Symptoms of heart failure with normal ECG

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Clinical history

- Woman 63 y.o.
- Overweight, hypertension, dyslipemia, type II diabetes.
- Mild/moderate renal insufficiency.
- 2 acute episodes of pulmonary edema 8-3 months before.
- Presents with chest pain and weakness after mild exercise.
- The rest ECG was totally normal.
- Medication: ARBS, diuretics, metformin, statins.
• The patient was submitted for a stress-rest myocardial perfusion study (MPS) with dipyridamole.

• 99mTc-MIBI two-day protocol was used (25 mCi, 925 MBq each day), starting with the rest study.

• The stress test was well tolerated, with no ECG changes and no symptoms, and normal BP response.
MPS – qualitative result
MPS – quantitative result (perfusion)
MPS – quantitative result (LV function)
The study result is consistent with:

a) Myocardial infarction with no ischemia
b) Myocardial infarction with ischemia
c) Hibernating myocardium and ischemia
d) b & c
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- There are reversible defects suggesting mild/moderate ischemia, especially at the antero-lateral wall.
- Either myocardial infarction or hibernation, or a mixture of both, could explain the fixed defects at the anterior, apical and inferior walls.
- Since the patient had a normal ECG and the ischemic burden was low, she was submitted for a viability study with $^{18}\text{F}$-FDG.
PET with 18F-FDG
Summary of perfusion/metabolic imaging

MIBI Dip

MIBI Rest

FDG
How would you read the result?

a) Normal perfusion with abnormal metabolism
b) Abnormal perfusion with abnormal metabolism

Abnormal perfusion with normal metabolism
d) Normal perfusion with normal metabolism
How would you read the result?

a) Normal perfusion with abnormal metabolism
b) Abnormal perfusion with abnormal metabolism
c) Abnormal perfusion with normal metabolism
d) Normal perfusion with normal metabolism

• This is a perfusion-metabolism *mismatch*, consistent with myocardial *hibernation*.
• Since there is evidence of viability, revascularization is warranted.
• Of note, the patient could have probably been sent for catheterization anyway since there was some evidence of ischemia in the stresss/rest MIBI study.
Follow-up

- The patient was sent to catheterization.
- Three-vessel disease was observed with diffuse lesions and thin arteries.
- Not a candidate for revascularization due to technical limitations.
- She was put on aggressive medical treatment with some clinical improvement at 6 months follow-up.
Teaching points

- Myocardial viability assessment is indicated in patients with chronic LV dysfunction.
- In patients with LV dysfunction and myocardial viability, the mortality is significantly lower in those treated with revascularization than those treated medically.
- The extent of perfusion–metabolism mismatch is proportional to mortality rate in medically treated patients with chronic ischemic LV dysfunction.
Bibliography


