group ($p<0.01$). 3. The level of LDH, CK, TNF-α, IL-1β, IL-6 were no significant difference between Tet group and Sim group ($p>0.05$).
Conclusion Tet can attenuate myocardial ischaemia/reperfusion injury. It achieves this pharmacologic action through inhibition the IκB-α phosphorylation and reduces the harmful cytokine TNF-α and IL-6.

e0130 TETRANDRINE CONTROL PRO-INFLAMMATORY FACTOR TO REDUCE RAT MYOCARDIAL ISCHAEMIC/REPERFUSION INJURY

doi:10.1136/hrt.2010.208967.130

Yuqin Wang, Yuqin Wang. *The Pla 252 hospital*

Objective To investigate how tetrandrine through regulate the pro-inflammation factors TNF-α, IL-1β, IL-6 to attenuate rat ischaemic/reperfusion injury.
Methods Sprague-Dawley (SD) rats were randomly divided into four group: Sham, ischaemia/reperfusion (I/R), Tetrandrine (Tet) and simvastatin group (Sim). The SD rat underwent 30 min of left anterior descending (LAD) coronary occlusion and 24 h reperfusion to make ischaemia/reperfusion (I/R) injury model in vivo. Sham group were not subjected to occlusion of artery. Tet group were injected tetrandrine to abdominal cavity 20 min before ischaemia starting. The rat in Sim group was administrated simvastatin 2 mgkg/l intragastricly every day, administrating drugs lasted 14 days. The other procedures were same to the I/R group. Samples were collected after 24 h reperfusion. The expression level of TNF-α, IL-1β, IL-6 protein in serum and myocardial tissue was detected by ELISA. LDH and CK were detected too. The neutrophil infiltration degree in myocardium was determined by using measuring the activity of myeloperoxidase (MPO) method. Cardiac function which includes FS%, EF and E/A was measured by using ultrasound. EB/TTC (Azovan Blue/2, 3, 5-Tripheny-2H-Tetrazoliam Chloride) dyeing method was used to measure the infraction size.
Result 1. The LDH and CK were significantly higher in I/R, Tet and Sim groups compared with Sham group ($p<0.01$), but it were much lower in Tet and Sim groups compared with I/R group. 2. The cardiac function of systolic and dilator in experimental group was decreased significantly compared with normal heart's function. In Tet and Sim group, which was experienced pharmacological preconditioning their cardiac function were significant higher than I/R group ($p<0.01$), but no significant difference between Tet and Sim on EF and E/A. 3. The activity of MPO was significantly increased after reperfusion, its activity in experimental groups were much higher than Sham group ($p<0.01$), notwithstanding its activity in Tet nad Sim groups were significantly lower than I/R group ($p<0.01$). No significant difference was found between Tet and Sim group. 4. In Tet and Sim group the expression of proinflammatory factors (TNF-α, IL-1β, IL-6) were significant lower compared with I/R group ($p<0.01$) and significant higher than shame group ($p<0.01$).
Conclusion Tet can attenuates myocardial ischaemia/reperfusion injury. It achieves this pharmacologic action through reduce the harmful cytokine TNF-α and IL-6, IL-1β.

e0131 THE ANTI-APOPTOTIC EFFECT OF INSULIN ON CARDIOCYTE IN DIABETIC RATS

doi:10.1136/hrt.2010.208967.131

Liu Yaling, Cheng Xunmin, Jiang Shisen, Song Dan. *Department of Cardiology, Clinic Medical School, Nanjing University /Nanjing General Hospital of Nanjing Military Command, Pla, Nanjing, China*

Objective To observe the diverse apoptosis of the myocardiac mitochondria on insulin therapy in diabetic rats and to investigate the anti-apoptotic mechanism of insulin interacting with the mitochondria.
Methods Male wistar rats were administered with intraperitoneal injection of streptozotocin (STZ, 25 mg/kg) and high fat diet to induce type 2 diabetic mellitus. Twenty-two were randomly divided into two treatment groups, namely, the early treatment group and the late treatment group (each n=7), and one diabetic (DM)group (n=8). Another eight were chosen for control. Novolin 30R was administrated hypodermically to the early treatment group (IE group) at the first week and to the late treatment group (IL group) at the fourth week. DM group were injected subcutaneously with physiological saline. All groups were treated for 8 weeks. At the end of the experiment we compared SOD, MDA, GSH in different groups, as well as apoptotic index, mitochondrial membrane potential ($\Delta\Psi m$), active oxygen and myocardial ultrastructure.
Results Compared to the control group, DM rats had higher blood glucose (30.53 ± 2.39 vs 7.48 ± 1.03, $p<0.01$), HW/BW (2.88 ± 0.01 vs 2.56 ± 0.03, $p<0.05$), MDA (6.46 ± 0.99 vs 4.98 ± 0.30, $p<0.01$), apoptotic index (0.934 ± 0.032 vs 0.063 ± 0.011, $p<0.01$), and active oxygen, but lower SOD (222.06 ± 12.94 vs 245.99 ± 8.67, $p<0.01$), GSH (6.99 ± 1.50 vs 9.71 ± 0.67, $p<0.01$) and $\Delta\Psi m$ (0.243 ± 0.087 vs 0.900 ± 0.075, $p<0.01$). The mitochondrial crista of DM rats break, dissolved and became vacuolous. Compared to the DM group, The level of MDA (5.31 ± 0.60 vs 6.46 ± 0.99, $p<0.01$) and apoptotic index (0.48 ± 0.07 vs 0.93 ± 0.03, $p<0.01$) were significantly lower and the level of $\Delta\Psi m$ (0.63 ± 0.09 vs 0.24 ± 0.09, $p<0.01$) was increaseed in the IE group. The IE group showed remarkable improvement in contrast to the IL group which improved a little (MDA (5.31 ± 0.60 vs 6.27 ± 0.75, $p<0.01$), apoptotic index (0.48 ± 0.07 vs 0.90 ± 0.03, $p<0.01$), $\Delta\Psi m$ (0.63 ± 0.09 vs 0.35 ± 0.04, $p<0.01$).
Conclusion Insulin has an anti-apoptotic effect on cardiocytes of diabetic rats, and earlier intervention is better than later.

