HCM patients (0.009±0.002) p= 0.23, MI patients (0.005±0.001) p= 0.4, and IHD (0.008±0.003) p= 0.77. MI patients show lowest levels of GR than other patient groups.

CONCLUSIONS Patients with myocardial infraction show higher levels of hypertension (both systolic and diastolic).Anti-oxidant enzyme levels were lower in heart patients than control samples indicating higher scores of oxidative stress in heart patients. Positive correlation occurs between heart physiology and catalase levels, as it has found that higher the score of oxidative stress worse is heart physiology.

GW27-e0564

The role of Hypoxia-Inducible Factor 1-Alpha (HIF1-α) in maintaining the balance between survival and cell death during the course of myocardial infraction.

Angelos Tsipis,[2,2] Anna Maria Athanassiadou,[1] Emmanouil Petrou,[2] Dimitrios Miliopoulos,[2] Aggeliki Gkouziouta,[2] Pauline Athanassiadou,[1] Polixeni Nikolopoulou[1]
[1]University of Athens; [2]Onassis Cardiac Surgery Center

OBJECTIVES HIF1-α is a transcription factor, sensitive to hypoxia and is up-regulated in regions of myocardial ischemia. HIF1-α regulates several pathways critical for cellular response to hypoxia. Under hypoxia, HIF1-α protein rapidly induces the expression of genes that increase the oxygen availability to cells such as the expression of vascular endothelial growth factor (VEGF). HIF1-α also regulates the expression of a battery of genes involved in the promotion or inhibition of apoptotic pathway. The aim of the present study was to investigate the expression of HIF1-α in myocardial infarction and the relation with VEGF and the apoptotic proteins.

METHODS We studied myocardial samples of hearts with histologic findings of acute myocardial infarction (group A, n=100), old myocardial infraction (group B, n=100) and myocardial samples of normal heart (control group, n=20). An immunohistochemical method was performed with the use of HIF1-α, VEGF, Bax, Bcl-2 antibodies, in order to investigate the expression of HIF1-α and apoptosis-related proteins bax, bcl-2 in ischemic cardiac disorders.

RESULTS HIF1-α expression was intensive at the risk areas of samples with acute myocardial infarction. In old myocardial infraction the HIF1-α expression decreased and the positive samples demonstrated weak staining. VEGFis expressed in cardiomyocytes at the risk areas of acute myocardial infarction in 80% of cases. High concordance of HIF1-α and VEGF expression was detected (71,5% of cases, p = 0.020). Bcl-2 positive expression was moderate at the risk areas in 75% of samples with acute myocardial infarction. In old myocardial infraction the bcl-2 positive samples demonstrated weak staining as in the control group. Bax staining was weak in 80% of samples with acute myocardial infraction and intensive in 60% of samples with old myocardial infraction. Bax positive expression was weak in 50% of samples of the control group.

CONCLUSIONS Increased levels of HIF1-α were associated with intense expression of antiapoptotic bcl-2 protein in acute myocardial infraction. Decreased levels of HIF1-α and intensive expression of proapoptotic bax were found in cases of old myocardial infraction. The decreased expression of HIF1-α is associated with the progressive loss of myocytes by apoptosis. The increased expression of HIF1-α and bcl-2 in acute myocardial infraction represents a possible compensatory mechanism of salvaged myocytes. The prevalence of the apoptotic mechanism or this of compensatory antiapoptotic may influence the progression of heart failure.

GW27-e0574

Effect and mechanism of chemerin on the artery contraction in obesity-induced hypertension

Weng Chunyan, Hong Yuan
The Third Xiangya Hospital, Central South University, Changsha, China

OBJECTIVES The obesity-induced hypertension is associated with high morbidity and mortality, because it leads to cardiovascular disease. And the prevention and treatment of obesity-induced hypertension is a major obstacle. So, we discuss the effect of chemerin on artery contraction in obesity-induced hypertension using model rats and human aortic smooth muscle cells. Our study will try to identify novel targets, which would provide new ideas for the prevention and treatment of obesity-induced hypertension.

