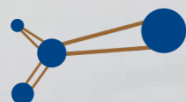


Svarsskrivning

Elin Trägårdh

Klinisk fysiologi och nuklearmedicin, SUS Malmö

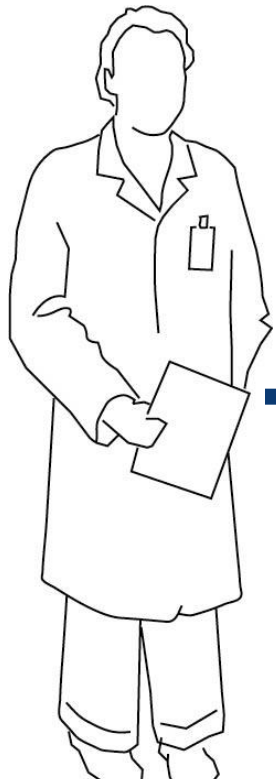


NUMEMA
NUCLEAR MEDICINE IN MALMÖ

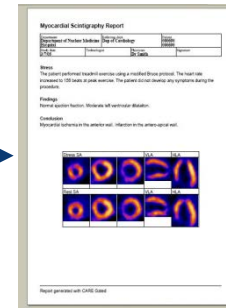
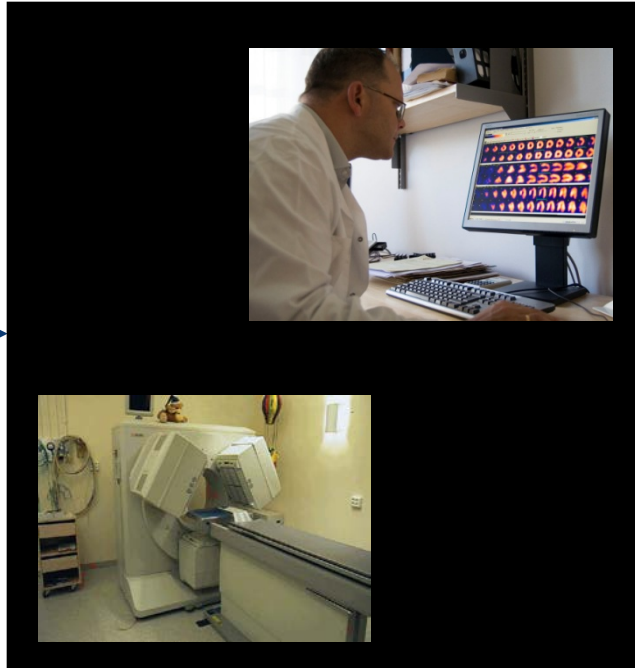


Remiss – Svar – Kliniskt beslut

OK, då gör vi en PCI!



Remiss



Svar

Beslut

Tolkning

Tolkning

European Heart Journal - Cardiovascular Imaging Advance Access published January 23, 2015



European Heart Journal – Cardiovascular Imaging
doi:10.1093/ehjci/jeu304

POSITION PAPER

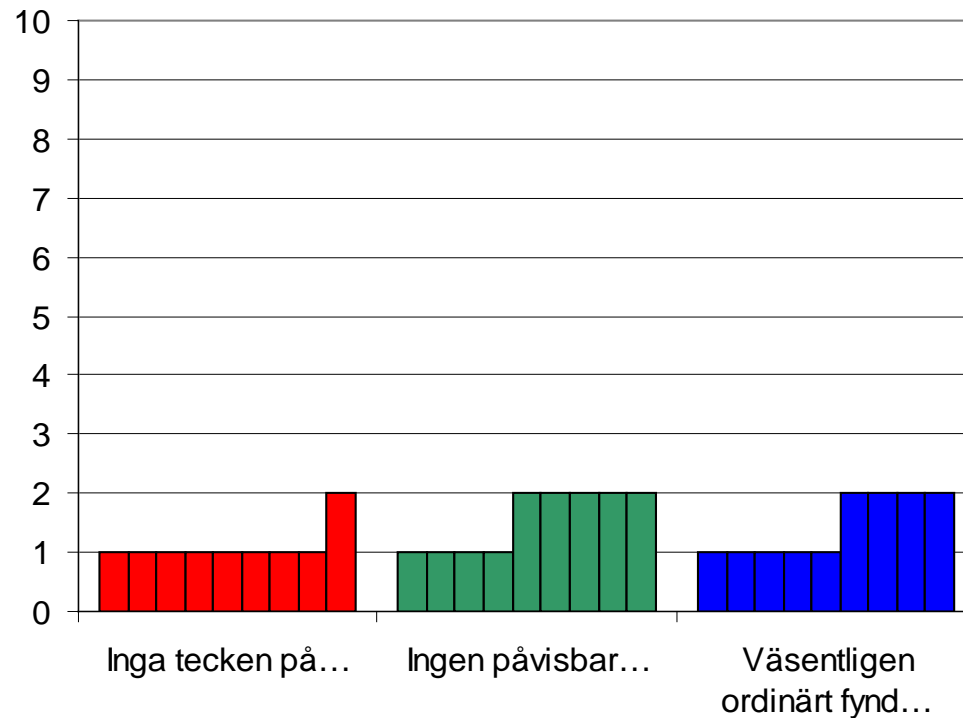
Reporting nuclear cardiology: a joint position paper by the European Association of Nuclear Medicine (EANM) and the European Association of Cardiovascular Imaging (EACVI)

