Influence of Perfusion Defects on Survival after Coronary Revascularization

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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 Lortie model (Flows). Correspondence artery territories were assessed using computerized 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 vessels), 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. Results were corroborated among 11 independent observers (kappa statistic 0.81, p<0.001). 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.

OP142
Impact of glycosylated hemoglobin (HbA1C) on extent of perfusion abnormalities and left ventricular dysfunction on gated myocardial perfusion imaging and clinical outcomes in diabetics.

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Objectives: Aim of this study was to find out impact of glycosylated hemoglobin (HbA1C) on extent of perfusion abnormalities and left ventricular dysfunction on GMPi and clinical outcomes in diabetics. Material & methods: This is a prospective study conducted at Karachi Institute of Heart Diseases (KIHD) from January ‘09 to December ‘11. Total 1013 (457 diabetic: 556 non-diabetics control) were included, among diabetic cohort 254 (56%) males and 203 (44%) were females, with a mean age of 58 ± 9 years. Mean duration of diabetes, HbA1C and fasting blood sugar (FBS) were 13.6 ± 89 months, 7.6% ± 1.7 and 137 ± 48 mg/dl respectively. Hypertension, dyslipidemia, positive family history for CAD and smoking was found in 73%, 26%, 35% and 15% respectively. GMPi was performed with exercise (54%) or dipyridamole stress (46%). GMPi was evaluated for size and severity of perfusion defects, transient ischemic dilatation ratio (>1.22), and left ventricle ejection fraction (LVEF) using commercial software (Autoquant®). Coronary angiography (CA) was used as gold standard in patients with positive GMPI ± 2 months of GMPI. All these patients were followed up for period of 22 months (12-24 months). Results: In diabetics: non-diabetics control, GMPi was normal (49%-68%; p<0.0001), fixed (21%-16%; p<0.049), reversible (30%-16%; p<0.0001) with TID (19%-20% <0.0001) respectively. ROC analysis showed diagnostic strength of HbA1C for CAD: 68% at each coronary arteries severity was assessed by AUC (AUC) 0.873 with a sensitivity of 68.8% and specificity of 81.9% at a cut-off value of >7.3% (p value <0.0001). FBS and duration of diabetes was found to have poor diagnostic strength (p value >0.05). On the basis of criterion HbA1C, cohort was divided into those having value >7.3% (Group A) and those with ≤ 7.3% (Group B). In group A: incidence of fixed (33.09%; p<0.0001), reversible (41.22%; p<0.0001), sum stress score (62±5±2; p<0.0001) and sum thickness score (38±8: 32±6; p<0.0001), 5LLVFe(53 ± 16: 58±11 ± 0.0001) with TID (32%; 8%; p<0.0001) respectively. Kaplan Meier survival curves revealed event free survival for fatal MI 97.2%/98.3% (p value 0.742) and for nonfatal MI 87.9/97.9% (p<0.05) for group A and B respectively. Conclusions: We conclude that incidence of CAD is significantly higher in diabetics than non-diabetics. HbA1C but not FBS and duration of diabetes is a reliable predictor for CAD. Extent and severity of perfusion defects, LV dysfunction and incidence of non-fatal MIs are more prevalent at a HbA1C>C-7.3%.

OP143
Evaluation of calcium score among other risk factors in patients with normal myocardial perfusion and normal left ventricular ejection fraction as determined by 99mTc-sestamibi myocardial perfusion imaging

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Aim: The aim of this study was to evaluate coronary artery calcium score (CACS) among other potential risk factors for cardiovascular events and/or death in patients with normal myocardial perfusion imaging (MPI) and normal left ventricular ejection fraction. Materials and methods: The study comprised 540 consecutive patients who underwent a CT attenuation corrected 99mTc-sestamibi myocardial perfusion imaging protocol with either ergometer bicycle- or pharmacological stress. Patients were referred to MPI by a cardiologist if they had a potential risk of ischemic heart disease (IHD), had a history of IHD with renewed suspicion of ischemia, or prior to renal transplantation because of chronic renal insufficiency. A total of 318 patients were included on the basis of a normal myocardial perfusion distribution, a normal left ventricular ejection fraction (LVEF), and a successful assessment of CACS. Data on patient risk factors, history, and events were retrieved from hospital files. Evaluated risk factors were: CACS ≥ 400 male gender, family history of coronary artery disease, hypertension, chronic renal insufficiency, diabetes, smoking, age > 63 years, known IHD, inability to perform ergometer bicycle stress, and hypercholesterolemia. Median follow-up time was 980 days. End points were myocardial infarction or need for revascularisation of significant coronary artery stenosis, among 11 consecutive patients (51.1, 81.9, 9/11 (82%) had at least one severe stenosis and 2/11 (18%) had at least one intermediate stenosis. 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.

OP144
High Dose Nicolardio Administration on PCI in initial ST Elevated AMI Patients Can Bring Beneficial Effects.


