

Symptoms of heart failure with normal ECG

F. Mut, A. Beltran, M. Kapitan

Nuclear Medicine Service, Italian Hospital
& CUDIM

Montevideo, Uruguay

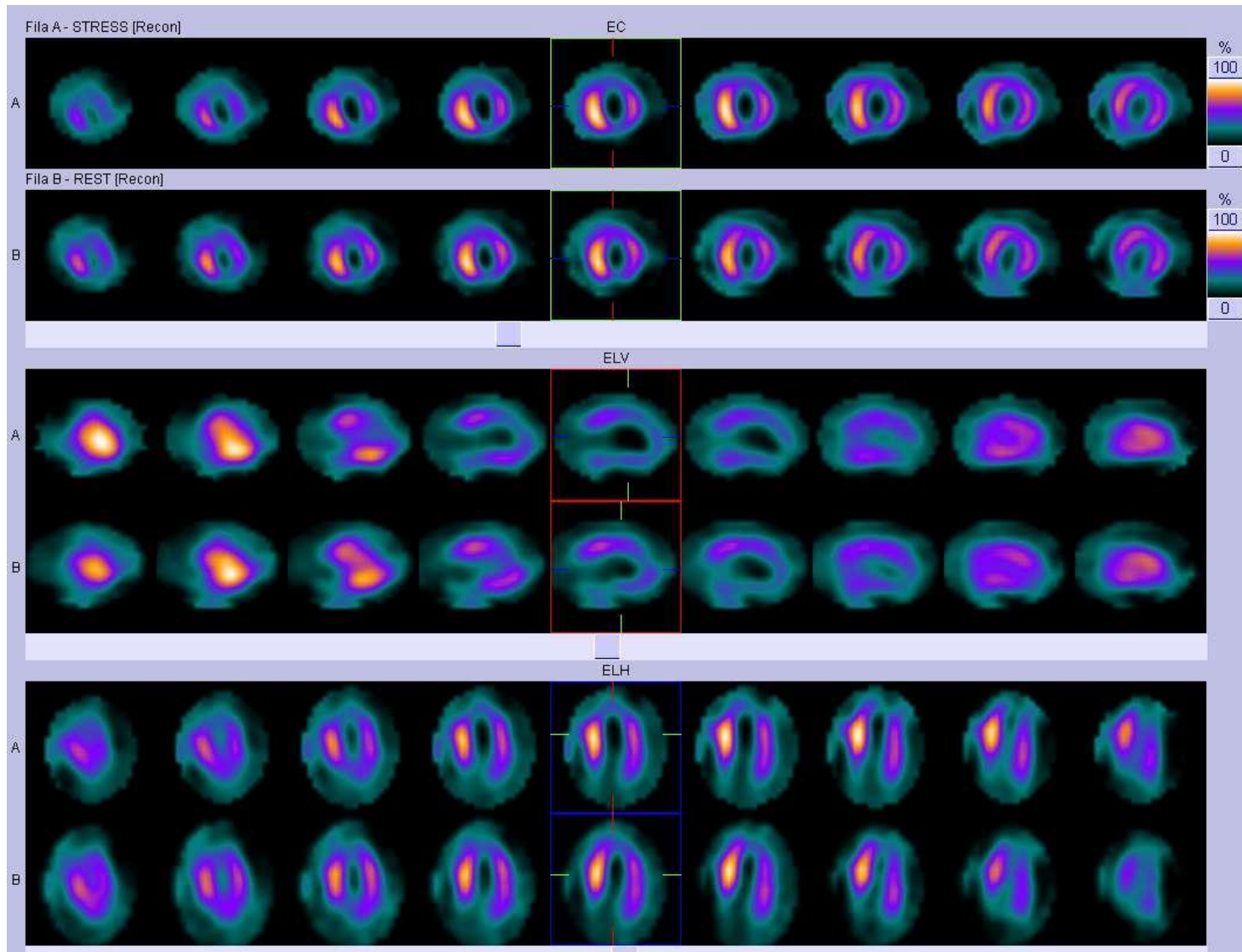


Clinical history

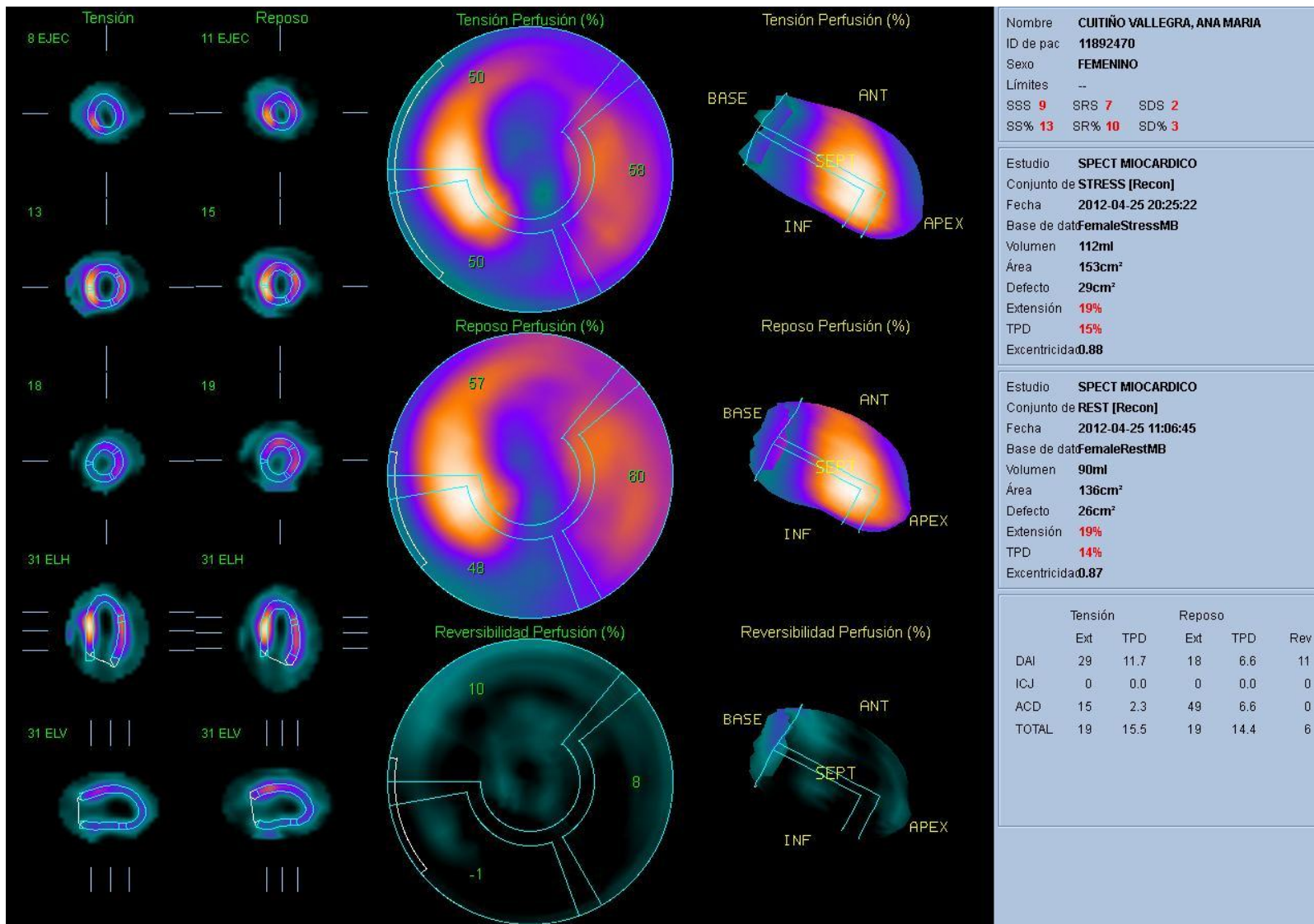
- Woman 63 y.o.
- Overweight, hypertension, dyslipemia, type II diabetes.
- Mild/moderate renal insufficiency.
- 2 acute episodes of pulmonary edema 8-3 months before.
- Presents with chest pain and weakness after mild exercise.
- The rest ECG was totally normal.
- Medication: ARBS, diuretics, metformin, statins.