Elin Trägårdh^{1*†}, Birger Hesse^{2†}, Juhani Knuuti³, Albert Flotats⁴, Philipp A. Kaufmann⁵, Anastasia Kitsiou⁶, Marcus Hacker⁷, Hein J. Verberne⁸, and Lars Edenbrandt¹

Document Reviewers: Victoria Delgado, Erwan Donal, Thor Edvardsen, Maurizio Galderisi, Gilbert Habib, Patrizio Lancellotti, Koen Nieman, Raphael Rosenhek (for EACVI) and Denis Agostini, Alessia Gimelli, Oliver Lindner, Riemert Slart, and Christopher Übleis (for EANM)

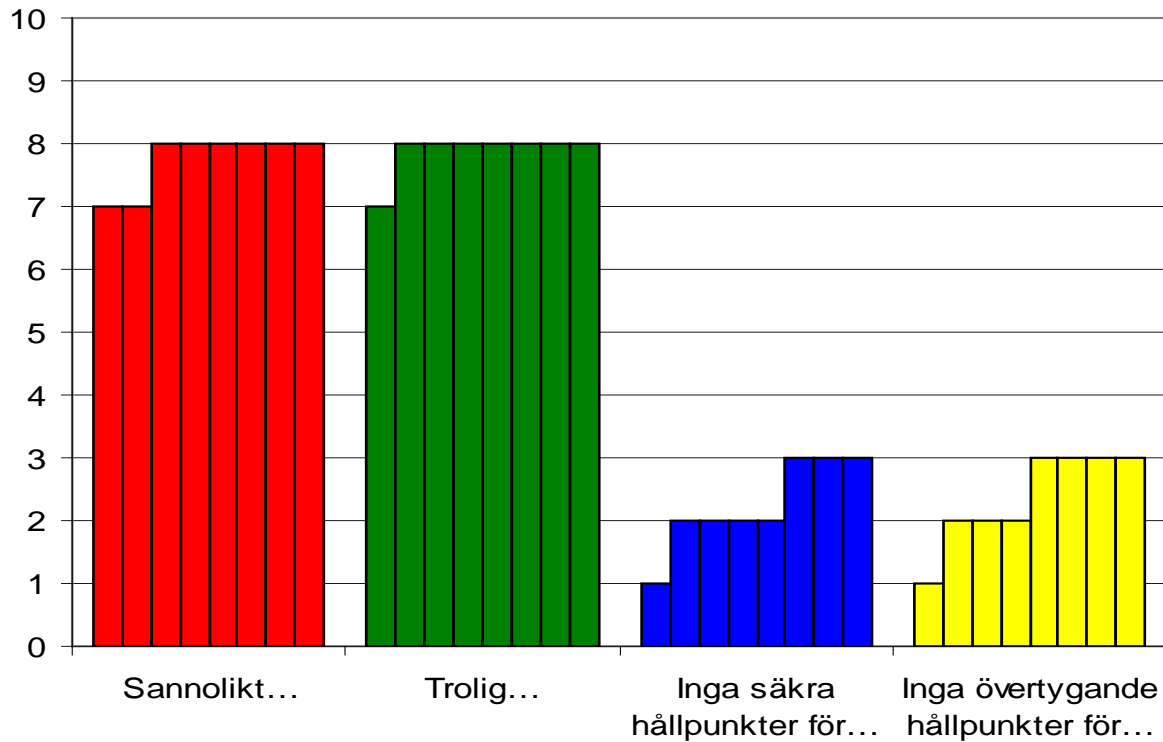
Förstår vi själva våra svar?