Purpose/Methods: Nicolardio administration in AMI patients was reported to reduce infarcted myocardium and prevent left ventricular (LV) remodeling. In addition, high dosage (HD) NCR administration was reported to be effective to CHF. To clarify whether HD nicolardio administration in AMI patients was more effective to salvage myocardium than low dosage (LD) nicolardio administration, 30 patients (age≥62+10y,M/F=26/4) with initial AMI with ST segment elevation undergoing successful percutaneous coronary intervention (PCI) were enrolled. Patients were divided to HD group (15patients) and LD group (15patients) at random. HD nicolardio administration was intravenous (0.2mg/kg/5 minutes), intracoronary (2mg), and continuous (0.2mg/kg/h for 24hours) administration. LD nicolardio administration was intravenous (4mg), intracoronary (2mg), and continuous (4mg/h for 24 hours) administration. Tc-99m miibi QGS was done on subacute and chronic period (6 to 9 months). LV ejection fraction (LVEF), end diastolic volume (EDV) and end systolic volume (ESV) using Tc99m miibi QGS were calculated. Total CACS (CASC) was performed by the summation of 5-point grading defect score (0=normal perfusion to 4=perfusion defect) of 17 SPECT segments. Extent score (ES) was calculated by the number of hyperperfusion and perfusion defect segments. Exercise tolerance was estimated by anaerobic threshold oxygen consumption (AT-VO2) and peak oxygen consumption (Peak-VO2) using cardiodiarymographic exercise test (CPX). Result: There were no significant differences between HD group and LD group in CPK, BNP, AT-VO2 and saucifie and chronic EF, EDV and ESV. Some results of HD group were significantly better than LD group in subacute TDS (HD: 8.6+/6.7 vs. LD: 16+/10 p<0.01), chronic TDS (HD: 7.2+/6.6 vs. LD: 13.7+/11.7; p<0.04) and chronic Peak-VO2 (HD: 23.5+/4.8m/min/kg vs. LD: 17.8+/4.5 ml/min/kg; p=0.004). Conclusion: High dosage nicolardio administration in AMI patients was effective to reduce myocardial infarction and improve exercise tolerance in comparison with low dosage nicolardio administration.

OP145
Influence of Perfusion Defects on Survival After Coronary Revascularization

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AIM: To test the hypothesis that with reversible ischemia by myocardial perfusion scintigraphy (MPS) the prognosis in terms of survival is more favourable following revascularization. Materials and Methods: We conducted a review of 6 years’ MPS performed in 1157 patients referred for suspected obstructing atherosclerosis. Perfusion defects were graded using the summed stress score (SSS) and a 20-
OP146
Ischemia but not necrosis is a predictor of post-stress LVEF drop 6 months after myocardial infarction: a gated myocardial perfusion SPECT study.

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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-tisemtambium. Rest gSPECT images were acquired 30 minutes after injection of 11.1 MBq/Kg of 99mTc-tisemtambium 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 ≤5% 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 infarct characteristics were similar when compared with patients with unchanged post-stress LVEF (group B). Patients with LVEF drop had significantly higher SDS when compared with patients with unchanged LVEF (median (IQR): 2 (0-5) vs 0 (0-3) p=0.016); they also had more often significant ischemia (i.e. SDS>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.

OP147
Estimation of myocardium at risk and saved myocardium using myocardial perfusion gated-SPECT practiced one month after infarction

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Objective. To estimate myocardium at risk (MR) and salvaged myocardium (SM) following percutaneous coronary revascularization (PCR) in patients with a first acute myocardial infarction (AMI), using myocardial perfusion gated-SPECT (gSPECT). Method. Forty patients (mean age 61.5 years, 8 women) with AMI and primary PCR were prospectively included. They underwent two gSPECT: the first one consisted in the injection of 800 MBq of 99mTc-tetrofosmin prior to the PCR and the second one 30 minutes after it. The first study (gSPECT-1) was performed when patient was considered stable immediately after PCR procedure. The second study (gSPECT-2) was performed between the fourth and fifth week following AMI. The area of real MR was quantified by assessing the perfusion defect in gSPECT-1, while the SM was measured by the difference between the MR area and the area of necrosis in gSPECT-2. The MR area in gSPECT-2 was calculated by analysing the discordance between the extension of the perfusion defect and the left ventricular motility defect. Quantification of left ventricular perfusion defects, wall motion, wall thickening, ejection fraction and ventricular volumes were assessed using the QGS software. Results. A significant improvement in perfusion, wall motion, thickening and left ventricular ejection fraction was found (p<0.001) in both studies. Moreover, the discorance between the extension of the perfusion defect and the left ventricular motility defect, measuring 25% of SM area, was significantly different in gSPECT-1 and gSPECT-2, having been 1.9% in gSPECT-1 and 2.8% in gSPECT-2 (p=0.007). The degree of concordance for correct classification of patients with SM >50% was 83% (kappa: 0.6). Conclusions. Gated myocardial perfusion SPECT performed one month after early PCR in a first AMI can be used to establish an estimate of MR and SM areas.

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Symposium 4 - EANM/EAU Joint Session: Diagnostics and Therapy in Patients with Biochemical Recurrence after Primary Therapy

OP148a
Introduction

G. Janetschek, AUSTRIA

OP148b
PET/CT in Patients with Biochemical Recurrence after Primary Therapy

B. Krause, GERMANY

OP149
Salvage Therapy Options: Urology

B. Tombal, BELGIUM

OP150
Salvage Therapy Options: Radiation Oncology

V. Kho, UNITED KINGDOM

410 — Sunday, October 28, 2012, 14:30 — 16:00, Brown 2
Neurosciences: Dopamine Imaging

OP151
Quantification and Whole-Body Distribution of a Novel Dopamine D2/D3 Receptor Agonist, [123I]MCL-524, in Monkeys: A Prediction for Application in Human Subjects

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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 [123I]MCL-524 [1]. In the current study we performed a quantitative analysis of [123I]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 [123I]MNPA [2] and [123I]MCL-524. Arterial blood was obtained for