The involvement of IL-23/Th17 pathway in murine model of coxsackievirus B3-induced viral myocarditis

Methods VMC was induced in male Balb/c mice by CVB3 peritoneal injection. Mice injected with PBS were taken as the controls. IL-23, IL-17 protein from blood plasma was evaluated by ELISA. Flow cytometric analysis was used to evaluate the frequencies of Th17 subsets in CD4+T cell. CD4+ T cells were isolated from VMC mice and cultured with rIL-23 in vitro to investigate the function of IL-23 in the IL-23/Th-17 pathway.

Results Comparing with the controls, IL-23, IL-17 and RORγt mRNA in the myocardium of VMC were assessed by semi-quantitative RT-PCR on the time of 0, 1, 2, 3, 4 and 6 weeks after injection. IL-23, IL-17 protein from blood plasma was evaluated by ELISA. Flow cytomteric analysis was used to evaluate the frequencies of Th17 subsets in CD4+T cell. CD4+ T cells were isolated from VMC mice and cultured with rIL-23 in vitro to investigate the function of IL-23 in the IL-23/Th-17 pathway.

Conclusions IL-23/Th-17 pathway may play an essential role in VMC.

Effects and function mechanism of hydrogen sulfide on myocardial ischemia reperfusion arrhythmia in rats

Methods We used sodium hydrosulfide (NaHS) as the donor of H2S. SD rats were randomly divided into sham group, Myocardial Ischemia reperfusion group (IR group), IR+NaHS group, and IR+NaHS+glibenclamide group. We monitor the Haemodynamics of rats, including heart rate, arterial pressure, left ventricular pressure and myocardial tissue in swine with acute myocardial infarction.

Objective To observe the effects and mechanism of hydrogen sulfide on myocardial ischemia reperfusion arrhythmia in rats.

Results H2S can significantly reduces rats’ heart rate, arterial pressure and left ventricular pressure. It also reduces the rate of ventricular arrhythmia in Myocardial Ischemia reperfusion Rats. The KATP Channel Blocker glibenclamide can weaken the H2S antiarrhythmic effects.

Conclusions H2S can reduces the rate of ventricular arrhythmia in Myocardial Ischemia reperfusion Rats. The Function Mechanism may be associated with the KATP signal transduction pathway in cells.
and the expression of TNF-a and VCAM-1 in ileum were observed by H.E staining and immune chemical methods.

Results
12 animals in each group, 9 in group NT, 10 in group SC and 9 in group PC were successfully resuscitated; all animals were on mechanical ventilation for 2 to 4 h 5, 6 and 8 animals in each group respectively survived to the end of the experiment. The temperatures of tympanic and peritoneal cavities of animals in group NT were maintained in normal range. The tympanic temperature of animals in group SC and PC was arrived target temperatures at 29±6.55 mins and 62±8.27 mins. During the stage of maintenance of hypothermia, the tympanic and peritoneal temperatures of animals in group SC were in range 33 to 35°C, while the peritoneal temperatures of animals in group PC were in range 31 to 34°C, 1 to 2°C lower than the tympanic temperature. The scores of histological injured of ileum animals in group PC were in range 31 to 34 were in range 33 to 35.

The differences among them were significant, particularly in PC vs SC, p<0.000; PC vs NT, p<0.000; while SC vs NT, p=0.30. The expression of TNF-a in ileum was 9.98±1.79% in group NT, 5.87±1.45% in group SC and 3.78±0.53% in group PC, the differences among them were statistically significant. The phenomenon of the expression of VCAM-1 was little like the TNF-a, 3.78±0.53% in group PC was significantly from the 5.93±1.53% in group NT and 5.92±1.06% in group SC.

Conclusion The neotype peritoneal cooling can improve the injured of ileum mucous beside quickly induce hypothermia after ROSC in rabbits.

e0224 MODEL OF CARDIAC ARREST IN RATS BY TRANSCUTANEOUS ELECTRICAL EPICARDIUM STIMULATION
doi:10.1136/hrt.2010.208967.224

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Objective To establish a new model of Cardiac Arrest (CA) in rats by transcutaneous electrical epicardium stimulation.

Methods Two acupuncture needles connected to the anode and cathode of a stimulator were transeptually inserted into the epicardium as electrodes. The stimulating current was steered to the epicardium and the stimulation was maintained for 3 min to induce CA. Cardiopulmonary resuscitation (CPR) was performed at 6 min after a period of nonintervention.

Results The success rate of induction was 12/20 at the current intensity of 1 mA; and reached 20/20 when the current intensity was increased to 2 mA. The average time from the electrical stimulation to CA induction was 5.10 (±0.49) mins. During the stage of maintenance of hypothermia, the success rate of induction was 12/20 at the current intensity of 1 mA; and reached 20/20 when the current intensity was increased to 2 mA. The average time from the electrical stimulation to CA induction was 5.10 (±0.40, p=0.376) mins. On seventh day after CPR, The serum concentrations of H2S was 9.12±3.17 μmol/l in the experimental group and the contrast was 3.72±1.05 μmol/l, the difference between the two groups had statistic significance (t=5.136, p=0.000). Compared with the control group, the experimental group’s neurons apoptosis index and the sum of integrated optical density (IOD) of caspase-3 in cortex, hippocampus CA1 region and cerebellum were obviously reduced (p<0.05).

Conclusion After CPR, H2S can inhibit neurons apoptosis and its mechanism may be through caspase-3 pathway. It may play a role in the treatment of the brain injury after CA.

e0226 EFFECTS OF BONE MARROW MESENCHYMAL STEM CELLS ON ELECTROPHYSIOLOGICAL FUNCTION IN RATS WITH MYOCARDIAL INFARCTION
doi:10.1136/hrt.2010.208967.226

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Objective Concerns that intramyocardial delivery of immature cells could cause potentially life-threatening ventricular arrhythmias have been repeatedly raised. The aim of this study is to investigate the electrophysiological and arrhythmogenic effects for MSCs therapy in AMI.

Methods GFP tagged MSCs were injected into a murine heart with left anterior descending (LAD) ligation. Two weeks after transplantation, effective refractory period (ERP), ventricular arrhythmias (VAs) inducibility and ventricular fibrillation threshold (VFT) were assessed by programmed electrical stimulation (PES), respectively. Epicardial monophasic action potential (MAP) recordings were obtained from infarcted border zone (IBZ) and none infarcted zone (NIZ) of left ventricular epicardium for calculation action potential duration (APD) and activation time (AT). Immunofluorescence and immunoblots were used to determine the expression and distribution of Cx43, collagen I and Kv4.2.

Results FES showed a significant reduced VTs, raised VFT and VERP in MSCs treated rats compared to PBS treated animals. MSCs implantation led to markedly longer APD and shorter AT in IBZ than PBS treated hearts. Histological study revealed that fibrotic area and collagen deposition in infarcted region were significantly lower in MI-MSCs group than in MI-PBS group. Abnormal alterations of Cx43 including reduction and lateralisation were significantly attenuated by MSCs treatment. Inhibition of Kv4.2 expression was partly ameliorated by MSCs therapy.