Sannolikhet för myokardischemi eller infarkt
på en skala 1-10



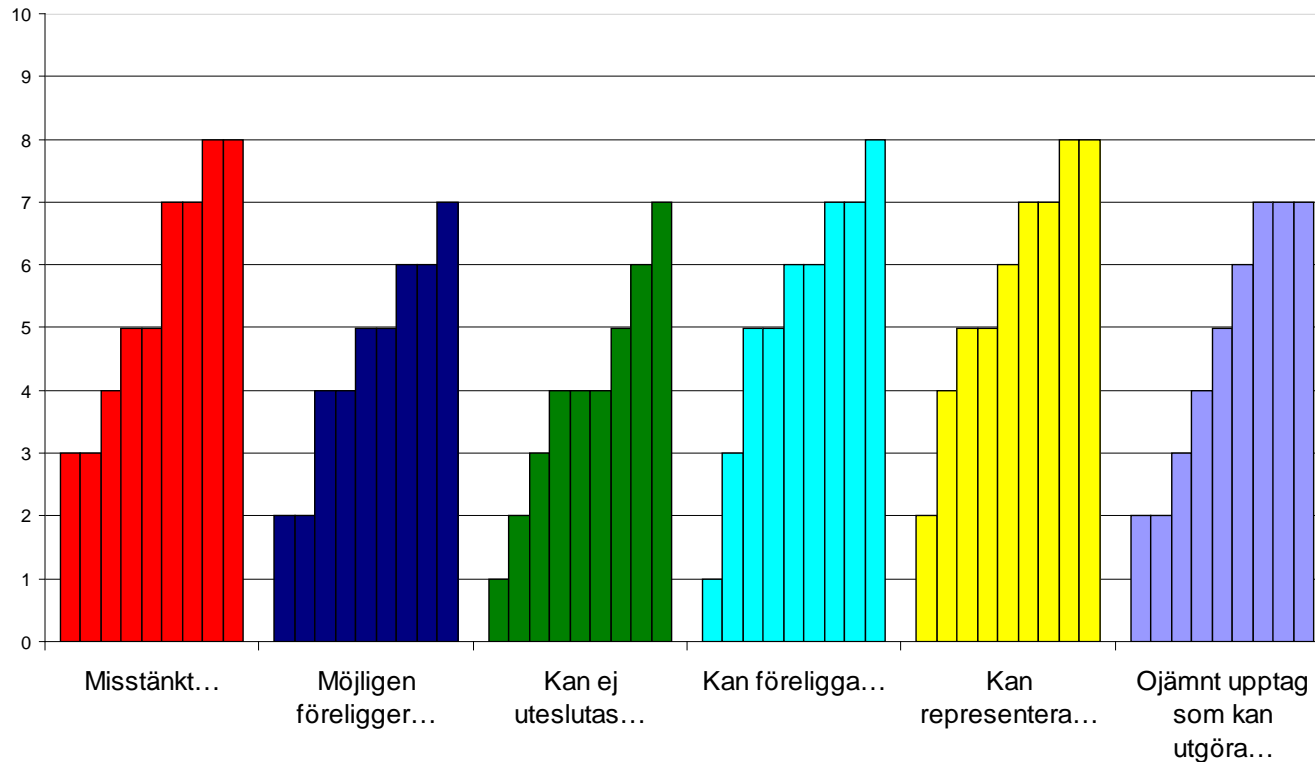
Förstår vi själva våra svar?

