TID with normal myocardial perfusion

F. Mut, M. Kapitan

Nuclear Medicine Service, Asociacion Española
Montevideo, Uruguay
Clinical history

- 51-year old male with hypertension and diabetes.
- Atypical symptoms (right arm discomfort at stress).
- Echocardiography revealed LVH.
- Submitted for stress myocardial perfusion study (MPS).
- Exercise/rest MPS was performed with $^{99m}$Tc-sestamibi.
**Myocardial perfusion study**

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**Table:**

- Patient ID: 7722 280-3 57/802
- Sex: MALE
- Study: SPECT MICARDICO
- Dataset: STRESS [Recon]
- Date: 2009-10-29 10:31:41
- Volume: 50 ml
- Area: 100 cm²
- Defect: 0 cm²
- Extent: 0%
- TFD: 2%
- Eccentricity: 0.87

- Study: SPECT MICARDICO
- Dataset: REST [Recon]
- Date: 2009-10-28 13:57:07
- Volume: 45 ml
- Area: 95 cm²
- Defect: 0 cm²
- Extent: 0%
- TFD: 1%
- Eccentricity: 0.88
The MPS result is consistent with:

a) Anteroseptal ischemia + TID(*)

b) Anterior wall infarction + TID.

c) TID, no perfusion defects.

d) Inferior ischemia, no TID.

(*)TID = Transient Ischemic Dilation.
The MPS result is consistent with:

a) Anteroseptal ischemia + TID.

b) Anterior wall infarction + TID.

c) TID, no perfusion defects.

d) Inferior ischemia, no TID.

- The images show homogeneous distribution of the radiotracer both at stress and rest (perfusion scores = 0).

- There is evident TID.
TID ratio is defined as:

a) Rest:stress LV volumes.
b) Stress:rest LV volumes.
c) Rest:stress volumes divided by LV rest volume.
d) Stress:rest volumes divided by LV stress volume.
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- **a)** Rest:stress LV volumes.
- **b)** Stress:*rest LV volumes.*
- **c)** Rest:stress volumes divided by LV rest volume.
- **d)** Stress:rest volumes divided by LV stress volume.

- TID ratio is calculated dividing stress by rest LV volumes; this is usually done on the non-gated images defining the endocardial limits of the LV but also can be done on the gated, end-diastolic images.
Upper normal limit for TID ratio is generally considered as:

a) 1.19
b) 1.55
c) 1.99
d) 0.55
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- Although normal TID ratios vary among publications, the value of 1.19 is generally accepted as the upper limit, with some referring as up to 1.3 in women.
- In this case study, LV volume at stress = 59 mL; at rest = 45 mL, TID ratio = 1.31 in a male patient, thus above normal limit.
- Normal values for local population is recommended to be established by each laboratory or country.
TID can be found using:

a) Exercise/rest, one-day protocol.
b) Exercise/rest, two-day protocol.
c) Pharmacologic/rest, one-day or two-day protocol.
d) Any of the above.
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- TID has been described using any kind of stress/rest protocol and with different SPECT and PET perfusion agents, including Thallium, Technetium-labelled radiopharmaceuticals and Rubidium.
Follow-up

- The patient was submitted to the cath lab.
- Coronary angiography revealed no significant lesions.
- The patient was placed on optimal medical therapy and was free of symptoms 6 months later at follow-up.
Teaching points

- Although TID is usually higher in patients with LAD ischemia or multivessel disease (MVD), it can also be found in patients with LVH or diabetes (like in this case).

- However, TID in the absence of evident perfusion abnormalities should always raise the question of balanced myocardial ischemia in the first place, which is more common in MVD.
Bibliography


