

RESULTS Alcohol consumption was significantly higher in Korean-Chinese than in Han patients. No difference was observed in other risk factors between two groups. The numbers of stenotic coronary arteries were significantly higher in Korean-Chinese patients. Plasma NO and eNOS were significantly lower in Korean-Chinese patients.

CONCLUSIONS There are significant differences in the angiographic characteristics and the levels of plasma NO and eNOS between Korean-Chinese and Han patients with CHD in Yanbian area in China. Reduced eNOS may be responsible for increased stenotic coronary arteries in Korean-Chinese CHD patients compared to Han in Yanbian area in China. Mechanistic link between alcohol consumption and eNOS/NO deficiency or angiographic abnormality needs further investigation.

GW28-e0221

Associations between Cardiac Fibrosis and Expression of Klotho, Collagen I and Collagen III mRNA in Rats with Chronic Heart Failure



Zheng Jia,^{1,2,3,4,5} Qian Liu,^{1,2,4} Zhengjiang Xing,^{1,2,3,4} Jie Wei,^{1,2,3,4} Honglin Zou,^{1,2,3,4} Li Yang^{1,2,4}

¹Kunming Medical University Affiliated Yan'an Hospital; ²Cardiovascular Disease Hospital of Yunnan Province; ³Cardiovascular Surgery Research Institute of Yunnan Province; ⁴Yan'an Hospital of Kunming City; ⁵Institute of American College of Cardiology

OBJECTIVES To investigate the association between cardiac fibrosis and expression of Klotho, Collagen I and Collagen III mRNA in myocardial of rats with chronic heart failure, and explore the mechanism underlying Klotho-mediated cardioprotection. We determined whether reduce myocardial remodeling via adjusting the expression of Klotho, Collagen I and Collagen III in a rat model of chronic heart failure.

METHODS Male Sprague-Dawley rats (250-300g) were established to chronic heart failure model by continuous intraperitoneal injection of isoproterenol and sham model with saline. Cardiac weigh/body weigh index (CW/BW) was calculated from heart specimens. Hematoxylin Eosin and Masson staining were observed to myocardial pathological changes and myocardial fibrosis. Realtime-PCR was used to detect the expression of Klotho, Collagen I and Collagen III in the myocardium of models. Cardiac function was evaluated by echocardiography. Then, we investigate the association between cardiac fibrosis and expression of Klotho, Collagen I and Collagen III mRNA by statistical analysis. Moreover, Klotho-mediated cardioprotection such as reduce myocardial remodeling proved by the study.

RESULTS The index of CW/BW in the CHF group was $(6.02 \pm 0.31) \times 1000/g$ significantly higher than that in sham group $(4.09 \pm 0.24) \times 1000/g$, ($P < 0.01$). The ejection fraction in sham model $(69.78\% \pm 4.06)$ was significantly higher than that in CHF model $(38.97\% \pm 2.52)$ ($P < 0.01$). However, cardiomyocyte hypertrophy and necrosis, myocardial fiber rupture, myocardial interstitial fibrosis scar tissue formation, myocardial tissue structure disorder, the degree of myocardial fibrosis significantly higher in CHF model according to HE and Masson staining. The collagen volume fraction (CVF%) $(55.387\% \pm 3.63)$ in CHF group significantly higher than that in sham group (0.301 ± 0.09) ($P < 0.01$). Realtime-PCR results showed: Klotho mRNA relative expression decreased in CHF group (0.791 ± 0.143) than that in sham group (1.9033 ± 0.51) ($P < 0.05$). Collagen I and Collagen III mRNA in CHF group (2.116 ± 0.968) (2.678 ± 1.176) highly expressed than that in sham group (0.033 ± 0.01) (0.0833 ± 0.046) (both $P < 0.05$). Collagen I and Collagen III were showing a close negative correlation with Klotho in CHF model's myocardial ($r = -0.586$, $P < 0.05$; $r = -0.549$, $P < 0.05$).

CONCLUSIONS 1. Continuous intraperitoneal injection of isoproterenol can construct a stable rat model of chronic heart failure. 2. In the process of myocardial remodeling, we are infer to the mechanism underlying of cardioprotection by up-regulated expression of Klotho and down-regulated expression of Collagen I and Collagen III. 3. The expression of Klotho mRNA showing independent and significantly negative correlation with Collagen I and Collagen III mRNA in the myocardium of chronic heart failure.

GW28-e0352

Effects of switching of dual antiplatelet therapy in STEMI patients



Tavluva Evgeniya,¹ Alekseenko Alexey,¹ Gruzdev Olga,¹ Barbarash Olga¹

¹Research Institute for Complex Issues of Cardiovascular Diseases, Kemerovo, Russia

OBJECTIVES To assess of the relationship between the level of the platelet aggregation and of interleukin-6 (IL-6) and C-reactive protein (CRP) in STEMI patients receiving clopidogrel or switching therapies to ticagrelor.

