

PET:n uusimmat diagnostiset mahdollisuudet sydänpotilailla

Kotka 2010



Juhani Knuuti



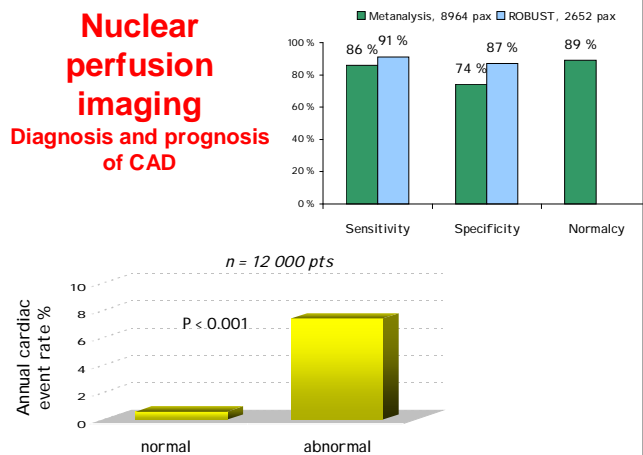
PET:n uudet diagnostiset mahdollisuudet sydänpotilailla

- Sepelvaltimotauti
- Sydämen vajaatoiminta
- Tulehdukselliset sydänsairaudet

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Nuclear perfusion imaging Diagnosis and prognosis of CAD



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Severity of CAD in nuclear imaging

Challenge

- Balanced 3 vessel disease
- Multivessel disease
- Non-ischemic CAD
- Microvascular disease

Solution

Severity of CAD in nuclear imaging

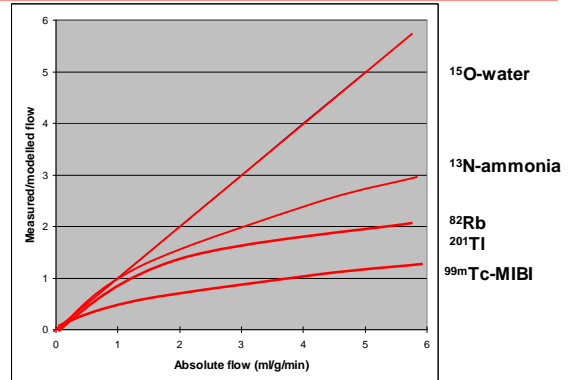
Challenge

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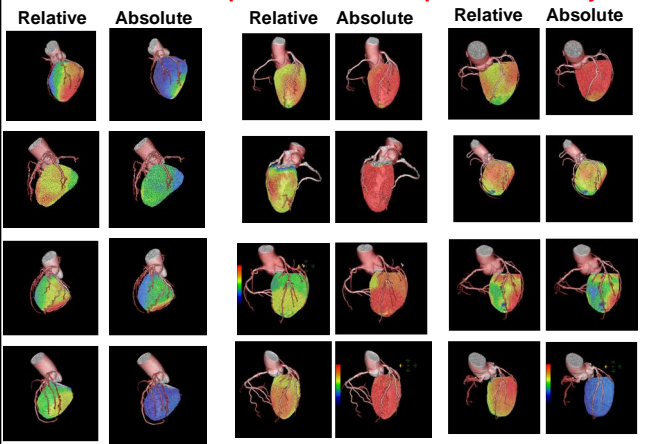
Solution

- Quantitation
- Quantitation
- Hybrid imaging
- Quantitation

Quantification of myocardial blood flow: Different kinetics in different tracers

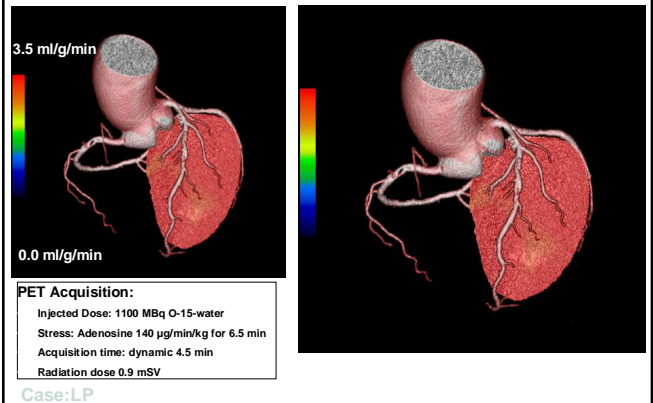


12 unselected examples of relative vs quantitative analysis



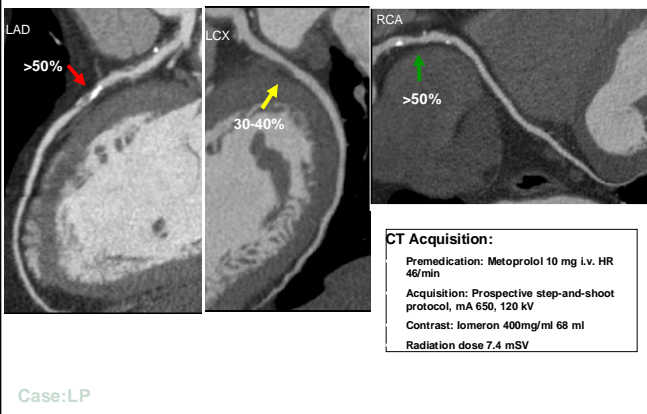
PET perfusion imaging during stress

Displayed as fused volume rendered images scaled to absolute scale 0-3.5 ml/g/min
Normal perfusion: above 2.5 ml/g/min: yellow or red

