and fibrosis in myocardium, thus delay the progress of the diabetic cardiomyopathy.

e0041 VASOMOTOR FUNCTION FOLLOWING NEWER GENERATION OF BARE METAL STENT OVERSTRETCH IN A PORCINE CORONARY MODEL

doi:10.1136/hrt.2010.208967.41

[1]Jing Chen, [2]Takamitsu Nakamura, Daisuke Matsumoto, Nicolas Chronos, Dongming Hou. *[1]Renmin Hospital, of Wuhan University, Wuhan, China; [2]Saint Joseph's Translational Research Institute/Saint Joseph's Hospital, Atlanta, Georgia, USA*

Backgrounds Overstretch damage after bare metal stent (BMS) placement could trigger cell proliferation and in-stent restenosis (ISR). Newer Co-Cr BMS has thinner stent struts, which designs to minimise cellular response to injury. We aimed to investigate neointimal growth, as well as vasomotor function after overstretch using Co-Cr BMS in a pig coronary model.
Methods 15 vessels in five pigs were assigned to receive BMS (stent struts 91 μm) implantation with either S/A ratio 1.3 (group I, n=7) or 1.5 (group II, n=8). Quantitative coronary angiography (QCA) and optical coherence tomography (OCT) were performed at 14 days after stent implantation. Coronary vasomotor function was evaluated by incremental acetylcholine (Ach) (10^{-7} and 10^{-6} M) and nitroglycerin (NTG, 400μg) infusion before stent implantation and at 14 days. Endothelial response to Ach was measured at 5–10 mm distal to the stent edge.
Results Both QCA and OCT showed that in-stent stenosis of group I were significantly smaller than group II at 14 days (QCA-late loss (LL), 1.22±0.21 mm vs 1.79±0.17 mm; OCT % AS, 17.0±7.9% vs 26.9±10.7% at 14 days, p<0.05 and 0.001, respectively). Liner regression analysis QCA-LL is proportional to obtained S/A ratio (r=0.60, p<0.05). Endothelium-dependent vasomotion at distal non-stented reference segments was no difference between groups. The mean coronary diameter changes at Ach 10^{-7} M and 10^{-6} M was 2.1%±0.2% and 2.1%±0.2% in goup I; 2.2%±0.2% and 2.1%±0.2% in group II (p>0.05, accordingly). There was also no difference before and at 14 days after stent implantation.
Conclusion The progression of neointimal hyperplasia after BMS implantation is positively associated with the extent of coronary artery injury. Coronary endothelial function is preserved after BMS implantation at 14 days, which is independently of overstretch degree.

e0042 THE EFFECT OF ISCHAEMIC POSTCONDITIONING ON THE STRUCTURE, FUNCTION AND CX43 OF MITOCHONDRIA IN RABBIT MYOCARDIAL ISEHEMIA/REPERFUSION INJURY

doi:10.1136/hrt.2010.208967.42

Yan He, Zhi-Yu Zeng, Guo-Qiang Zhong, Wei Li, Wei-Ke Li. *Department of Cardiology, The First Affiliated Hospital of Guangxi Medical University*