METHODS The study enrolled 80 patients with STEMI. At the ambulance all patients received a loading dose of aspirin (250 mg) and clopidogrel (600 mg). After 24 hours patients were received with maintenance dose of aspirin (100 mg) and of clopidogrel 75 mg / ticagrelor 90 mg twice a day. ADP-induced platelet aggregation (1.25 and 2.5 mgr/ml), levels of IL-6 and CRP in blood plasma were assessed before switching therapies to ticagrelor and on the 7th day after switching therapies to ticagrelor.

RESULTS On the 7th day after switching therapies to ticagrelor, platelet aggregation was significantly lower in patients on ticagrelor than in patients on clopidogrel (C: 45.61 (32.7; 56)%, T: 30.3 (13.3; 41.6)%, $p = 0.001$). The level of CRP on the 7th day in the clopidogrel group was significantly higher than the level of CRP on the 7th day in the ticagrelor group: 25.3 (4.6; 46.4) ml / l and 17.5 (4.6; 20.9) mg / l, respectively ($p = 0.04$). The level of IL-6 on the 7th day in the clopidogrel group was significantly higher than the level of IL-6 on the 7th day in the ticagrelor group: 7.03 (2.7; 11.3) pg / ml, and 2.8 (1.8; 4.2) pg / mL, respectively ($p = 0.01$).

CONCLUSIONS On the 7th day after switching therapies to ticagrelor in STEMI patients levels of inflammatory markers (IL-6, CRP) were significantly higher in the group where ADP-induced platelet aggregation was higher.

GW28-e0464

THE COUNT OF DIFFERENT SUBPOPULATIONS OF MONOCYTES AND CIRCULATING ENDOTHELIAL CELLS IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION AND TYPE 2 DIABETES MELLITUS



Galina Kukharchik,^{1,2} Olga Lebedeva,^{1,2} Alexey Ermakov,¹ Larisa Gaikovaya,¹ Viktoria Dmitrieva,¹ Olga Abramova²

¹North-West State Medical University, named after I.I. Mechnikov; ²St Elizabeth City Hospital

OBJECTIVES to evaluate the activity of monocytes and the severity of endothelial dysfunction in patients with acute myocardial infarction (AMI) and type 2 diabetes mellitus (DM).

METHODS 74 patients with AMI were included in the study: 1 group - 36 patients with type 2 DM, 2 group - 38 patients without type 2 DM. The content of leukocytes, monocytes and their subpopulations ("classical" M1-CD14+CD16- and «nonclassical» M2-CD14+CD16+), circulating endothelial cells (CEC) were determined by cytoflowmetry on days 1, 3 and 14 of AMI. The count of CEC was calculated for 100,000 leukocytes. The lymphocyte-to-monocyte ratio (LMR) was defined as the ratio of the mean count of lymphocytes to the number of monocytes. Statistical analysis was performed with STATISTICA 10.0.

RESULTS The average age of the patients was 68.3 ± 4.1 years. No differences in age between groups were detected. The level of leukocytes in the first day of AMI was increased in patients from the 1 group up to $11.38 \pm 4.8 \times 10^9/L$ and from the 2 group up to $11.075 \pm 2.76 \times 10^9/L$ ($p > 0.05$). On third day in both groups, the level of leukocytes was similar and decreased by the 14th day. Patients of both groups had monocytosis, which decreased during the observation. The number of M1 in the first day in the 1 and 2 groups was $844.2 \pm 374.2/\mu l$ and $869.6 \pm 404.1/\mu l$, respectively ($p > 0.05$); on the third day - $703.5 \pm 260.4/\mu l$ and $646.3 \pm 200.1/\mu l$, respectively ($p > 0.05$); on the 14th day - $546.7 \pm 155.8/\mu l$ and $655 \pm 229/\mu l$, respectively ($p > 0.05$). The amount of M2 on first day was $90.5 \pm 41.2/\mu l$ in the 1 group, $58.3 \pm 41.0/\mu l$ in the 2 group ($p < 0.05$); on the third day - in the 1 group - $80.5 \pm 42.2/\mu l$, in the 2 group - $57.6 \pm 30.5/\mu l$ ($p < 0.05$). On the 14th day, the M2 count was significantly higher in patients with AMI in combination with type 2 diabetes than in patients without type 2 diabetes ($69.9 \pm 41.3/\mu l$ and $46.3 \pm 19/\mu l$, respectively, $p < 0.05$). LMR in patients from 1 group on the first day and 14th day was higher in comparison with the patients from the 2 group (2.4 ± 1.2 vs 1.8 ± 1.1 , $p < 0.05$; 4.1 ± 1.3 vs 2.9 ± 1.2 , $p < 0.05$). The content of CEC in the first day of AMI was similar in the 1 and 2 groups (17.53 ± 7.6 vs 17.5 ± 6.8 , respectively, $p > 0.05$). On the third day of AMI, the level of CEC in patients from 1 group was 19.65 ± 6.4 , and from the 2 group - 15.6 ± 5.7 ($p < 0.05$). On the 14th day, the number of CECs in 1 group patients was significantly higher in comparison with 2 group patients (25.81 ± 5.8 and 20.1 ± 8.7 , respectively, $p < 0.05$).