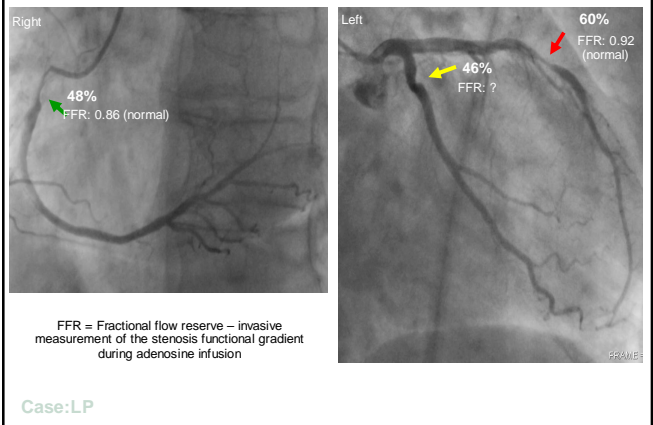


CT angiography

Curved MPR reconstructions of the major coronary vessels

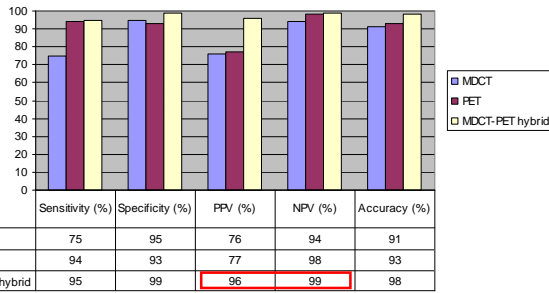


Invasive angiography + FFR



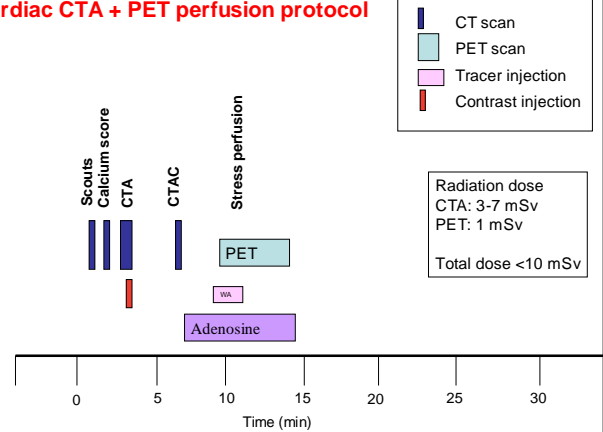
PET/CT against ICA+FFR for CAD

Figure 2b: Vessel Analysis against ICA+FFR

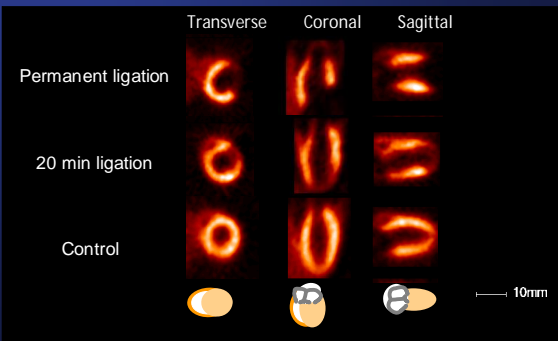


Kajander et al submitted

Cardiac CTA + PET perfusion protocol



¹⁸F-BMS PET perfusion images in rat AMI

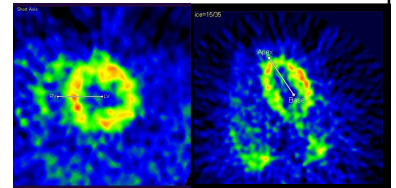


Sherif, Saraste Circ Cardiovasc Imaging 2009

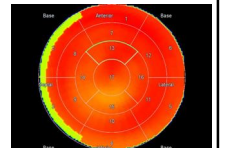
New PET perfusion tracers

Ga-68 tracers

- Cheap
- Generator based



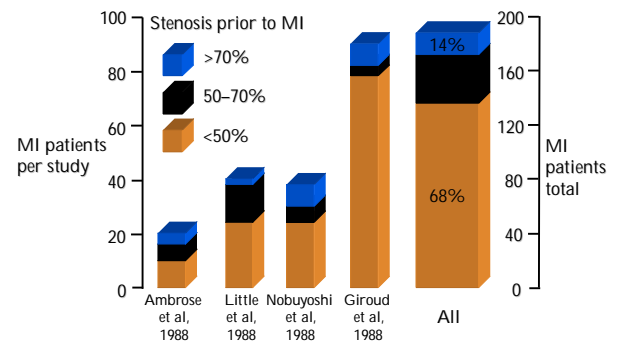
- 68-Ga-Bis(3-MeO-sal)Me4BAPEN



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- **Sydämen vajaatoiminta**
- **Tulehdukselliset sydänsairaudet**