- The patient was submitted for a stress-rest myocardial perfusion study (MPS) with dipyridamole.
- ^{99m}Tc -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.

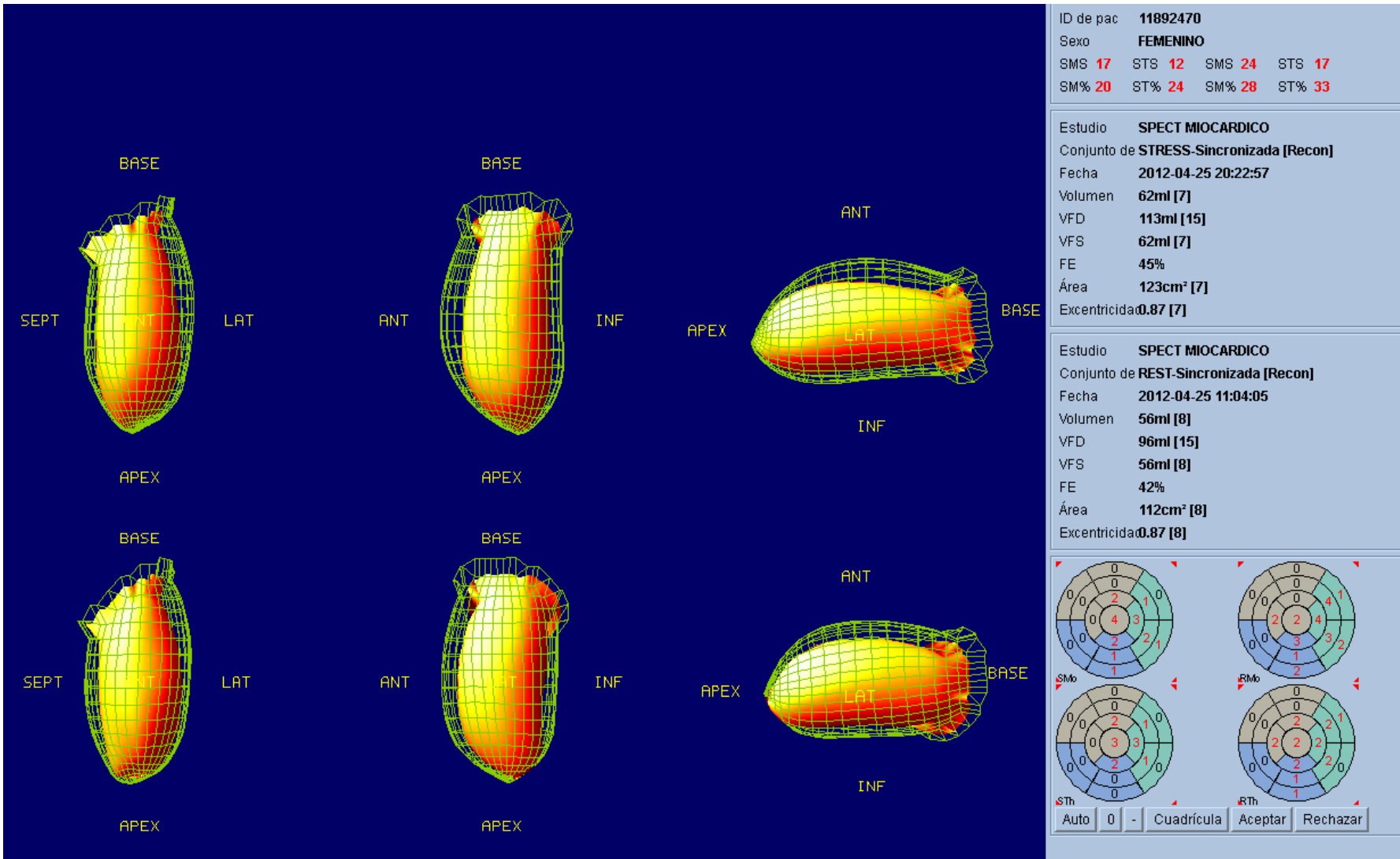
MPS – qualitative result



MPS – quantitative result (perfusion)