METHODS After one week feeding with normal diet, the 8-week-old Wistar rats (n = 40) were randomly divided into two groups. The control group (n=10) was fed with general diet, while the model group (n=30) was fed with high-fat diet for 20 weeks. Body weight, blood pressure and heart rates were measured every 4 weeks. Serum chemerin levels were measured at 0, 4 and 20 weeks. Then, all the rats were sacrificed at the end of the experiments. The effect of chemerin 9 on artery tension in aortic rings was examined by vascular tone detector. The expression of chemerin, CMKLR1, ROCK and P-MYPT1 were detected by Western blot and Immunohistochemistry in arteries and human aortic smooth muscle cells.

RESULTS After 4 weeks of high-fat diet, The weight, pressure, heart rates and Lee's index of rats were significantly higher than the control group ($p<0.05$). After 20 weeks, serum LDL-C, epididymis adipose mass/body weight were higher than the control group ($p<0.05$). However the blood sugar and triglyceride have no significant difference. Chemerin 9 potentiated the artery tension in model group ($p < 0.05$). The expression of chemerin, CMKLR1, ROCK and P-MYPT1 were much higher in model group, and ROCK 2 were increased by chemerin time-dependently.

CONCLUSIONS The obesity-induced hypertensive rats were successfully modeled by high fat diet. Chemerin can enhance the vasoconstriction of the hypertensive rats. Chemerin may promote vasoconstriction through ROCK2/P -MYPT1 signaling pathway.

GW27-e0585

The Effect of Naoxintong Capsule on Nitroglycerin Tolerance in Rats

Yuchen Qian, Yu Wang, Xiaoqing Jiang, Yang Yang, Wangxiao Tan, Xiaoying Wang
Tianjin University of Traditional Chinese Medicine, Tianjin, China

OBJECTIVES Nitroglycerin (NTG) has been used for the treatment of cardiovascular diseases such as anginapectoris and heart failure, however, the NTG tolerance, which might compromise therapeutic efficacy, will be developed in prolonged prescription. The mechanism of the NTG tolerance mainly focused on superoxide anion (O2-) increasing, endothelial dysfunction and the activity of mitochondrial aldehyde dehydrogenase (ALDH-2) decreasing. Naoxintong capsule (NXT), a Chinese patent medicine extensively applied in clinic for stroke and coronary heart disease which approved by the China Food and Drug Administration. It's composed by 16 kinds of Chinese herbal medicines which mainly contain Astragali Radix, Salviae Miltiorrhizae Radix ET Rhizoma and Angelicae Sinensis Radix. Pharmacological research indicated that NXT could eliminate free radical of oxygen, protect mitochondria and endothelial cells. Therefore, it was considered that NXT might not only cure anginapectoris in combination with NTG, but also inhibit the NTG tolerance. We observed the effect of NXT on NTG tolerance in rats to provide theoretical basis for clinical practice.

METHODS Male Sprague-Dawley rats weighing 260-300g were divided into five groups randomly: (1) control group (CON), (2) nitroglycertin tolerance group (NTG tolerance), 50mg/kg daily, s.c.injections q.d.3 days, (3) - (5) groups given NTG with increasing dose of NXT (2.5, 5.0, 10.0mg/kg daily, s.c.injections q.d.3 days, NTG+NXT-L/M/H). Vevo 2100 Imaging System was employed to evaluate rats' cardiac function; the contents of malonaldehyde (MDA) and nitric oxide (NO) in blood were also detected.

RESULTS The left ventricular (LV) ejection fraction (EF) by NTG tolerance was higher than that of CON, meanwhile the EF in NTG+NXT was significantly decreased than NTG tolerance. NTG+NXT-M could significantly improve the blood flow of LV outflow tract (LVOT) inhibition by NTG tolerance.The contents of MDA and NO showed a dramatically increased by NTG tolerance. NXT could decrease the excessive MDA and NO induced by NTG tolerance.

CONCLUSIONS NXT could significantly inhibit the nitroglycerin tolerance by protecting cardiac function and reducing oxide stress. The corresponding clinical pharmacology might be related to expanding blood vessel and increasing blood flow.

GW27-e0588

Gene Expression Profiling of Doxorubicin Induced Cardiac Toxicity

Xiao Liu, Yang Yang, Xianghui Ma, Yuchen Qian, Xiaoying Wang
Tianjin University of Traditional Chinese Medicine, Tianjin, China

OBJECTIVES Doxorubicin (Dox) is anti-tumor drug which is widely used in clinic. It has a wide range of biological and chemical effects for human body. However, Dox also could produce some serious adverse reactions, such as cardiac toxicity, and violent cytotoxic function.