Objective To investigate the effects of ischaemic postconditioning on structural and functional and connexin 43(Cx43) changes of mitochondria induced by myocardial ischaemia reperfusion (IR) injury of rabbits in vivo and potential mechanism.
Methods In anaesthetised open-chest rabbits, the left anterior descending artery (LAD) was occluded for 30 min and reperfused for 4 h. Sixty-four rabbits were randomly divided into four groups (n=16 in each group): Sham operation group (Group Sham), ischaemic reperfusion group (Group IR), ischaemic preconditioning group (Group IP) and ischaemic postconditioning group (Group PC) with sixteen rabbits in each. All rabbits in the four groups were killed 4 h after reperfusion. Myocardial infarct size were determined at the end of the experiment. Mitochondria were isolated with different centrifugations. Ultrastructural changes of mitochondria were observed under electronmicroscope and mitochondrial membrane potential, Ca^{2+} concentration, MDA content and SOD activity of myocardial mitochondria were examined. The content of the mitochondria Cx43 were detected with Western Blot.
Results Myocardial infarct size was significantly reduced in IP (18.9±2.8)%)and PC (19.1±3.9)%)groups as compared to IR groups (35.7±5.8)%, p<0.01). Compared with group IR, the damage of mitoehondrial ultrastrueture were milder and Ca^{2+} concentration and MDA content were much lower in group IP and group PC (p<0.05). Mitochondrial membrane potential (p<0.01) and SOD activity of myocardial mitochondria in group IP and group PC was significantly higher than that in group IR (p<0.05). Compared with sham group, the mitochondria Cx43 expression is distinctly decreased compared group IR (p<0.05) and no significant difference was found between Group IP and Group PC.
Conclusion PC can protect mitochondrial ultrastructure by increaseing mitochondrial membrane potential and SOD activity, and by alleviating Ca^{2+} overload, and by decreasing MDA content in myocardial mitochondria. The mechanism of PC protection to mitochondria may be concerned with PC attenuating the decrease the mitochondria Cx43 expression induced by ischaemia/reperfusion injury.

e0043 EFFECTS OF SIMVASTATIN ON ANGIOGENESIS AND THE EXPRESSION OF ANG1 AFTER MYOCARDIAL INFARCTION IN RATS

doi:10.1136/hrt.2010.208967.43

He Quan, Qin Shu, Ma Kanghua, Luo Suxin, Zhang Xiaogang. *The First Affiliated Hospital Chongqing Medical University*

Objective To investigate the effects of simvastatin on myocardial angiogenesis and the expression of angiopoietin-1 after experimental myocardial infarction (MI) in rats.
Methods 60 healthy adult SD rats were randomly divided into the sham operated group, the control group, low dose of simvastatin ($1\ mg\cdot kg^{-1}\cdot d^{-1}$) group, medium dose of simvastatin ($10\ mg\cdot kg^{-1}\cdot d^{-1}$) group, high dose of simvastatin ($40\ mg\cdot kg^{-1}\cdot d^{-1}$) group. Left anterior descending coronary underwent permanent occlusion to establish the MI model. Rats were administered simvastatin respectively via oral gavage for four consecutive weeks starting at the next day. Density of new microvessels in the ischaemic area, LVMI, protein and mRNA expression of Ang-1 were detected 4 weeks after operation.
Results (1) Compared with the control group, the Density of new microvessels in low and medium dose of simvastatin group increased significantly (p<0.05); and those did not changed significantly in high dose of simvastatin group (p>0.05) (2) LVMI in low and medium dose of simvastatin group decreased significantly compared with that in control group (p<0.05), and further decreased in high dose of simvastatin group. (3) The protein and mRNA expression of Ang-1 in all simvastatin group increased significantly compared with that in control group (p<0.05).
Conclusion (1) Low and medium dose of simvastatin can stimulate myocardial angiogenesis after MI, wherase high dose of simvastatin have no pro-angiogenic effect. (2) the pro-angiogenic effect of simvastatin may be associated with upregulated expression of Ang-1.

e0044 THE ROLE OF ANG1 AND ENOS IN THE PROANGIOGENIC EFFECT OF SIMVASTATIN AFTER MYOCARDIAL INFARCTION IN RATS

doi:10.1136/hrt.2010.208967.44

He Quan, Qin Shu, Ma Kanghua, Luo Suxin, Zhang Xiaogang. *The First Affiliated Hospital Chongqing Medical University*

Objective To investigate the roles of angiopoietin-1 (Ang-1) and endothelial nitric oxide synthase (eNOS) in pro-angiogenic

effect of simvastatin after experimental myocardial infarction (MI).

