Typical chest pain with ECG changes

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Clinical history

- Male 58 y.o.
- Diabetic, smoker, hypertension (poorly controlled).
- Admitted for episode of chest pain 72 hs ago (resolved).
- ECG: Inferior Q waves, dynamic changes lateral wall.
- Echo: Mild LVH, inferior hypokinesis, LVEF ~40%.
- Myocardial perfusion with dipyridamole requested.
Myocardial perfusion study
The study demonstrates:

a) Inferior wall infarction.
b) Inferior wall ischemia.
c) Apical ischemia + infarction.
d) Apical infarction + inferior & antero-apical ischemia.
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a) Inferior wall infarction.
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d) Apical infarction + inferior & antero-apical ischemia.

- There are reversible inferior and antero-apical perfusion defects, characteristic of ischemia affecting the RCA and the LAD territories.
- There is a small apical fixed defect indicating possible MI.
Quantitative results

Rest gated not performed
The quantitative results are:

a) Consistent with the visual interpretation.
b) Not consistent with the visual interpretation.
c) Not reliable because of technical artifacts.
d) Necessary for patient management.
The quantitative results are:

a) *Consistent with the visual interpretation.*

b) Not consistent with the visual interpretation.

c) Not reliable because of technical artifacts.

d) Necessary for patient management.

- Perfusion scores indicate a fixed apical defect + reversible defects involving antero-apical, infero-apical and mid-inferior segments.

- The extent of the defects and total perfusion deficit (TPD) values are also consistent with the visual estimation.
The LV function parameters indicate:

a) Possible myocardial scarring/fibrosis.
b) Possible myocardial stunning.
c) Possible hibernated myocardium.
d) Possible dilated cardiomyopathy.
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a) Possible myocardial scarring/fibrosis.

b) *Possible myocardial stunning.*

c) Possible hibernated myocardium.

d) Possible dilated cardiomyopathy.

- There is a drop in post-stress LVEF (67% rest vs. 52% post-stress) and development of regional hypokinesis in wall motion analysis (WMA).
- Both are typical findings of post-ischemic regional ventricular dysfunction or *myocardial stunning.*
Coronary angiography

LCA - RAO  LCA - LAO  RCA
Coronary angiography demonstrates:

a) Normal coronary arteries.
b) One vessel disease.
c) Two vessel disease.
d) Three vessel disease.
Coronary angiography demonstrates:

a) Normal coronary arteries.

b) One vessel disease.

c) Two vessel disease.

d) *Three vessel disease.*

- LAD: severe stenosis (90%), middle third.
- Cx: severe stenosis (90%), middle third.
- RCA: dominant, occluded, middle third (distal circulation through collateral branches).
Teaching points

• In patients with no known coronary artery disease, MPS adds prognostic information and risk-stratifies patients beyond clinical data.

• Semiquantitative information obtained by MPS provides important measurements of disease extent and severity, however visual analysis is able to depict high-risk patients in most cases.

• In patients with 3-vessel disease, perfusion defects can be restricted to only one or two arterial territories, because due to the fundamentals on which nuclear images are based, the region with relative ‘best perfusion’ can appear ‘normal’ (like the lateral wall in this particular case, despite a lesion in the Cx artery).
Bibliography


• Schuijf JD, Bax JJ, van der Wall EE. Anatomical and functional imaging techniques: basically similar or fundamentally different? Neth Heart J 2007; 15:43–44.