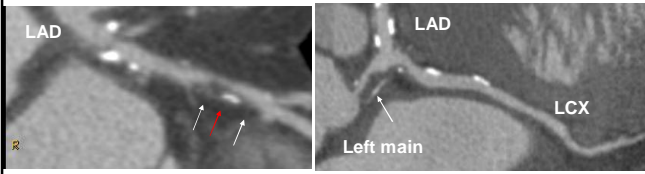
Stenosis as a predictor of MI



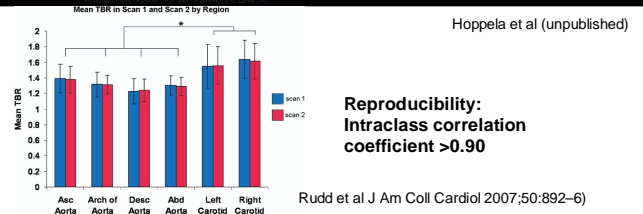
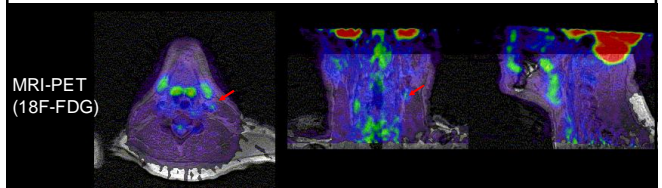
In vivo assessment of coronary atherosclerotic plaque using MSCT

Characteristics of high risk lesion

- Large volume (- Lesion density)
- Mixed composition
- Positive remodelling

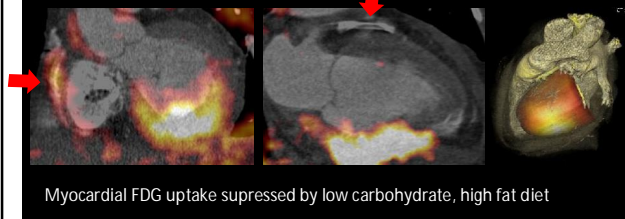


Imaging of Unstable Atherosclerotic Carotid-Artery and Aortic Lesions

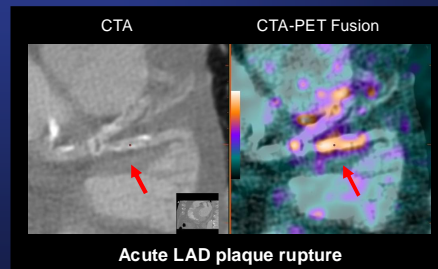


¹⁸F-FDG PET/CT of the culprit artery in a patient with acute myocardial infarction

Acute RCA occlusion, previous LAD stenting



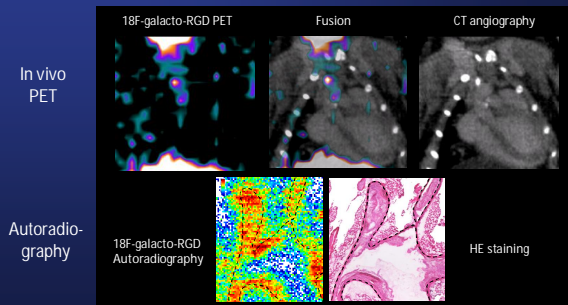
Dual gated ¹⁸F-FDG PET/CT of the culprit artery in acute NSTEMI



Myocardial FDG uptake suppressed by low carbohydrate, high fat diet

Turku PET Centre, Finland

¹⁸F-Galacto-RGD uptake in mouse atherosclerotic plaques



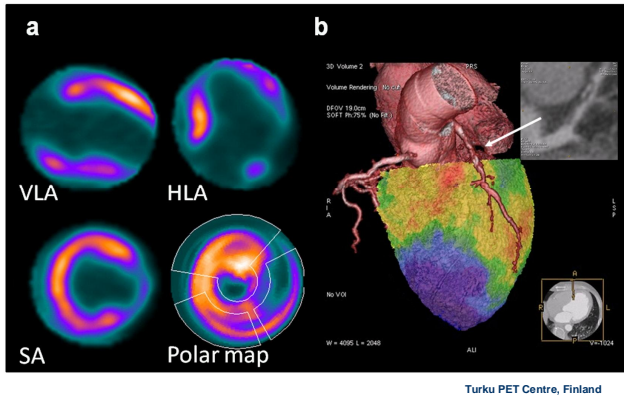
LDLR/ApoB48 double knockout mice

Laitinen and Saraste Circ Cardiovasc Imaging 2009

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Sydänlihaksen elinkykyisyys FDG PET/CT



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 - Sarkoidoosi
 - FDG + perfuusio