MPS – quantitative result (LV function)



The study result is consistent with:

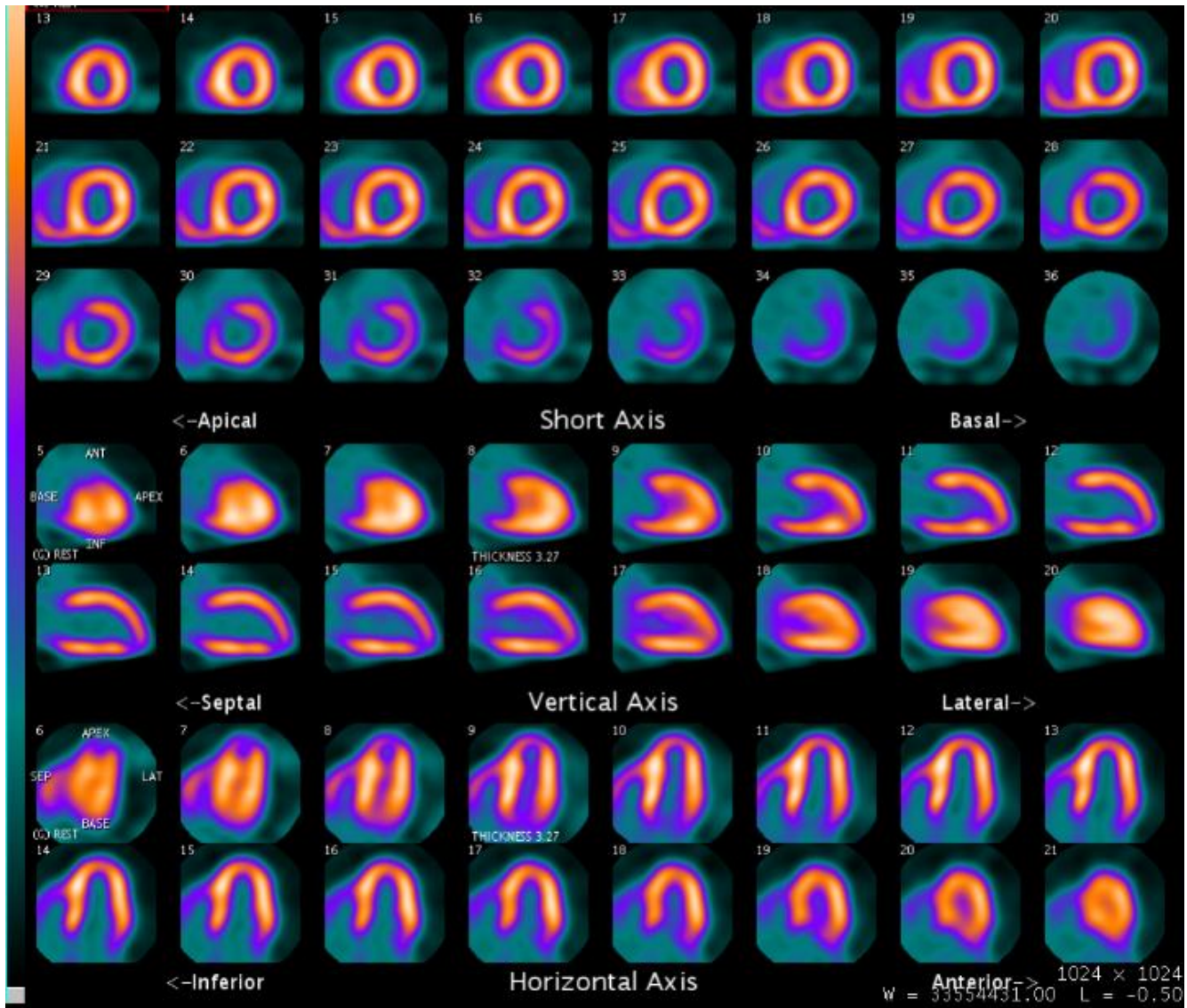
- a) Myocardial infarction with no ischemia
- b) Myocardial infarction with ischemia
- c) Hibernating myocardium and ischemia
- d) b & c

