Acute coronary syndrome with high risk features

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Clinical history

• Male 65 y.o.
• Acute coronary syndrome, no evidence of MI by ECG or enzymes.
• Echo with WM abnormalities.
• Submitted for myocardial perfusion study (MPS) with pharmacologic test.
• Dipyridamole (0.56 mg/Kg) + rest in 2-day protocol with 99mTc-MIBI.
Myocardial perfusion study
The perfusion result is consistent with:

a) Anteroseptal defect - due to LBBB.
b) Anteroseptal myocardial ischemia.
c) Anterolateral myocardial ischemia.
d) Anterolateral infarction + technical artifact.
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- There is a large reversible perfusion defect involving the anterolateral wall, indicating extensive ischemia.
- Subendocardial infarction not ruled out because of small persistent perfusion deficit at the posterior aspect of the same wall.
Quantitation of perfusion and function
The quantitative results indicate:

a) Both EDV and ESV are increased, at stress and rest.

b) EDV and ESV are increased at stress only.

c) EDV is increased, but ESV is normal at stress and rest.

d) The only LV volume abnormality is increased ESV at stress.
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b) EDV and ESV are increased at stress only.

c) EDV is increased, but ESV is normal at stress and rest.

d) The only LV volume abnormality is increased ESV at stress.
Normal left ventricular volumes with gated SPECT – upper limits*:

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDV</td>
<td>150 mL</td>
<td>100 mL</td>
</tr>
<tr>
<td>ESV</td>
<td>75 mL</td>
<td>50 mL</td>
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</tbody>
</table>

This patient’s volumes:

<table>
<thead>
<tr>
<th></th>
<th>Stress</th>
<th>Rest</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDV</td>
<td>205 mL</td>
<td>191 mL</td>
</tr>
<tr>
<td>ESV</td>
<td>147 mL</td>
<td>126 mL</td>
</tr>
</tbody>
</table>

* QGS software; values may change with different programs.
Follow-up

- The patient was referred for coronary angiography.
- Results: 90% stenosis LAD, occluded MG, 90% stenosis LCx, normal RCA.
- PTCA with stent → LAD + LCx.
Teaching points

• Post-stress decrease in LVEF and/or increase in ESV are strong predictors of cardiac events.

• Transient ischemic dilation (TID) of the LV and a relative drop in post-stress LVEF may represent myocardial stunning.

• In this patient, these findings were associated with 2-vessel disease (including 90% LAD stenosis).

• LV volumes should be considered when interpreting a gated SPECT study. However, abnormal volumes should be reported with caution since significant differences could be obtained using different software packages.