The aim of this study was to explore the mechanism of cardiac toxicity induced by Dox.

METHODS Sixteen wistar rats (250 ± 10g) were randomly divided into 2 groups, control group: intraperitoneal injection of saline; Dox group: intraperitoneal injection of Dox (3mg/kg), once every two days. Medicine was taken 4 times totally, and accumulative dosage of Dox was 12mg/kg. Then, the spleens were isolated from rats. By the application of Agilent Rat Gene Expression, we identify the differentially expressed genes. After that, we imported the differentially expressed genes into Ingenuity Pathways Analyses (IPA) to screen the pathways (P-value < = 0.05) and genes related to cardiac toxicity reduced by Dox.

RESULTS In summary of IPA, we predicted Dox could induce cardiotoxicity, such as cardiac infarction, heart failure, cardiac hypertrophy, cardiac congestive cardiac failure and congenital heart anomay. In the part of diseases and function, it was also predicted that Dox could lead to some cardiovascular diseases, for instance, arteriosclerosis, acute coronary syndrome and infarction. From the analysis of canonical pathways, atherosclerosis signaling pathway was related to Dox cardiac injury and there were 16 genes regulated this pathway, which mainly included CCR3, ALOX15, IL1A, CXCL12.

CONCLUSIONS Our study indicated that Dox could induce cardiac toxicity mainly by atherosclerosis signaling pathway during treatment, and the genes of CCR3, ALOX15, IL1A, CXCL12 involved in Dox cardiac injuy.

GW27-e0596

Presence of circulating endothelial progenitor cells and secretory stromal derived factor-1α expression in aortic dissection patients

Jia Xu, Ye Zhang, Jinli Liao, Yan Xiong, Ziyu Zheng, Hong Zhan
The 1st Affiliated Hospital of SUN Yat-sen University

OBJECTIVES Circulating endothelial progenitor cells are specialized subset of stem/progenitor cells derived from bone marrow. The number and activity of EPCs influenced its ability of neo-vascularization of injured vessels and predict the outcome in patients with aortic dissection. We aimed to evaluate the distinct patterns of circulating endothelial progenitor cells in aortic dissection.

METHODS We studied 26 consecutive patients with initial diagnostic aortic dissection and17 healthy subjects as control group. In all patients, the number of circulating EPCs of peripheral vein were measured by flow cytometer. Levels of soluble vascular endothelial growth factor (VEGF) and soluble vascular cell adhension molecule (sVCAM) were detected by ELISA. Stromal derived factor-1α (SDF-1α) of plasma and culture medium level ofcirculating EPCs were measured by ELISA.

RESULTS Compared to controls, CD34+/CD133+ EPCs numbers were much higher in aortic dissection group with significantly elevated plasma levels of VEGF and sVCAM. Both plasma and cultured supernatant SDF-1α levels of circulating EPCs were significantly higher in aortic dissection patients compared to healthy volunteers group.

CONCLUSIONS Our findings indicated that number and activity of circulating EPCs levels could be up-regulated when aortic dissection occurred with a plasma biomarker SDF-1α elevated.

GW27-e0597

Enhanced external counterpulsation promotes reendothelialization capacity of endothelial progenitor cells via activation of Tie2-dependent signaling pathway in stable angina patients

Jia Xu, Jinli Liao, Yan Xiong, Feng Zhu, Ziyu Zheng, Hong Zhan
The 1st Affiliated Hospital of Sun Yat-sen University

OBJECTIVES Enhanced external counterpulsation (EECP) has a beneficial effect on endothelial progenitor cells (EPCs) which play a pivotal role in endothelial repair following conorary arterial injury. However, the underlying mechanism of effects on endothelial intergrity and EPC signaling pathway involved in it remained to be studied. So, we investigate the effects of EECP on reendothelialization capacity of human circulating EPCs and the related epidermal growth factor homology domain-2 (Tie-2)-dependent signaling pathway in stable angina patients.