Methods 60 healthy adult SD rats were randomly divided into the sham operated group, control group, simvastatin group, simvastatin plus L-NAME (inhibitor of NOS) group and simvastatin plus AMG386 (inhibitor of Ang-1) group; Left anterior descending coronary was undergone permanent occlusion to establish the MI model. Rats with MI were administered simvastatin (1 mg/(kg·d)), simvastatin plus L-NAME (40 mg/(kg·d)), and simvastatin plus AMG386 (10 mg/(kg·wk)) respectively for 2 weeks. New microvessels in the ischaemic area near the infarction myocardium were stained by CD31 and the density of new microvessels was dedected; Ang-1, eNOS and phosphoralated endothelial nitric oxide synthase at Ser^{1177} (p-eNOS) were evaluated by western blotting and RT-PCR assay.

Results (1) simvastatin significantly increased the density of new microvessels ($p<0.05$), but L-NAME and AMG386 significantly inhibited the pro-angiogenic effect of simvastatin ($p<0.05$). (2) simvastatin significantly improved The expression of Ang-1, eNOS and p-eNOS ($p<0.05$), and AMG386 significantly decreased simvastatin induced upregulation of p-eNOS.

Conclusion The pro-angiogenic effect of simvastatin is associated with increased expression of Ang-1, eNOS and p-eNOS, and phosphoralation of eNOS maybe the downstream pathway for Ang-1 induced angiogenesis.

e0045 EFFECTS OF GINSENOSIDE-RBL ON ALDOSTERONE-INDUCED ELASTIN PRODUCTION IN RAT CARDIAC FIBROBLASTS EX VIVO

doi:10.1136/hrt.2010.208967.45

Hongliang Kong, Zhanquan Li, Weiwei Zhang, Long Yuan, Aijie Hou. *Department of Cardiology, Liaoning Provincial People Hospital, Shenyang, China*

Objective To investigate whether the role of Ginsenosides-Rbl (Gs-Rb1) on aldosterone-induced elastic fibre deposition of neonatal rat cardiac fibroblasts (CFs) in vitro.

Methods CFs were randomly divided into control group, aldosterone group (10 nmol/l), Gs-Rb1 group (200 umol/l) and Gs-Rb1 binding aldosterone group (100, 200, 300, 400, 500 umol/l Gs-Rb1, respectively, basing on 10 nmol/l aldosterone), all of which were treated for 24 h. MTT colorimetric assay was adopted to evaluate cell proliferation whereas immunofluorescence cytochemistry and western blot were used to detect elastin, tropoelastin synthesis and elastic fibre deposition.

Results 1. Gs-Rb1 significantly inhibited CFs proliferation induced by aldosterone in a dose-dependent manner ($p<0.01$). 2. Aldosterone significantly increased elastic fibre deposition, the expression of elastin ($p=0.024$) and tropoelastin collagen ($p=0.031$) in CFs. 3. Pretreatment with Gs-Rb1 significantly inhibited the above aldosterone effects, including elastin levels ($p<0.01$), tropoelastin synthesis ($p<0.01$) and elastic fibre deposition in a dose-dependent manner.

Conclusions Gs-Rb1 was shown to inhibit aldosterone-induced collagen production in CFs.

e0046 ROSIGLITAZONE ATTENUATES MYOCARDIAL REMODELLING IN SPONTANEOUSLY HYPERTENSIVE RATS

doi:10.1136/hrt.2010.208967.46

Ti Yun, Hao Ming-Xiu, Li Chuan-Bao, Wang Zhi-Hao, Hou Xiao-Yang, Liu Jun-Ni, Zhang Wei, Zhang Yun. *Shandong University Qilu Hospital*

Background Rosiglitazone, an important Peroxisome proliferator-activated receptor-γ (PPAR-γ) agonist, improves left ventricular hypertrophy in diet-induced hypercholesterolemic rats. However, the effects of rosiglitazone on cardiac remodelling in spontaneous hypertension rats are unclear.