The study result is consistent with:

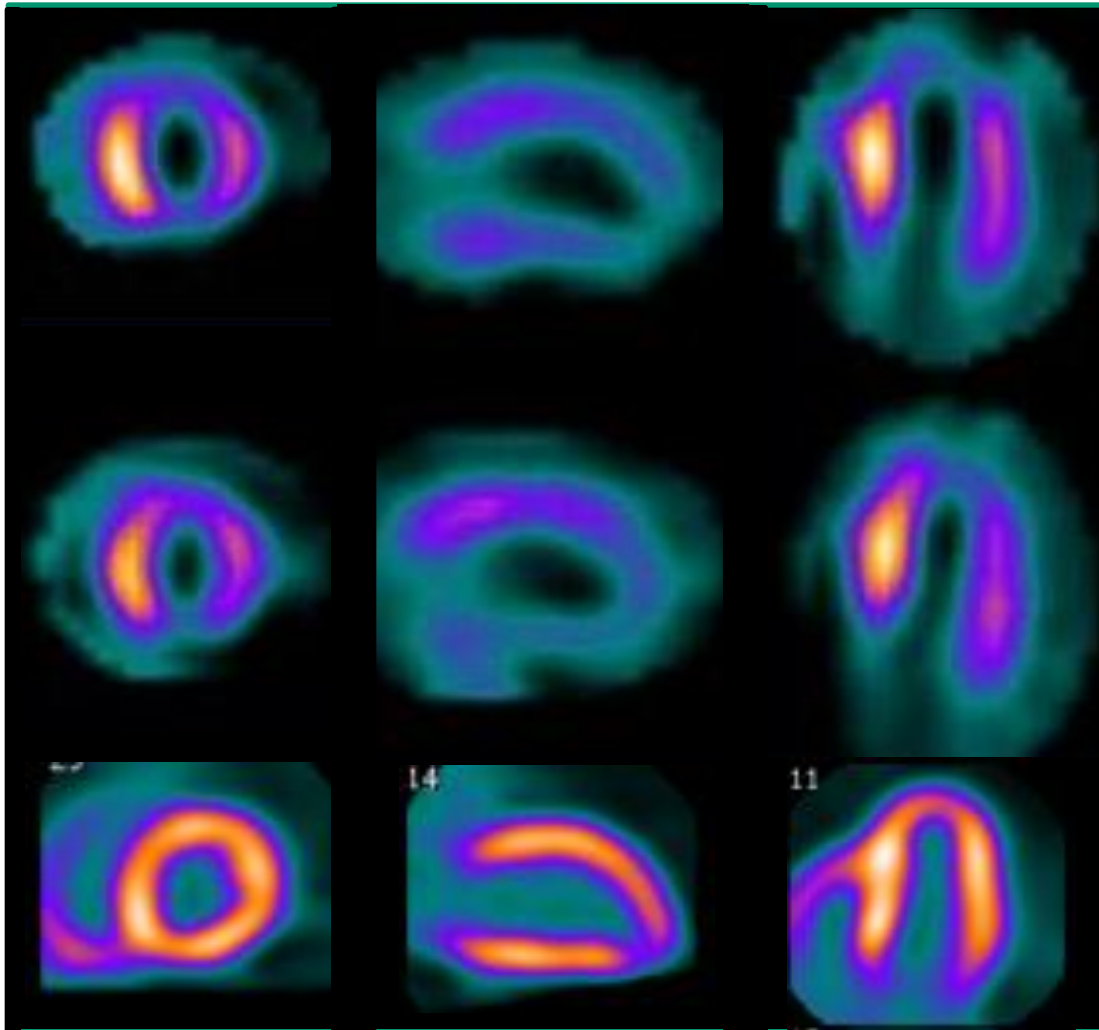
- a) Myocardial infarction with no ischemia
- b) Myocardial infarction with ischemia
- c) Hibernating myocardium and ischemia
- d) *b & c***

- 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}F -FDG.

PET with ^{18}F -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
- c) 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 stress/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

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