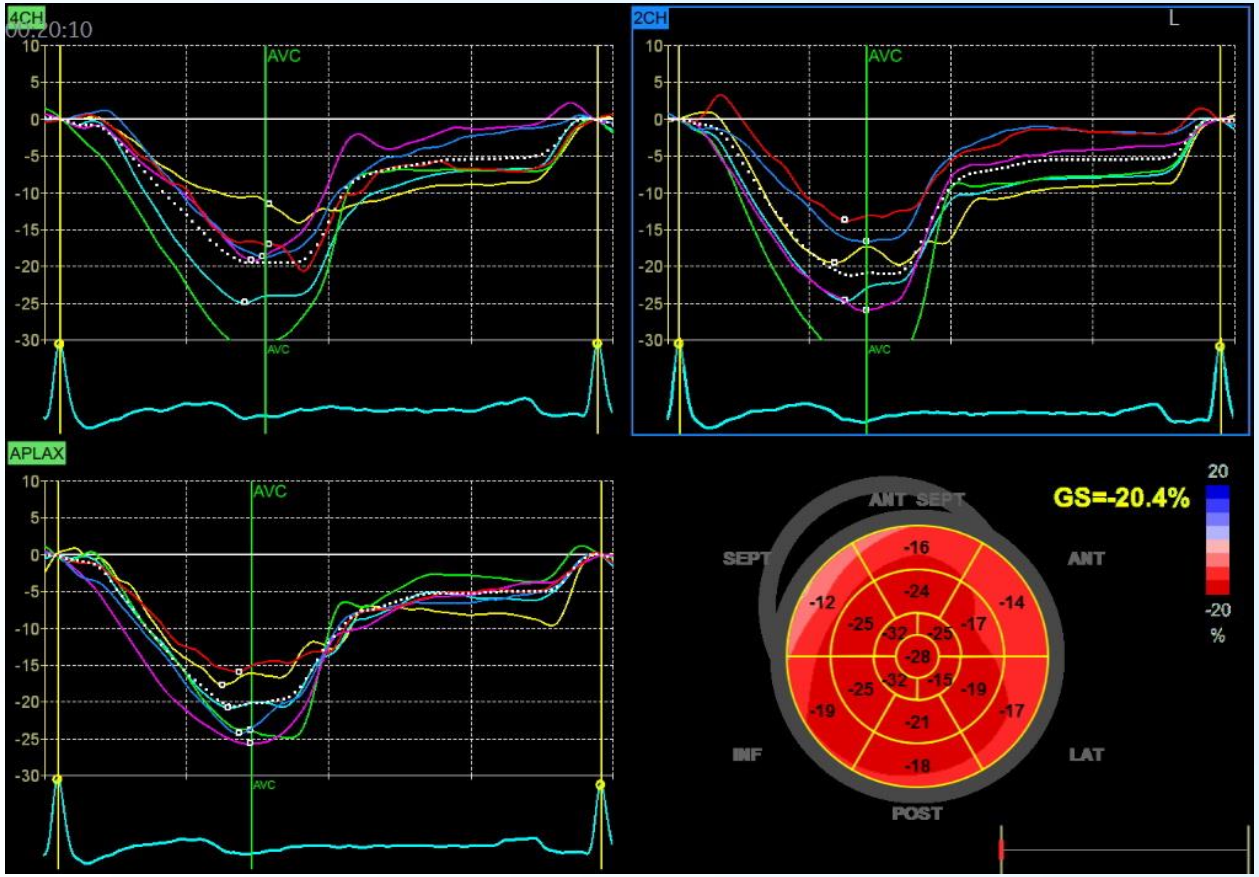
Step E

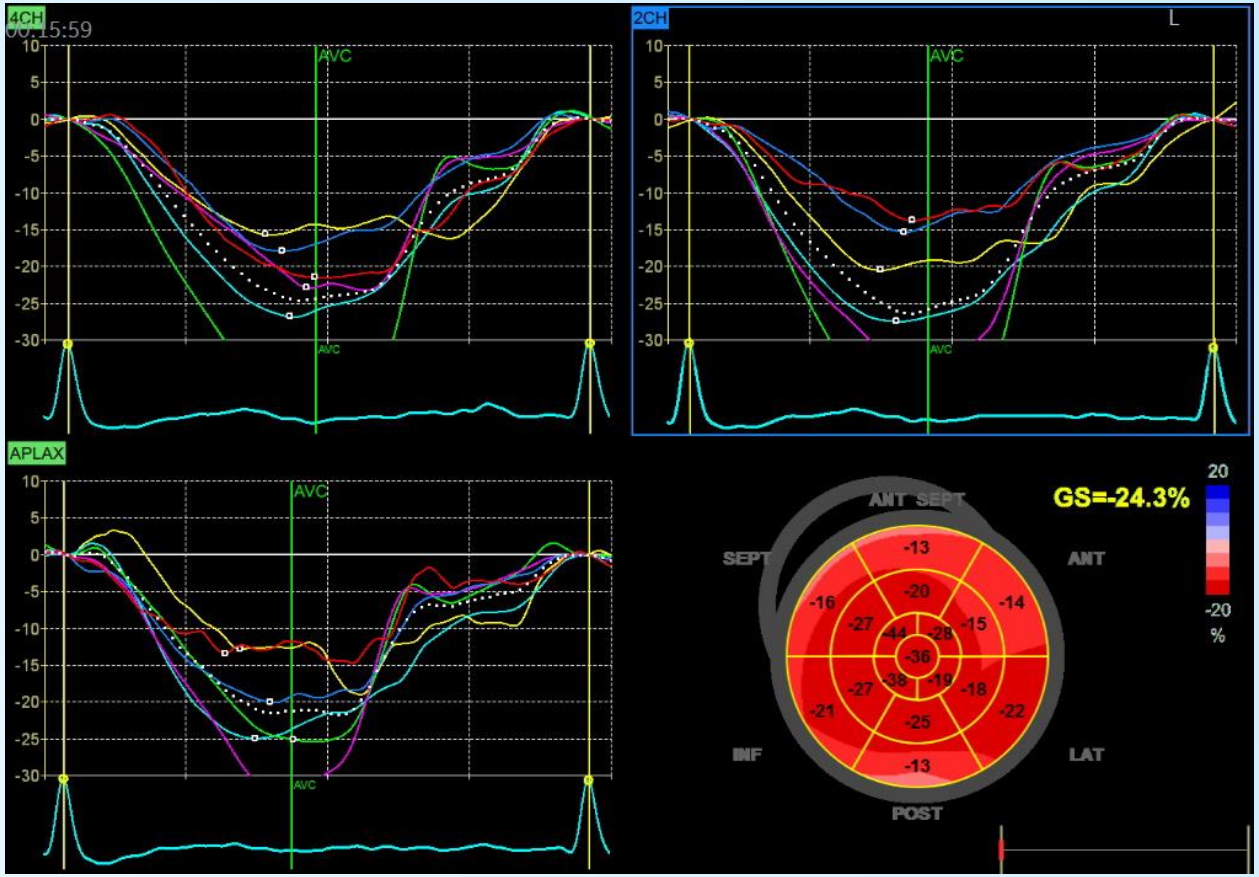
Rest HR = 50 bpm

Peak HR = 88 bpm

HRR = 1.76

Stress Echo (Global Longitudinal Strain)





Thank
You