e0132 MYOCARDIAL CAPILLARY PERICYTES IN RESPONSE TO HYPERTENSION WITH DIABETES

doi:10.1136/hrt.2010.208967.132

Cheng Xunmin, Jiang Shisen, Wang Jun. *Cardiology Department, Nanjing General Hospital of Nangjing Millitary Command of Pla, Nangjing, China*

Introduction Pericytes are perivascular cells with multifunctional activities which are now being elucidated. Pericyte alteration or degeneration is linked directly with microangiopathy in diabetes, scleroderma and hypertension.
Aims The purpose of the present study is to investigate the pathologic changes of the myocardial capillary pericytes in hypertension with diabetes rats.
Methods The rat model of hypertensive with diabetes mellitus (SHDM) and the rat model of diabetes mellitus (DM) were induced by an intraperitoneal injection of streptozotocin combined with high fat diet in spontaneously hypertensive rats (SHR) and SD rats, respectively. The four groups were as follows: SD, DM, SHR and SHDM. The ultrastructure changes were examined by transmission electron microscope and the number of precity was assessed by immunohistochemistry of ventricular sections at 16 weeks.
Results Ultramicroscopic analysis of capillaries showed the pericytes on myocardial capillaries of SHR, DM, and SHDM were conspicuously abnormal in shape and were with cytoplasm containing abundant myofilament and organelle. In addition, pericytes seemed to be loosely associated with the endothelium. The number of pericytes in SHR, DM and SHDM were significantly increased than that in SD. The number of pericytes in SHDM were much higher than that in SHR (11.8 ± 3.6 vs 3.9 ± 1.1, $p<0.01$), but no significantly difference than that in DM (11.8 ± 3.6 vs 10.2 ± 3.3, $p>0.05$).

Conclusion These results suggest the phenotype changes and increase of myocardial capillary pericytes in response to hypertension with diabetes. These changes may contribute to arterialisations of myocardial capillary and pericapillary fibrosis.

e0133 INFLUENCE OF TELMISARTAN ON OXIDATIVE STRESS PARAMETERS IN STREPTOZOTOCIN-INDUCED TYPE 1 DIABETIC RATS

doi:10.1136/hrt.2010.208967.133

Tang Xiang, Cheng Xunmin, Jiang Shisen, Song Dan. *Department of Cardiology, School of Medicine, Nanjing University, Nanjing, China*

Objective To investigate the level of oxidative stress in streptozotocin-induced type 1 diabetic rats as well as the intervention effects of telmisartan.

Methods Diabetic rat models were established by intraperitoneal injection of streptozotocin on adult male Wistar rats. The model diabetic rats were randomly divided into two groups of diabetic rats (DM group) and diabetic rats treated with telmisartan (T group) that was with eight in each group. There are eight normal rats as the control group (Con group). After 12 weeks, Body weight and heart weight were measured to calculate HW/BW. Lipid Peroxidation (Malondialdehyde, MDA), glutathione (GSH), the activity of superoxide dismutase (SOD) were evaluated by spectrophotometer. Ultra-microstructure of cardiac muscle cell and structure of heart was observed by transmission electron microscope.

Results The blood glucose were found no significant difference between those diabetic rats with and without telmisartan treatment groups at the 7th day after streptozotocin injection and the 12th week, but both higher than that of control group ($p<0.01$). The level of MDA in DM group was higher (6.92 ± 0.62 vs 3.66 ± 0.51, $p<0.01$) and the level of GSH was lower (7.88 ± 1.76 vs 11.97 ± 1.15, $p<0.01$) than those in Con group. The activity of SOD was also lower than those in Con group (155.35 ± 17.23 vs 219.72 ± 22.39, $p<0.01$). Compared with DM group, the level of GSH (11.22 ± 1.67 vs 7.88 ± 1.76, $p<0.01$) and the activity of SOD (187.70 ± 20.59 vs 155.35 ± 17.23, $p<0.01$) increased remarkably in T group, meanwhile, the level of MDA in T group was lower than that of DM group (4.24 ± 0.47 vs 6.92 ± 0.62, $p<0.01$). Myocardium of DM group was characterised by mitochondrial swelled and crista mitochondriales arranged irregularly or broken even dissolved. In addition, vacuolar degeneration was observed obviously in mitochondria of myocardium. Injury change of ultramicrostructure of myocardium in T group Lessen obviously than DM group.

