Influence of Perfusion Defects on Survival after Coronary Revascularization

Simonsen, Jane Angel; Gerke, Oke; Tamadoni, Mohammad; Rask, Charlotte Krogh; Thomassen, Anders; Hess, Søren; Johansen, Allan; Mickley, Hans; Jensen, Lisette Okkels; Hallas, Jesper; Høilund-Carlsen, Poul Flemming

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within 60 days; 4 patients who underwent revascularization or had any cardiovascular events between PET and ICA were excluded. Myocardial blood flow at rest (rMBF), at stress with adenosine (sMBF) and myocardial flow reserve (MFR=sMBF/rMBF) were estimated using the 1-compartment Lomte model (labelled with a maximum arterial tracer bolus, followed by a secondary bolus using computer-based automated edge detection (QCA). MFR was divided in 3 groups: G1: MFR<1.5, G2: 1.5≤MFR<2 and G3: MFR≥2. Stenosis severity was graded as non-significant (<50% or FFR ≥0.8), intermediate (50%≤stenosis<70%) and severe (≥70%). Correlation between MFR and percentage of stenosis were assessed using a non-parametric Spearman test. Results: In G1 (44 patients), 17 vessels (39%) had a severe stenosis, 11 (25%) an intermediate one, and 16 (36%) no significant stenosis. In G2 (13 vessels), 2 (15%) vessels presented a severe stenosis, 7 (54%) an intermediate one, and 4 (31%) no significant stenosis. In G3 (9 vessels), 0 vessel presented a severe stenosis, 1 (11%) an intermediate one, and 8 (89%) no significant stenosis. Hypertension, diabetes, smoking, and use of beta-blockers showed a strong association with at least one vessel MFR<1.5. Spearman rank correlation coefficients were calculated between MFR and clinical factors. There was a significant inverse correlation between stenosis severity and MFR among all 66 territories analyzed (rho= -0.38, p=0.002).

Conclusion: Patients with MFR<2 could avoid ICA. Low MFR (G1, G2) on a vessel-based analysis seems to be a poor predictor of severe stenosis severity. Patients with 3- vessel low MFR would benefit from ICA as they are likely to present a significant stenosis in at least one vessel.
Ischemia but not necrosis is a predictor of post-stress LVEF
drop 6 months after myocardial infarction: a gated myocardial perfusion SPECT study.

C. Guennancia,1 A. Cochef,2 L. Lorgis,1 K. Stamboul,1 O. Humberet,2 M. Zalinger1
1University Hospital, DIJON, FRANCE, 2Centre Georges-François Leclerc, DIJON, FRANCE.

Background: Gated myocardial perfusion SPECT (gSPECT) is able to detect restenosis or progression of coronary artery disease in the early systematic follow-up of myocardial infarction (MI). Although post-stress left ventricular ejection fraction (LVEF) decrease is often associated with ischemia, its explanatory factors after MI remain unclear. Aim: To identify the clinical and gSPECT characteristics associated with a 5% or more post-stress LVEF decrease in patients with earlier MI.

Methods: Two-hundred and thirty six consecutive patients admitted in intensive care unit for acute MI were prospectively included. Six months after discharge, a post-stress/rest gSPECT procedure was performed according to a one day protocol. Post exercise-induced stress gSPECT images were acquired 10 to 15 minutes after intravenous injection of 3.7 MBq/Kg of 99mTc-sestamibi. Rest gSPECT images were acquired 30 minutes after injection of 11.1 MBq/Kg of 99mTc-sestamibi and at least 4 hours after post-stress injection. End-diastolic volume, end-systolic volume and LVEF were determined using QGS® software. LVEF drop was considered significant if post-stress LVEF was ≤55% compared with LVEF at rest. Summed Stress Score (SSS), Summed Rest Score (SRS), and Summed Difference Score (SDS) were visually evaluated using a 17 segments model. Results: Post-stress LVEF drop was observed in 56 (24%) patients (group A). Demographic and infarc characteristics were similar when compared with patients with unaltered post-stress LVEF (group B). Patients with LVEF drop had significantly higher SDS when compared with patients with unaltered LVEF (median (IQR): 2 (0-5) vs 0 (0-3) p=0.016) they also had more often significant ischemia (i.e. SSS=2) (48% vs 27% p=0.006) and severe ischemia (i.e. SDS=7) (14% vs 4%, p=0.024). Moreover, rest LVEF was higher in group A than in group B (62% [56-69] vs 56% [49-63] p=0.001). Multivariate logistic regression analysis identified significant ischemia (OR: 1.70, 95% CI: 1.85-7.38) and rest LVEF (OR: 1.07, 95% CI: 1.04-1.11) as independent associated factors of LVEF drop.

Conclusion: In patients with previous myocardial infarction, a post-stress LVEF decrease ≥5% is associated with higher incidence of reversible perfusion defects. These results are in accordance with the myocardial stunning model and exclude the potential influence of an extended myocardial necrosis or left ventricular remodeling on post stress LVEF fall following MI.

Quantification and Whole-Body Distribution of a Novel Dopamine D2/D3 Receptor Agonist, [18F]MCL-524, in Monkeys: A Prediction for Application in Human Subjects

S. J. Finnema,1 V. Stepanov,1 R. Nakao,2 N. Amini1, A. W. Sromek2, J. L. Neumeyer2, P. Seeman1, M. G. Stabin1, L. Farde1, C. Halldin1; 1Karolinska Institutet, Stockholm, SWEDEN, 2McLean Hospital/Harvard Medical School, Belmont, MA, UNITED STATES, 1University of Toronto, Toronto, ON, CANADA, 2Vanderbilt University, Nashville, TN, UNITED STATES.

Aim: A fluorine-18 radiolabeled dopamine D2/D3 receptors agonist PET radioligand may be the optimal tool for investigation of the interaction between radioligand binding, endogenous dopamine and receptor trafficking in man. We recently reported the initial radiochemistry development of the promising agonist [18F]MCL-524 [1]. In the current study we performed a quantitative analysis of [18F]MCL-524 binding to central D2/D3 receptors and a whole body distribution study in nonhuman primates. Materials and Methods: A total of eight PET measurements were performed on six experimental days in four cynomolgus monkeys. Two monkeys were studied on two experimental days each using a HRRT PET system. On the first day two baseline PET measurements were performed after i.v. injection of respectively [11C]MNPA [2] and [18F]MCL-524. Arterial blood was obtained for...