Objectives: The reduction of myocardial matrix metalloproteinases-2 (MMP-2) in early atherosclerosis is showed has been shown that may lead to collagen accumulation in extracellular matrix (ECM) and myocardial fibrosis. CD147 is a natural inducer of MMP-2. We assume that the inhibition of CD147/MMP-2 pathway may contribute to this remodeling. So we intend to alter the level of CD147/MMP-2 in early hypertensive rats by injecting exogenous CD147 protein, and observe its effect on ventricular remodeling.

Methods: 30 healthy eight weeks male spontaneously hypertensive rats (SHR) were divided into 3 groups: SH group (n=10): normal saline via tail vein injection (iv) qd; CD147 group (n=10): CD147 600ng kg⁻¹ iv, qw; CD147+DOX group (n=10): CD147 600ng kg⁻¹ iv, qw and DOX (doxycycline, broad-spectrum inhibitor of MMPs) 30mg kg⁻¹ qd via gavage. 10 healthy eight weeks male Wistar-Kyoto rats (WKY) were treated as the control group (WKY group, n=10). Left ventricular mass index (LVWI= LV mass (mg)/ weight (g)) were measured and calculated; Morphological sections were observed by HE coloration, VG coloration; Collagen volume fractions (CVF) were obtained by image analysis; The proteins of MMP-2, TIMP-1 and CD147 in myocardial tissue were assessed by western blot after the rats were sacrificed in Day 36th.

Results: The contents of CD147 protein in myocardium of SHR group were reduced significantly (P<0.05) and the contents of MMP-2 were also reduced slightly compare with those in WKY group (P<0.05); The abundance of CD147 and MMP-2 protein in CD147 group was increased obviously (P<0.05), however, that of MMP-2 protein was reduced in CD147+DOX group after DOX intervention (P<0.05); The levels of TIMP-1 in the myocardium of three SHR groups, particularly in the CD147 group, were significantly higher than WKY group (P<0.05); The ratios of myocardium MMP-2/TIMP-1 in SHRs were less than WKYs obviously (P<0.05), but they were increased after CD147 intervention. LVWI of SHR group were higher than WKY group (P<0.05), but they were downregulated obviously in CD147 group and CD147+DOX group (P<0.05). The myocardial biopsy showed that there were cardiomyocyte hypertrophy, some myocardial fibre rupture, myocyte dissolution and fuzzy myocardial fibre boundaries in SHR group. The cardiac structure was improved significantly after CD147 intervention, but it was surprised when DOX administrated simultaneously. VG coloration sections were seen more abundance collagen fibers and higher CVF in the myocardium of SHR group than those in WKY group (P<0.05). The contents of collagen fiber and the CVFs were decreased significantly after CD147 intervention (P<0.05). While, they were increased again in CD147+DOX group (P<0.05).

Conclusions: The inhibition of CD147/MMP-2 pathway, the reduction of MMP-2 protein expression and the imbalance of MMP-2/TIMP-1 may contribute to early ventricular remodeling in SHR. Appropriate modification of CD147 protein overexpression may attenuate the process of early hypertensive ventricular remodeling.

GW25-e1393

Relationship between platelet count and the concentration of potassium
Liu Min, Chen Peizong, Zhang Shihong, Xu Hongyu
Department of Clinical Laboratory, The First Affiliated Hospital of Sun Yat-sen University

Objectives: To study the relationship between the platelet counts (PLT) and the concentration of potassium in both serum and plasma.

Methods: 298 subjects with different PLT were enrolled in this study. Subjects with other possible causes of elevated serum potassium were excluded. PLT was counted simultaneously. VG coloration sections were seen more abundant collagen fibers and higher CVF in the myocardium of SHR group than those in WKY group (P<0.05). The contents of collagen fiber and the CVFs were decreased significantly after CD147 intervention (P<0.05). While, they were increased again in CD147+DOX group (P<0.05).

Conclusions: The inhibition of CD147/MMP-2 pathway, the reduction of MMP-2 protein expression and the imbalance of MMP-2/TIMP-1 may contribute to early hypertensive ventricular remodeling.

GW25-e1393

GW25-e1393

Beta-3-Adrenoreceptor Stimulation Protects Against Atherosclerosis in Apolipoprotein E-deficient Mice
Shi Shitian, Li Yangfan, Guo Yangang, Wang Zhonghong
Anzhen Hospital, Capital Medical University

Objectives: β3-Adrenoreceptors (β3-AR) protects against the progression of atherosclerosis. However, the specific mechanism of this antiatherosclerotic effect is still clear. Thus, the aim of this study was to determine the molecular basis of the anti-atherosclerotic effects.