CONCLUSIONS leukocytosis and monocytosis are observed in patients with AMI on the first day and up to 14th day. LMR is elevated in

patients with type 2 diabetes on the 1st and 14th days, which indicates the predominance of the affective immunity in this group of patients. Unlike patients without type 2 diabetes, the number of “nonclassical” monocytes in patients with type 2 diabetes is higher, indicating a more pronounced inflammatory response. A significantly higher level of circulating endothelial cells in patients with type 2 diabetes is a sign of more severe endothelial dysfunction compared to patients without diabetes.

GW28-e0465

NEUTROPHIL-TO-LYMPHOCYTE RATIO AND MONOCYTE COUNT IN PATIENTS WITH CARDIOGENIC SHOCK, DEPENDING ON THE SEVERITY OF CORONARY ARTERY LESIONS



Galina Kukharchik,^{1,2} Olga Lebedeva,^{1,2} Gleb Saraev,² Lev Sorokin²

¹North-West State Medical University, named after I.I. Mechnikov; ²St. Elizabeth City Hospital, St Petersburg

OBJECTIVES We aimed to assess relationship between neutrophil-to-lymphocyte ratio (NLR), monocyte count and the severity of coronary lesions in patients with myocardial infarction (MI), complicated by cardiogenic shock.

METHODS 61 patients (27 (44%) men and 34 (56%) women) with MI complicated by cardiogenic shock were recruited. All patients underwent coronary angiography. The severity of coronary artery lesions was evaluated by Syntax Score I. Patients were divided into two groups depending on the outcome: group 1 - died (31 patients, 51%); group 2 - survivors (30 patients; 49%). NLR was calculated as the ratio of the mean neutrophil count to mean lymphocyte count. Statistical analyzes were performed with Statistica 10.0.

RESULTS Mean age of patients was 72.5 ± 2.1 years. No age differences were found between the groups. There were significantly more females in 1 group (70% vs 40% in group 2, p = 0.03). Patients with ST-segment elevation myocardial infarction were met equally often (82% in group 1 and 77% in group 2, p = 0.84). In group 1 patients more frequently had myocardial infarction in the past (39% vs 8.3%, p = 0.025) and type 2 diabetes mellitus (35% vs 16%, p = 0.09). In patients with Syntax Score > 32 from the 1 group admission mean white blood cell count was 14700 ± 7800/μl, neutrophil count was 11750 ± 4800/μl. On 3-4 day leukocytosis increased up to 20720 ± 8800/μl, neutrophil count to 18330 ± 8870/μl, NLR reached 21.96 ± 17.33, that was significantly higher in comparison to the survivors with Syntax Score > 32 (p < 0.05). Higher monocytosis was associated with more severe coronary artery lesions. Patients with Syntax Score 23-32 from the 1 group had higher leukocytosis compared with such patients in group 2 (21170 ± 640/μl vs 15290 ± 1860/μl, p < 0.01) due to neutrophilia (18280 ± 60/μl vs 11400 ± 180/μl, p < 0.01). Patients with Syntax Score < 23 in the 1 group had admission white blood cell count 15540 ± 4930/μl, in the 2 group - 11430 ± 4990/μl (p < 0.05). On 3-4 day in patients with low Syntax Score from group 1 leucocytosis increased up to 17600 ± 8800/μl, neutrophil count reached 15320 ± 8870/μl, that was more significant than in those from the 2 group.

CONCLUSIONS Among patients with MI complicated by cardiogenic shock females and patients with MI in the past had poor outcome more frequently. High neutrophil count and NLR in patients with cardiogenic shock is likely to be caused by more severe systemic inflammatory response and associated with poor prognosis in patients with MI and cardiogenic shock.

GW28-e0660

Elevated Hs-CRP Level is Independently Associated with the Presence of Non-calcified or Mixed Coronary Atherosclerotic Plaques in Chinese Population Undergoing Coronary Computed Tomography Angiography



Tiewei Li,¹ Rui Peng,¹ Xiangfeng Cong,¹ Xi Chen¹

¹Center of Laboratory Medicine, State Key Laboratory of Cardiovascular Disease, FuWai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences, Peking Union Medical College, Beijing, China

OBJECTIVES High-sensitivity C-reactive protein (hs-CRP) has been demonstrated to be a useful marker of the presence and extent of coronary atherosclerosis. Patients with mix plaque (MP) or non-calcified plaque (NCP) have a higher risk of poor outcomes. However, the relationship between hs-CRP and presence of NCP or MP (NCP & MP) in Chinese population remain unclear. We investigated the role of hs-CRP in predicting the presence of NCP & MP in Chinese population undergoing coronary computed tomography angiography (CCTA).

