How to Report Effectively on a Nuclear Cardiology Study

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The case

Let’s look at the pictures first.
? Blinded.
? You know the clinical Hx + / or exercise data

Try all the tricks to normalise or minimise the findings – maybe!!

Use planar images if necessary
Supine, prone, AC, Gating
Diagnosis

• ? Inferior ischaemia

• ? Apical ischaemia.

• What to do next??
Next case

• Real life..........
Now the case

84 year old. Previously well. Creat 180. 
Hx of hypertension on amlodopine. 
Diabetic on metformin. 
Exertional chest tightness for 6/12 - stable 
Exam — Well. 150/90 
   Chest clear 
   CVS Normal 
ECG — SR LAHB. Minor ST changes.
Exercise data

10 minutes Bruce.
Peak HR 130
Peak BP 210/100
Mild pain at peak exercise
SR. 1 mm further ST depression over baseline (equivocal)
No arrhythmia
Conclusion

The exercise MIBI study is mildly positive for reversible ischaemia at a high workload. A small amount of ischaemia is seen in the non-LAD territory as well as in the territory of a diagonal branch of the LAD. No major area of reversibility is detected.

“Code” – treat medically
Management – medical therapy.
Now the case - again

36 year old. Previously well.
No past history
Exertional chest tightness for 1/12 – good story
Exam – Well. 130/90
  Chest clear
  CVS Normal
ECG – Normal
Exercise – 12 mins Bruce. No pain No ECG changes
Conclusion

The exercise MIBI study is positive for reversible ischaemia at a high workload. A small amount of ischaemia is seen in the non-LAD territory as well as in the territory of a diagonal branch of the LAD. In total, a moderate amount of ischaemia is seen.

“Code” – can treat medically or cath, but concern re age.
Management – cath.
Talk to your referrers – teach them your code.
Same images

- Different report

- Different management

- Next case ....
Stylise the report

• Think Management

• Moderate Cx ischaemia

• The exercise performance and clinical history will guide you to think
  • 1. No therapy
  • 2. Medical therapy
  • 3. Cath +/- revascularisation
• You must think what you would do with the patient BEFORE you finalise the report!!

• Now the report .....
Clinical Indication

• < 2 lines

• What is the question being asked?

• Diagnostic v. Prognostic
Exercise data

• Protocol - exercise v. pharmacological +/-ex
• Duration
• Workload / energy /mets
• HR and BP – rest and peak (? Off meds e.g. beta blockers)
• Reason for termination
• Chest pain and equivalent
• ECG changes – ST, rhythm
• ? Abnormal HR or BP response
Perfusion imaging

• Define the protocol – rest /ex or ex/rest. 1 or 2 day, etc
• Tc99m MIBI-tetrofosmin and/or Tl-201
• Nitrate imaging
• AC used
• Gating used
• Prone v. supine
Perfusion results

• Be descriptive of EACH defect.

• Large, moderate, small size
• Severe, moderate, mild hypoperfusion
• Small, moderate or large amount reversibility.

• Comment - LV size, RV uptake, lung uptake, other (remember these are also oncological agents) at rest and stress.
Gating results

• LV function
• Global and regional
• LVEF rest and exercise (? Change in LVEF)
• Diastolic function, especially in the correct clinical setting
CONCLUSION

• 5 – line rule

• Summarise everything. Take “all the small, moderates and larges” and define “in total, (e.g.) a moderate amount of reversible ischaemia is seen.”

• Remember – two identical reports could end up with different managements, depending on the clinical context, and who is reading it
Pt A

• 83 year old man with CABG 5 years ago. Creat 200. Recurrent pain. Test done off metoprolol
• ECG 6 mins Bruce. HR 130 BP 200/80. No pain. 1mm lateral upsloping ST depression

Conclusion
The exercise MIBI study is mildly positive for reversible ischaemia in the non-LAD territory at a high level of haemodynamic stress. The study was done off metoprolol and no major ischaemia is seen.
Pt B1

- 39 year old male with positive F/H and very atypical pain. Weigh 120 kg.
- ECG 15 minutes Bruce. HR 170 BP 210/80. No pain and no ECG changes.
- This patient needs close review of exercise gating, supine v prone and AC. Maybe even thallium-201.

Conclusion – The exercise MIBI did not demonstrate definite scintigraphic evidence of reversible ischaemia at a very high workload. Patchy change in the inferior wall is most likely artefact.

Mx – risk factor control
Pt B2

Conclusion – The exercise MIBI study is mildly positive for reversible ischaemia in the non-LAD territory at a high workload.

Here, the emphasis on mild ischaemia is less important because it is a diagnostic, rather than prognostic scan – now pt B2 will get a Cath while A and B1 will not.

This is your call......
So...

- Make your own template
- Use IAEA template if needed
- Know your patient
- Know your referrers
- Go to their meetings. The false positive ex MIBI with a normal cath is far less dangerous to your practice if you are at the meeting to explain the pitfalls.
- Remember sensitivity and specificity are 80-90% but our strength is in predicting events
Guidance and Recommendations for the Implementation of Nuclear Cardiology in Developing Countries

Dear reader, please note that this document is the result of a Technical Meeting on “Evidence-based Nuclear Cardiology in Ischemic Heart Disease” held in Vienna on February 21-25, 2011. It reflects the contributions of participants to the meeting and has been further expanded and updated to be published as an IAEA Human Health Series.

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RADIOPHARMACEUTICAL: 99mTc Sestamibi, [] Mbq (Rest) / 99mTc Sestamibi, [] Mbq (Stress)

CLINICAL INDICATION

TECHNICAL PROCEDURE AND RESULTS

Stress test:

<table>
<thead>
<tr>
<th>Protocol - Bicycle</th>
<th>Duration - [] mins.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak workload - [] watts.</td>
<td>Work - [] kJ.</td>
</tr>
<tr>
<td>Heart rate (bpm): Rest - [] Peak - [] ([% MPHR])</td>
<td></td>
</tr>
<tr>
<td>BP: Rest - [] Peak - []</td>
<td></td>
</tr>
<tr>
<td>Reason for termination: []</td>
<td></td>
</tr>
<tr>
<td>Chest pain - []</td>
<td></td>
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<tr>
<td>ECG Changes - []</td>
<td></td>
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</tbody>
</table>

Myocardial Perfusion Scan:

Tomographic images of myocardial perfusion were performed following the injection of 99mTc-Sestamibi at rest and again, following the injection of 99mTc-Sestamibi after stress.

Nitrate administered prior to rest injection - []

OVERALL IMPRESSION
CONCLUSION

• The five lines of your conclusion is the most important thing that you contribute – make it impact and make it count
• We have a wonderful gatekeeping tool – use it wisely and use it often!!
• Get involved with your referrers, be it cardiologists or family doctors.
• Don’t be afraid of competing modalities and suggest appropriately to your referrers
• Most Importantly......
• Thanks for inviting me to beautiful Myanmar!!!