Methods: Male homozygous apolipoprotein E knockout (Apoe⁻/⁻) mice on a high-fat diet and wild-type (WT) C57BL/6J mice on a normal diet were used. Fifty Apoe⁻/⁻ mice were randomized into five treatment groups: atherosclerotic model, atorvastatin, low-dose β3-AR agonist, high-dose β3-AR agonist and β3-AR antagonist. Serum lipids were measured when the treatments ended. mRNA expressions in liver ApoA-1 and SR-B1 were detected by quantitative real-time PCR. Protein expressions of ApoA-1 and SR-B1 in the livers were determined by western blot analysis.

Results: Compared with Apoe⁻/⁻ control mice, chronic β3-AR agonist treatment significantly increased plasma high-density lipoprotein cholesterol levels. Compared with the age-matched WT mice, the ApoA-1 mRNA and protein expression level in Apoe⁻/⁻ mice were significantly increased. Compared with Apoe⁻/⁻ control mice, the ApoA-1 mRNA and protein expression level in liver were significantly increased in the atorvastatin and β3-AR agonist groups. The SR-B1 mRNA expression and protein level in liver of Apoe⁻/⁻ mice was significantly decreased compared with wild type mice. The SR-B1 mRNA expression and protein in liver were significantly increased in the atorvastatin and β3-AR agonist groups, compared with the Apoe⁻/⁻ atherosclerotic model mice.

Conclusions: The present study demonstrated that long-term β3-AR activation can regulate lipid metabolic disorders, and reduced progression of atherosclerosis. This effect may be related to ApoA-1 and SR-B1.

GW25-e1389

Interactions of high salt and family history of hypertension on the gene expression of TGF-β1/Smads, ion pumps and TRPCs in human umbilical arterial smooth muscle cells
Shang Qianhui, Shang Qianhui
Institute of Clinical Medicine and Hypertension Research Lab, Department of Cardiology of Affiliated Hospital, Zunyi Medical College

Objectives: High-salt intake and family history of hypertension are involved in the pathogenesis of hypertension and vascular remodelling. This study examined the interactions of high salt and family history of hypertension on the gene expression of TGF-β1/Smads, Ca²⁺ regulation-related ion pumps and transient receptor potential canonical channels (TRPCs) in human umbilical artery smooth muscle cells (HUASMCs).

Methods: Fourteen normal fetal umbilical cords were taken, which derived from 7 couples with positive family history of hypertension (FH+) and 7 cases with negative family history of hypertension (FH-). The HUASMCs were cultured by tissue explants adherent method, and were randomly divided into the normal salt medium (DMEM with a Na⁺ final concentration of 139mmol/L) and high salt medium (Na⁺ final concentration of 164mmol/L, contained additional sodium chloride) at FH+ and FH- level, respectively. Smooth muscle cell-specific Z-actin was observed through the immunocytochemical method. The real-time PCR was employed to detect the gene expression of transforming growth factor beta-1 (TGF-β1), Smad2, Smad3 and Smad7, Na⁺/K⁺-ATPase α₁-subunit, α₂-subunit, and α₃-subunit, plasma membrane Ca²⁺-ATPase isof 1 (PMCA1) and PMCA4, as well as TRPC1, TRPC3 and TRPC6. Factor analysis method was used to evaluate the interactions of family history of hypertension and high salt on above gene expression.

Results: There was interaction between family history of hypertension and high salt that affected gene expression of TGF-β1/Smads, but no interaction on TGF-β1/Smads, α₁-subunit, PMCA4, TRPC1 and TRPC6. Without interacting, family history was the main effect of TGF-β1/Smads, TRPC6 (P<0.05) and high salt was the main effect of Smad3, PMCA4, TRPC1 (P<0.05). Both family history and high salt affected Smad7 mRNA expression (P<0.05). With interacting, family history and high salt had negative interaction on the gene expressions of α₁-subunit, α₂-subunit and PMCA1 (P<0.05), while positive interaction on TRPC3 mRNA. For the main effect of family history, compared with FH+, the mRNA expressions of TGF-β1 and TRPC5 were increased in FH− (P<0.05), in contrast Smad7 and α₁-subunit decreased (P<0.05). For the main effect of high salt, the gene expressions of Smad3 and TRPC1 were higher in high salt than in normal salt (P<0.05) while Smad7 and PMCA4 lower in high salt medium.

Conclusions: Family history of hypertension may affect the mRNA expressions of a 3-subunit and TRPC6 while high salt affect the mRNA expressions of PMCA4 and TRPC1. Family history and high salt may co-regulate the mRNA expressions of TGF-β1/Smads, α₁-subunit, α₂-subunit, PMCA1 and TRPC3 in HUASMCs.

GW25-e1134

Clinical significance of serum homocysteine detection in patients with coronary heart disease
Xu Hongyu, Liu Min, Chen Peizong, Liao Haijung, Xu Hongyu
Department of Clinical Laboratory, The First Affiliated Hospital of Sun Yat-sen University

Objectives: Homocysteine (Hcy) has been identified as a major independent risk factor for cardiovascular disease. To explore the potential application of serum level of Hcy, and discuss the clinical value of its detection in patients with coronary heart disease.

GW25-e1134