Methods 20 male 8-week-old SHRs were randomly divided into two groups: one treated with oral saline (n=10) and the other treated with rosiglitazone (5 mg/kg/d) (n=10), compared with ten age-matched Wistar-Kyoto (WKY) rats as a control group. Echocardiography, immunohistochemistry, real-time RT-PCR, co-immunoprecipitation, and Western blot analysis were performed to assess the effects of rosiglitazone.

Results After 16 weeks of treatment, rosiglitazone decreased left ventricular weight (LVW) to body weight (BW) ratio (2.35 ± 0.11 vs 2.56 ± 0.14 mg/g, $p<0.01$). According to echocardiography, thickening of interventricular septum and posterior wall was prevented (2.07 ± 0.03 vs 2.15 ± 0.04 mm, $p<0.01$; 2.08 ± 0.05 vs 2.15 ± 0.05 mm, $p<0.01$, respectively) and midwall fractional shortening (MFS) was improved ($23.82\pm0.23\%$ vs $23.33\pm0.4\%$, $p<0.01$) by rosiglitazone. Rosiglitazone decreased collagen I and III mRNA expression (0.06 ± 0.01 vs 0.18 ± 0.01, $p<0.01$; 0.05 ± 0.01 vs 0.13 ± 0.01, $p<0.01$, respectively), and normalised the MMP-9/TIMP-1 ratio (1.16 ± 0.12 vs 0.78 ± 0.18, $p<0.01$). Furthermore, AP-1 activation (0.51 ± 0.10 vs 0.71 ± 0.09, $p<0.01$) and NF-κB expression (0.33 ± 0.04 vs 0.45 ± 0.08, $p<0.01$) were suppressed in treated group.

Conclusion These results suggest that treatment with rosiglitazone will improve myocardial remodelling in hypertension. Taken together, PPAR-γ agonist rosiglitazone may exert a protective effect on cardiac remodelling in SHRs by decreasing the expression of AP-1 and NF-κB.

e0047 ALPHALINONENIC ACID INHIBITS HIGH GLUCOSEMEDIATED ENDOTHELIAL NEUTROPHIL ADHESION BY DECREASING ADHESION MOLECULE EXPRESSION VIA PI3KAKT PATHWAY

doi:10.1136/hrt.2010.208967.47

Zhang Wei, Wang Zikuan, He Yong, Xue Yusheng, Zheng Qiangsun. *Department of Cardiology, Tangdu Hospital Fourth Military Medical University, Xi'an, P.R. China*

Objective Neutrophil-endothelial adhesion is crucial to vascular injury, the major cause of diabetic vascular complications. We studied the mechanism of cardio-protective effect of Alpha-linolenic acid (ALA).

Methods Human umbilical vein endothelial cells (HUVECs) were cultured in 5.5 mmol/l and 33 mmol/l for 72 h. ALA with different concentrations was (were) added with defatted bovine serum albumin as a carrier for 18 h before(del) incubation with high glucose. The effects of ALA on high glucose-induced activation of endothelial cells were then examined.

Results ALA (10 to 100 μmol/l) decreased the adhesion of human neutrophilic polymorphonuclear leukocytes (PMN) to HUVECs stimulated with high glucose (33 mmol/l) for 48 h. However, with a higher concentration, ALA (200 μmol/l) exerted an opposite effect. ALA (50 μmol/l) also inhibited intercellular adhesion molecule-1 (ICAM-1) and P-selectin expressions in HUVECs induced by high glucose. ALA enrichment partially prevented the reduction of Akt phosphorylation caused by high glucose. The inhibitory effects of ALA (50 μmol/l) on high glucose–mediated PMN adherence and endothelial adhesion molecule expression were partially abrogated by pretreatment with the PI3K inhibitor LY294002 and wortmannin, suggesting that Akt activation might inhibit activation of endothelial cell induced by high glucose.

Conclusions We conclude that(del) ALA, with a low concentration, acts directly on endothelial cell to inhibit expression of adhesion molecules and neutrophil adhesion mediated by high glucose via a PI3K/Akt-dependent pathway.