Stress echo:
Beyond the obvious

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1st case

- Hypertension
- Type 2 diabetes
- Dyslipidemia
- HIV (+)
- Parkinson’s disease
- Depression

Hb = 114gr/dl
MCV = 84.5fL

- 2012 PCI: LCx and OM1
- 3/2013: chest pain on exertion => patent stents, non-obstructive lesion at the ostium of LCx
- 15/8/2017: chest pain, syncope, melena

Male 64 years old

Hypertension
Type 2 diabetes
Dyslipidemia
HIV (+)
Parkinson’s disease
Depression
### Stress Protocol: Pharmacologic - Dobutamine

<table>
<thead>
<tr>
<th>Stage</th>
<th>Time</th>
<th>Dosage</th>
<th>Other Medication</th>
<th>Dosage</th>
<th>HR</th>
<th>BP</th>
<th>RPE</th>
<th>CP</th>
<th>Pain Location</th>
<th>Pain Type</th>
<th>Pain Action</th>
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<td>Recovery</td>
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<td>96</td>
<td>100160</td>
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</table>
Baseline
Dynamic LVOTO takes place in 15-20% patients during DSE.\(^1\)

It is related to hypotension and decrease in HR in 50% of patients.\(^2\)

Dyspnea ± Chest pain.

In rare occasions it can lead to RWMAs and finally even to acute myocardial infarction.\(^1\)

It is prognostic of chest pain, syncopal and presyncopal episodes.\(^3\)

\(^1\) Makaryus AN Int J Cardiovasc Imaging 2006 Dec;22(6):763-9.


\(^3\) Dawn B. Am Heart J. 2005 May;149(5):908-16.
Predisposing factors for SAM:

(1) excessive anterior or posterior leaflet tissue
(2) any anatomical or surgical translocation of the mitral valve anteriorly
(3) aortomitral angle <120°
(4) pathological or post-surgical correction elongation of the anterior leaflet
(5) annular undersizing in mitral valve repair
(6) chordal anomalies such as elongation and buckling
(7) surgical chordal interventions such as transection, translocation, and reimplantation
(8) anterior and medial displacement of the papillary muscles
(9) bulging subaortic septum
(10) absolute height of the posterior leaflet (>1.5 cm)
(11) anterior to posterior leaflet height ratio (<1.4)
(12) minimum distance from the coaptation point to the septum (C-Sept, <2.5 cm).

2nd case

Beyond diastology
60 years old female
Hypertensive
SOBOE
In patients with normal LV EF

- Average E/e’ > 14
- Septal e’ velocity < 7 cm/s or Lateral e’ velocity < 10 cm/s
- TR velocity > 2.8 m/s
- LA volume index > 34 ml/m²

55-60%

<50% positive → Normal Diastolic function

50% positive → Indeterminate

>50% positive → Diastolic Dysfunction

6.11 → 9
8 → 8
1.89 → 41.86
E = 0.52 m/s  E/e' = 6.11  e' sept = 0.09 m/s  e' lat = 0.08 m/s

E = 1.26 m/s  E/e' = 11.45  e' sept = 0.11 m/s  e' lat = 0.11 m/s
Diastolic stress echo results

**Grey zone**

Peak average E/e' 10-14 ???

or

Peak septal E/e' 10-15 ???

**INDETERMINATE**

Exercise right heart catheterization  

Coronary angiogram
A change in E/e’ >25% (stress-rest) was highly associated with a positive stress test and abnormal CCTA result
“So that the coming together depends on the going apart; the systole depends on the diastole; the flow depends on the ebb.”

D.H. Lawrence

NEJM, 1991
1. At peak, first look for RWMAs

2. At recovery, look for diastolic parameters as increased E/e’ persists in recovery

Other findings during diastolic stress echo

✓ LV Outflow Track Obstruction
✓ New RWMAs
✓ Dynamic MR
✓ Chronotropic incompetence