MPS and Calcium Score in asymptomatic patient

F. Mut, J. Vitola

Nuclear Medicine Service, Asociacion Española Montevideo, Uruguay
Quanta Diagnostico Nuclear Curitiba, Brazil
Clinical history

- Male 63 y.o., asymptomatic.
- Inactive but wants to start exercise.
- Knee osteoarthritis limiting exercise capacity.
- Hypertension (BP 145/90 mmHg under medication).
- Family history of CAD (father had sudden death at 53).
- Total Cholesterol = 223; HDL = 45; LDL = 128, Gluc = 0.97.
First step to evaluate an asymptomatic patient?

a) Global risk score (i.e. Framingham).
b) SPECT-MPS.
c) Coronary angioCT.
d) Rest ECG.
First step to evaluate an asymptomatic patient?

a) Global risk score (i.e. Framingham).
b) SPECT-MPS.
c) Coronary angioCT.
d) Rest ECG.

- Global risk score is a Class I indication in this setting; SPECT-MPS is Class IIB or III, Coronary angioCT is Class III, and Rest ECG is Class IIA.

- Calculated Framingham risk score = 18% (intermediate risk for CAD events in 10 years) based on SBP, cholesterol levels, age, gender, and smoking status.
Which test can help stratify intermediate CAD risk patients?

a) Calcium score (CAC).
b) C-Reactive protein.
c) Carotid intima-media thickness on ultrasound.
d) All of the above.
Which test can help stratify intermediate CAD risk patients?

a) Calcium score (CAC).
b) C-Reactive protein.
c) Carotid intima-media thickness on ultrasound.
d) All of the above.
CAC

1611 Agatston (Percentile 97 for sex, age and race)
High risk patient!
Which test can help further stratify intermediate CAD risk patients with advanced atherosclerosis?

a) Treadmill test
b) Myocardial perfusion study
c) CT angiography
d) Invasive angiography
Which test can help further stratify intermediate CAD risk patients with advanced atherosclerosis?

- a) Treadmill test
- b) *Myocardial perfusion study*
- c) CT angiography
- d) Invasive angiography

In addition to the knowledge about atherosclerosis burden in our patient, short-term prognosis is dependent on the presence and degree of ischemia, the territory involved, and the LV function - all of which can be provided by MPS.
Myocardial perfusion study

- SPECT MPS, combined low workload exercise with dipyridamole, 99mTc-MIBI, one-day protocol.
- No symptoms or ST changes.
Myocardial perfusion study

LVEF: stress 67%, rest 62%
The MPS result is consistent with:

a) Anteroseptal infarction + ischemia, high risk.
b) Normal perfusion.
c) Inferoapical ischemia, low risk.
d) Lateral wall ischemia, moderate risk.
The MPS result is consistent with:

- a) Anteroseptal infarction + ischemia, high risk.
- b) Normal perfusion.
- c) *Inferoapical ischemia, low risk.*
- d) Lateral wall ischemia, moderate risk.

- The images show inferoapical reversible defect, with preserved LV function both post-stress and rest = low risk for cardiac events.
Follow-up

- Patient was managed clinically for CAD, ischemic heart disease: Beta-blockers, ASA, statins.
- Secondary prevention (target = LDL< 70).
- Low level exercise: medicated and under supervision.
Teaching points

- CAC provides independent incremental information in addition to traditional risk factors in the prediction of all-cause mortality.

- The principal difference between MPS and Ca scoring is that the former is an excellent tool for assessing short-term risk, guiding decisions on revascularization.

- In contrast, atherosclerosis imaging methods like CAC provide greater long-term risk assessment, and are more useful in defining the need for aggressive medical prevention.
Bibliography