Sannolikhet för myokardischemi eller infarkt
på en skala 1-10



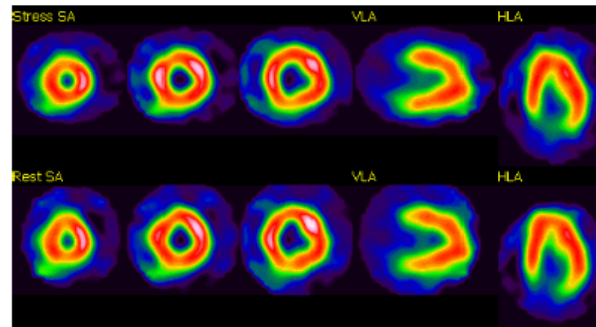
Förstår vi själva våra svar?

Sannolikhet för myokardischemi eller infarkt
på en skala 1-10



Förstår remittenterna våra svar?

- Svartsstudie
 - 6 nuklearmedicinare
 - 23 kliniker
 - 60 remissvar
- Resultat
- 12/23 kliniker uppfattar ischemiska områden som mindre än vad nuklearmedicinaren som skrev svaret menade



Stress protocol

Pharmacologic stress testing was performed with adenosine.

ECG: Normal ECG.

Findings

Homogeneous tracer distribution throughout the myocardium, both at stress and at rest. The ejection fraction of the left ventricle was > 70% at rest, and the end diastolic volume was 125 ml.

Conclusion

No inducible myocardial ischemia. No defects indicative of myocardial infarction. Normal systolic function of the left ventricle.

European Heart Journal - Cardiovascular Imaging Advance Access published January 23, 2015



European Heart Journal – Cardiovascular Imaging
doi:10.1093/ehjci/jeu304

POSITION PAPER

Reporting nuclear cardiology: a joint position paper by the European Association of Nuclear Medicine (EANM) and the European Association of Cardiovascular Imaging (EACVI)

Elin Trägårdh^{1*†}, Birger Hesse^{2†}, Juhani Knuuti³, Albert Flotats⁴, Philipp A. Kaufmann⁵, Anastasia Kitsiou⁶, Marcus Hacker⁷, Hein J. Verberne⁸, and Lars Edenbrandt¹

Document Reviewers: Victoria Delgado, Erwan Donal, Thor Edvardsen, Maurizio Galderisi, Gilbert Habib, Patrizio Lancellotti, Koen Nieman, Raphael Rosenhek (for EACVI) and Denis Agostini, Alessia Gimelli, Oliver Lindner, Riemert Slart, and Christopher Übleis (for EANM)

Innehåll

- Myokardscintigrafi
- PET (perfusion och viabilitet)
- MUGA
- Hybrid-imaging (CACS/CCTA + MPI)
- MIBG

Terminology in the report

It is crucial that the referring or treating physician understands the report as intended by the interpreter of the images. This implies careful attention to the terminology used in the report.

Regarding general language, it is strongly recommended that:

- (i) The report is written in a simple way, if possible, without the use of technical terms.
- (ii) The use of abbreviations and technical information not important for the referring physician should be avoided or extremely limited.
- (iii) Qualitative descriptions (e.g. small, medium-sized, large or slightly, moderately, severely reduced) should be replaced, if possible, by quantified data since qualitative words are used and understood differently.¹³
- (iv) Protective expressions (e.g. is likely, cannot be excluded) are used as little as possible. However, relevant doubt about the clinical implication of the interpretation must be communicated.

reversible (stress-induced) or irreversible (non-reversible, fixed, and permanent). Depending on the context, one expression may appear more correct than another one. In the description of SPECT findings, an ischaemic perfusion defect is less accurate than a reversible or stress-induced perfusion defect, but is more relevant in the clinical conclusion of the study. Likewise, in the *conclusion*, an expression like a fixed or permanent perfusion defect, relevant in the section on findings, should be translated to infarction or scar tissue, provided that viable tissue is unlikely. The more standardized format of accurate and relevant information is provided, the better the reader's interpretation will be minimizing misunderstandings of the report leading to subsequent better clinical decisions.