METHODS 86 stable angina patients were enrolled in our study, therein 37 patients received EECP treatment.60 healthy volunteers were selected as control group. The number and activity of circulating EPCs as well as the levels of GM-CSF and NO-VEGF in plasma and cell culture medium were measured in subjects of three group. The protein expression levels of Tie2/PI3K/Akt/eNOS signaling pathway were detected by western blot. In vivo, reendothelialization capacity of human EPCs in different group was detected by transplantation of EPCs in nude mouse model of carotid artery injury.

RESULTS The number and activity of circulating EPCs was impaired in stable angina patients compared with healthy volunteers and restored in EECP treatment group significantly. In parallel, EECP treatment enhanced levels of NO, VEGF, and GM-CSF of both serum and cultured medium. Transplantation of EPCs treated by EECP facilliated in vivo reendothelialization in nude mouse with carotid artery injury combined with enhanced phosphorylation of Tie2 and Akt protein expression of EPCs.

CONCLUSIONS EECP treatment could enhance the number and reendothelialization capacity of EPCs in stable angina via Tie2/PI3K/Akt/eNOS signaling pathway,at least in part.

GW27-e0600

4-phenylbutyrate Acid Induced Protection against Pulmonary Arterial Hypertension in Rats

yun wu, Dilare Adi, Mei Long, Fen Liu, Min-Tao Gai, Alidan Aierken, Ming-Yuan Li, Yi-Tong Ma, yitong ma
Department of Cardiology, the First Affiliated Hospital of Xinjiang Medical University, Urumqi, PRC

OBJECTIVES Endoplasmic reticulum (ER) stress is implicated in the pathophysiology of various pulmonary diseases via the activation of the unfolded protein response. However, the role of ER stress in pulmonary arterial hypertension (PAH) remains unclear. 4-phenylbutyrate acid is a well-known chemical chaperone that inhibits ER stress signaling. We hypothesized that chemical chaperones known, including 4-phenylbutyrate acid, will inhibit the disruption of ER stress and prevent and/or reverse PAH.

METHODS Male Wistar rats were randomly divided into four groups: a normal control group (NORMAL group), a PAH group, and two PAH model plus 4-PBA treatment groups. The latter two groups include rats receiving 4-PBA in either a prevention (PBA starting the day of PAH induction, onward for 4 weeks) or a reversal (on the third week of PAH induction, onward for 2 weeks) protocol by gavage each day.

RESULTS The PAH model was induced by intraperitoneally administering monocrotaline. The extent of mean pulmonary artery pressure and mean right ventricular pressure were lower in the REV and PRE groups when compared with the NORMAL group. Furthermore, 4-PBA was shown to improve pulmonary arterial remodeling. Treatment with 4-PBA was also shown to suppress the expression of GRP78, GRP94, ATF6, CHOP, and Bcl-2, all of which are ER stress indicators.

CONCLUSIONS Our findings indicate that PAH induces ER stress and provokes pulmonary arterial and right ventricular remodeling. Additionally, we show that the attenuation of ER stress has the potential to be an effective therapeutic target to protect pulmonary arteries.

GW27-e0605

NF-κB gene targeting transduction in reducing the aging myocardial ischemic-heart failure injury

He Chunhui, Bangdang Chen, Yining Yang, Fen Liu, Xiaocui Chen, Mintao Gai, Yitong Ma
Department of Cardiology, the First Affiliated Hospital of Xinjiang Medical University, Urumqi, PRC

OBJECTIVES This study was designed to investigate the effect of NF-κB signaling pathway during acute myocardial infarction and chronic ischemic heart failure in aged mice. We used cytomegalovirus (CMV) promoter and recombinant single strand AAV9 vector and double strand AAV9 vector to validate tissue-specific expression, and screened to obtain better AAV9 vectors which can be used in gene therapy of heart disease. We used IKBα (inhibitor of kappa Bα, IKBα) gene recombinant AAV9 vector for the targeting transduction in aging mouse heart, to investigate whether exogenously introduced IKBα can be used in gene therapy, and lead to targeted depression of NF-κB, reduction of myocardial infarction, inhibition of myocardial apoptosis, and improve survive of ischemia heart failure in aging mice.

METHODS Male C57BL/6J mice with age of 15 to 18-month were selected, to establish acute myocardial infarction model via left coronary artery liagation. The myocardial infarct size, myocardial apoptosis, IKBα, and the expression of p65 of p50 in cytoplasm and nuclear were observed on day 3 and day 28. ssAAV9-CMV-eGFP and