METHODS A total of 868 subjects were recruited and the clinical and laboratory data were collected. Coronary plaques were classified as calcified, non-calcified and mixed. According to whether the subjects had coronary atherosclerotic plaques and the characteristic of the most stenotic plaque, subjects were divided into no plaque (NP), calcified plaque (CP) and NCP & MP. There were 219 subjects who had no NP, 331 patients with CP, 207 patients with NCP and 111 patients with MP. NCP & MP were more prone to occur poor outcomes, therefore, patients with NCP & MP were merged for analysis.

RESULTS Patients with NCP & MP had significantly higher hs-CRP level than those with NP or CP (1.99 [1.01-3.83] vs. 1.56 [0.84-2.81] or 1.56 [0.86-3.23] mg/L, p < 0.05). The subjects were divided into 2 groups according to the median hs-CRP level: high hs-CRP group and the low hs-CRP group. The percentage of patients with NCP & MP in the high hs-CRP group was significantly higher than those in the low hs-CRP group (42.5% vs. 30.9%, p < 0.05). Spearman correlation analysis showed that hs-CRP was positively correlated with triglyceride (r = 0.092, p < 0.05), while negatively correlated with high-density lipoprotein-cholesterol (r = -0.195, p < 0.001). Multiple logistic regression analysis showed that hs-CRP level was an independent risk factor for the presence of NCP & MP (OR: 1.05; 95% CI: 1.01-1.09; p = 0.022).

CONCLUSIONS Higher hs-CRP level is independently linked with the presence of NCP & MP in Chinese population.

GW28-e0804

Abstract Withdrawn



GW28-e0855

The effect of bisdemethoxycurcumin on myocardial apoptosis induced by staurosporine



Xing Li,¹ XiaoMing Wang¹

¹Department of Geriatrics, The First Affiliated Hospital of The Fourth Military Medical University

OBJECTIVES To investigate the effects of Bisdemethoxycurcumin (BDMC) on apoptosis of primary neonatal cardiomyocyte induced by staurosporine (STS).

METHODS The whole experiment was divided into control group, STS treatment group, BDMC pretreatment with STS treatment group and BDMC pretreatment group in the cultured neonatal mouse cardiomyocytes. Then, the cell viability, the cell apoptosis, the caspase-3 activity and the intracellular ROS level were measured by the CCK-8 assay kit, TUNEL assay kit, the caspase-3 activity assay kit and the reactive oxygen species assay kit respectively.

RESULTS (1) Compared with STS group, 100μmol/L BDMC pretreatment potentially increases the viability of cardiomyocytes (from 50% to 78%, P < 0.01, n=10). (2) Compared with STS group, BDMC pretreatment can lower the caspase-3 activity (from 700 to 500, P < 0.01, n=10) as well as the rate of apoptosis significantly (from 28% to 10%, P < 0.01, n=5). (3) Compared with STS group, BDMC pretreatment can reduce the ROS level obviously (from 7.7 to 1.7, P < 0.01, n=8).

CONCLUSIONS Bisdemethoxycurcumin can inhibit apoptosis to exert cardiomyocyte protection through lowering the intracellular ROS level in staurosporine treatment.

GW28-e1127

S100A12 as an Early Biomarker for ST Elevation Myocardial Infarction



Minghui Cheng,¹ Gao Naijing,¹ Zhang Xiaolin,¹ Tian Xiaoxiang,¹ Yan Chenghui,¹ Han Yaling,¹ Wang Shuang¹

¹Department of Cardiology, Institute of Cardiovascular Research of People's Liberation Army

OBJECTIVES The diagnostic sensitivity of myocardial necrosis markers, such as creatine kinase-MB (CK-MB), cardiac troponins, myoglobin for the earliest stage of ST-elevation myocardial infarction (STEMI), remains insufficient. We compared a new biomarker of plaque vulnerability (receptor for advanced glycation end-products, S100A12) with other biomarker at the earliest stage of STEMI.

METHODS The study population comprised 250 subjects [150 STEMI, 50 non-STEMI (NSTEMI), 50 unstable angina pectoris (UAP) and 50 control]. S100A12, myoglobin, troponin T and CK-MB were determined on arrival, after 4h, 6h, 12h, 24h, 3d, 7d and 1 month. Receiver operating curves (ROC) for S100A12, myoglobin, troponin T and CK-MB were constructed at 2h, 4h and 6h after onset. Based on