Conclusion Telmisartan may inhibit oxidative stress, then improves ultramicrostructure of myocardium in type 1 diabetic rats.

e0134 THE EFFECTS OF TELMISARTAN ON MITOCHONDRIAL MEMBRANE POTENTIAL AND CARDIOMYOCYTE APOPTOSIS IN TYPE 1 DIABETIC RATS

doi:10.1136/hrt.2010.208967.134

Tang Xiang, Cheng Xunmin, Jiang Shisen, Song Dan. *Department of Cardiology, School of Medicine, Nanjing University, Nanjing, China*

Objective To investigate the changes of mitochondrial membrane potential and cardiomyocyte apoptosis as welll as the intervention of telmisartan, further to explore whether telmisartan can improve cardiomyocyte apoptosis through the possible pathway of mitochondria correlated in diabetic rats.

Methods Diabetic rat models were established by intraperitoneal injection of streptozotocin on adult male Wistar rats. The model diabetic rats were randomly divided into two groups of diabetic rats (DM group) and diabetic rats treated with telmisartan (T group) that was with eight in each group. There are eight normal rats as the control group. After 12 weeks, Fluorescent probe DCFH-DA was used to monitored the levels of reactive oxygen species and JC-1 was used to monitored the changes of mitochondrial membrane potential by spectrofluorophotometer. Cardiomyocyte apoptosis was evaluated by TUNEL.

Results The blood glucose were found no significant difference between those diabetic rats with and without telmisartan treatment groups at the 7th day after streptozotocin injection and the 12th week, but both higher than that of control group ($p<0.01$). Compared with controls, Body weight decreased remarkably in DM group and T group (410.63 ± 11.59 vs 426.88 ± 14.32, $p<0.01$). Cardiomyocyte apoptosis was seen few in control group; compared with control group, cardiomyocyte apoptotic index ascended (0.35 ± 0.16 vs 0.15 ± 0.08, $p<0.05$) and mitochondrial membrane potential ($\Delta\Psi m$) depressed (9.66 ± 1.70 vs 19.88 ± 1.38, $p<0.01$) in DM group, but the index of cardiomyocyte apoptosis was lower (0.17 ± 0.08 vs 0.35 ± 0.16, $p<0.05$) and transmembrane potential ($\Delta\Psi m$) (16.84 ± 1.84 vs 9.66 ± 1.70, $p<0.01$) in T group was higher than that of DM group.

Conclusion Telmisartan can promote mitothondrial membrane potential and improve cardiomyocyte apoptosis in type 1 diabetic rats.

e0135 THE EFFECTS OF DIABETIC MELLITUS ON THE OPENING OF MYCARDIAL MITOCHONDRIAL PERMEABILITY TRANSITION PORE IN RATS

doi:10.1136/hrt.2010.208967.135

Song Dan, Cheng Xunmin, Jiang Shisen, Tang Xiang. *Department of Cardiology, Clinic Medical School, Nanjing University/Nanjing General Hospital of Nanjing Military Command, Nanjing, China*

Objective To investigate the effects of diabetic mellitus on the opening of mycardial mitochondrial permeability transition pore (MPTP) in rats and explore the role of the opening of MPTP in development of diabetic cardiomyopathy.

Methods 16 male Wistar rats were randomly divided into normal control (NC) group and diabetic mellitus (DM) group. Diabetic mellitus models were established by intraperitoneal injection of streptoaotocin. After 12 weeks, the levels of reactive oxygen species (ROS) and the changes of membrane potential in myocardial mitochondria (MMP) were assayed. Cardiomyocyte apoptosis was evaluted by TUNEL and the level of glutathione (GSH) in serum was measured by spectrophotometer.

Results Compared to the control group, the rate of the ROS generation in the myocardial mitochondria were more significantly increased ($5.10\%\pm1.23\%$ vs $2.42\%\pm0.74\%$, $p<0.01$) in DM group, but the levels of MMP in the myocardial mitochondria were more significantly decreased (9.65 ± 1.69 vs 19.88 ± 1.38, $p<0.01$). The apoptotic index was more significantly increased (0.40 ± 0.03 vs 0.26 ± 0.02, $p<0.01$)and the levels of GSH in serum were more significantly decreased (7.88 ± 1.76 vs 11.97 ± 1.15, $p<0.01$) in DM group than NC group. It was negative correlation between the rate of the ROS generation and the levels of MMP in the myocardial mitochondria ($p<0.05$).

Conclusions Diabetic mellitus may lead the mitochondrial oxidative stress and induce MPTP opening and lead to cell apoptottic consequentely.