Table 2 Findings of tracer distribution in the report of a gated myocardial perfusion SPECT study

Tracer distribution	Must be included	Should be included	May be included
Normal	Brief description		
Abnormal	Presence of defect(s)		Other comments to perfusion distribution abnormalities
Location of defect(s)	Relation to LV segments, relation to the patient's coronary artery distribution if known	Preferably using the 17-segment model. ⁹ Suggestion of single- or MV disease	Relation to standard coronary anatomy with reservations regarding anatomy variations
Extent of defect(s)	Description of defect size(s). 'Large', 'small', etc. is a minimum	Quantification as percentage or a percentage interval of the LV ^a ; alternatively in summed scores	
Severity of defect(s)	Description of defect severity. 'Mild', 'severe', etc. is a minimum	Quantified in summed stress/rest/difference scores ^b	
Reversibility of defect(s)	Reversible (stress-induced), fixed (permanent and irreversible), or mixed (partially reversible) defect(s)	Quantified in summed difference scores ^b	
Quantification of regional perfusion in PET		Absolute values in ml/min/g tissue at rest/ during hyperaemia, including reference values. Coronary flow reserve in units	
Other abnormalities	Incidental extracardiac findings	Deviations in tracer distribution (locally increased/decreased uptake, LV cavity dimensions)	
Non-diagnostic study	Describe the reason		

Conclusion of the report

The conclusion must address and as clearly as possible answer the clinical question from the indication. A statement must be given whether the study is normal, abnormal, or inconclusive. Results from the present study should be compared with previous studies if available. Information about technical errors, sub-optimal quality, or abnormal extracardiac tracer uptake should be mentioned. Further diagnostic investigation may be suggested, dependent on the relationship between the referring and interpreting physician and based on the extent and severity of present perfusion and functional abnormalities.

Table 6 Conclusions in the report of nuclear cardiology study types

	Must be included	Should be included	May be included
Myocardial perfusion SPECT	Defect suggesting stress-induced ischaemia or scar tissue. Location and extension/severity	<i>Defect:</i> Extent and severity quantified. Relation of defect to coronary anatomy and/or stenosis if reported/available	
Functional data from gated myocardial perfusion SPECT	Stress and rest (if available) LVEF and change from rest to stress. Reference values for LVEF. LV dilatation, TID. Concordances and discrepancies between perfusion and wall motion, if observed	LV volumes and regional function. Synchrony	Other quantitative values

Exempel

Stress testing data

Adenosine stress testing was performed with low-level exercise (50W) during adenosine infusion (6 min). No other medication was given.

Tracer administration

600 MBq ^{99m}Tc -Tetrofosmin was injected after 4 min of infusion, and images were acquired 45 min after tracer injection.

Findings

Homogeneous tracer distribution throughout the myocardium at stress. LV ejection fraction: 70% (normal $> 60\%$). Normal LV volumes and normal wall motion and wall thickening. No rest study was performed.

Conclusion

No stress induced ischemia. No myocardial infarction. Normal LV function.

Exempel

Stress testing data

The patient performed a bicycle exercise test. Maximum workload 125 W (4METs). Heart rate increased from 72 to maximum 153 beats/min (92% of maximum predicted heart rate). Blood pressure increased from 145/95 mmHg to maximum 195/- mmHg. The patient experienced moderate chest pain during peak exercise. The test was terminated due to fatigue and dyspnoea. During exercise 2 mm ST-depression was observed in leads V₄-V₆. No medications were administered.

Tracer administration

600 MBq ^{99m}Tc-Sestamibi at peak exercise and 600 MBq at rest (2-day protocol). Images were acquired 45 min after the tracer injections.

Findings

Rest study: Homogeneous tracer distribution throughout the myocardium.

Stress study: Severely decreased tracer uptake in a large area of the left ventricle including the whole anterior wall, apex and apical lateral region (segments 1, 7, 13, 16, 17).

Gated SPECT imaging showed normal myocardial thickening and wall motion at rest. LVEF was 65% (normal > 60%), but decreased during stress to 55%. Moderate hypokinesia and moderately decreased antero-lateral wall thickening during stress. Normal LV volumes both at rest and after stress.

Conclusion

Severe, stress-induced ischaemia in the whole anterior wall, apex and apical lateral region, approx 25% of the LV. No sign of myocardial infarction.

Global and regional LV systolic function was normal at rest, but EF decreased significantly after exercise, and regional systolic function was reduced after exercise.

Slutsatser

- Svaret är en viktig del av undersökningen
- Var så tydlig och relevant som möjligt
- Använd standardiserade uttryck
- Läs EANMs/EACVIs nya riktlinjer