and IGF-1. RV mRNA levels were linearly related (p<0.01) with those of the LV, both for ACE (r=+0.88) and ET-1 (r=+0.71). The present study showed that LV dysfunction in a model of selective RV overload is accompanied by biventricular activation of regulatory (ACE and ET-1) systems, while counter-regulatory BNP is selectively activated in the RV. These findings might add to the understanding of the relative importance of load and autocrine/paracrine activation in the progression to heart failure.

1029-184 The Clinical Significance of a Common, Functional, X-Linked Angiotensin II Type 2-Receptor Gene Polymorphism (-1332 G/A) in a Cohort of 509 Families With Premature Coronary Artery Disease

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Background: A common intronic polymorphism, (-1332 G/A) of the angiotensin type 2 (AT2) receptor gene, located on the X-chromosome, has been reported to be biochemically functional.

Methods: We investigated 509 families from a cohort of families with a history of premature coronary artery disease (CAD). Families consisted of one sibling affected with premature CAD and two unaffected siblings. Genotyping of subjects was performed using a restriction enzyme digestion of an initial 310 bp PCR fragment that included the AT2 (-1332 G/A) locus.

Results: The mean age of the 611 siblings affected by premature CAD at the time of event was 49.5 ± 8.1 yrs. Conditional logistic regression analysis confirmed a significant predictive value of premature CAD for the covariates of hypertension, diabetes, dyslipidemia, family history of smoking, as well as male gender (p<0.005). The genetic data were analyzed using the X-TDT statistics program which allows the calculation of exact p-values where the null hypothesis is of no linkage. In men (but not women) the G allele occurred significantly more frequently than would be expected if the disease causing locus and AT2 (-1332 G/A) locus were unlinked: p-exact value = 0.034. The data were further analyzed to investigate linkage between this locus and a causative locus for hypertension. In men we observed a trend towards linkage; p-exact value = 0.08.

Conclusion: We have found evidence of linkage between the AT2 (-1332 G/A) locus, and a causative locus for premature CAD in men but not in women.

1029-185 Mobilization of Bone Marrow Cells With Granulocyte-Colony Stimulating Factor Increases the CD34-Positive Mononuclear Cells in Peripheral Blood and Improves Angiogenesis, Ventricular Remodeling and Heart Function After Acute Myocardial Infarction in Rats

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Background: It's reported that bone marrow endothelial progenitor cells (EPCs) can be mobilized by myocardial infarction (MI). The aim of this study was to investigate the effect of granulocyte-colony stimulating factor (G-CSF) in mobilizing the putative precursor of EPCs (CD34-positive mononuclear cells (MNC)) from bone marrow and the correlation to heart function in a rat MI model. Methods: G-CSF (n=6, 150 µg/kg/day) or placebo (n=8) were given subcutaneously to left coronary artery-ligated rats for 5 days after operation. On the 6th operation day, MNCs were separated and labeled with anti-CD34 for FACS analysis. Echocardiography was performed for assessment of heart function before rats were killed at 6 weeks after operation. Results: 1) Leucocytes and MNCs in peripheral blood in G-CSF-treated group were increased by 2-fold (25.17±10.93/ml vs. 10.14±3.09/ml, 20.55±10.42/ml vs. 9.12±2.86/ml, *p<0.05 vs. G-CSF group), neutrophil by 4-fold (4.61±2.95/ml vs. 1.02±0.6/ml), MNCsCD34+ by 6-fold (262.79±73.63/ml vs. 43.9±29.77/ml) compared to the control group 6 days after MI. Erythroctyes and thrombocytes were similar between the two groups. 2) The capillary density of the CSF group in scar and border zone was increased significantly. 3) LVDD (left ventricular end-diasstolic diameter, 0.83±0.09 cm vs. 0.70±0.08 cm) was attenuated, scar thickness increased (0.13±0.02 cm vs. 0.17±0.02 cm) and LVEF increased (88.89±4.14% vs. 66.22±13.35% ) by G-CSF compared to the control group 6 weeks after MI; 4) The number of circulating MNCsCD34+ was positively correlated with LVEF (r=0.84, p<0.05). Conclusions: Mobilization of bone marrow cells with G-CSF increases the CD34-positive mononuclear cells in peripheral blood and improves angiogenesis, ventricular remodeling and heart function after acute myocardial infarction in rats.

1029-186 Plaque Targeting in Atherosclerotic Mice Using a Small ImmunooProtein Against an Angiogenesis-Associated Fibronectin Isoform

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Background: Currently, human atherosclerotic plaques can be visualized by angiography, ultrasound, CT and MRI. However, these imaging modalities are restricted to detect advanced atherosclerotic lesions. The aim of our study was to visualize early atherosclerotic plaques at the molecular level using an antibody against the extra-domain B of fibronectin (L19).

Methods: L19 was marked with radioactivity (1-125) or fluorescence (Cy5) and injected intravenously in apolipoprotein E knockout (Apoe ko) and corresponding control mice. 24h after injection of the tagged L19, the aorta was isolated for en face and cross sectional analysis. An unspecific antibody was used as a control for L19.

Results: Plaques could be clearly visualized in all Apoe ko mice after injection of labeled L19 (Fig.A). Specifically, the signal after phosphorimaging of the en face aorta following injection with radiolabeled L19 exactly matched the fat staining of plaques using Oil Red O (Fig.B). Similarly, fluorescent staining with Cy5 corresponded well with plaques on cross sections. No signal was observed in normal vessels and in Apoe ko mice injected with the unspecific antibody.

Conclusions: L19 enabled us to specifically identify atherosclerotic plaques and thus, may provide a novel molecular tool for plaque diagnosis. Furthermore, these findings may set the stage for a non-invasive plaque therapy by coupling anti-atherogenic drugs to the proposed antibody.

1045-190 Documentation of Exercise-Induced Coronary Collateral Growth in Humans

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Background: Collateral vessels can reduce the often fatal consequences of a sudden coronary artery occlusion. Collateral arteries develop out of preexisting arteriolar anastomoses in response to increased shear forces. We hypothesized that a long-term exercise program (increasing vascular shear forces) leads to:

1) Increased collateral flow as obtained in an angiographically normal coronary artery
2) Lack of decrease in collateral flow expected after percutaneous coronary intervention (PCI) in a diseased coronary artery
3) A dose-response relation between the degree of fitness following training and change in coronary collateral flow.

Methods: Thirty-four patients (age 61 ± 8 years) undergoing PCI because of stable angina pectoris were included in the study. They performed a 3-months physical endurance program (3 times per week, 1 hour per session) with baseline and follow-up exercise tests by using bicycle ergometry. Results: There was a significant increase in CFI in the angiographically normal vessel (baseline: 0.19 ± 0.09; follow-up: 0.23 ± 0.08; p=0.003) and the expected decrease in CFI in the vessel undergoing PCI was prevented (baseline: 0.18 ± 0.05; follow-up: 0.20 ± 0.06; p=NS). There was a direct dose-response relation between delta VO2max and change of CFI in the normal vessel (p=0.4, r=0.42).

Conclusion: Endurance exercise training induces the growth of collateral arteries ("arteriogenesis") in a myocardial region supplied by an angiographically normal vessel and it