[gw22-e0061]

BH3-ONLY PROTEIN BIM IS INVOLVED IN MYOCARDIAL INJURY INDUCED BY CO-STRESS OF ISCHEMIA AND COLD IN RATS

Huang Chahua¹, Tu Jianglong², Xie Yao¹, Huang Xiao¹, Bao Xiaoming¹, Wang Yaosheng¹ ¹*Department Of Cardiology, The Second Affiliated Hospital, Nanchang University, Nanchang, China;* ²*Department Of Neurology, The Second Affiliated Hospital, Nanchang University, Nanchang, China*

10.1136/heartjnl-2011-300867.136

Objectives To determine the effects of co-exposure to ischemia and cold stress on cardiac injury and whether Bim is involved in this situation.

Methods Myocardial ischemia model was established by permanent ligation of left coronary artery. Sprague-Dawley rats were randomly divided to four groups (n=12): sham+normal temperature (S group); sham+cold stress (SC group);

myocardial ischemia+normal temperature (I group); myocardial ischemia+cold stress (IC group). At the condition of 26°C, SC and IC groups were kept in a 4°C artificial chamber for 8 h (8:00–16:00) for 4 consecutive days. Cardiac function was assessed by echocardiography; pathological changes were analysed by HE staining; myocardial infarct size was determined by TTC staining; myocardial apoptosis was detected by TUNEL assay; Bim, caspase-3 expression in myocardium were determined by western blot.

Results It was demonstrated that, compared with single myocardial ischemia, co-exposure of myocardial ischemia and cold stress could create significant abnormalities in both appearance and pathology of cardiac muscle; compared to group I, apoptosis of myocardium and infarct size were increased markedly in IC group ($(27.47\pm0.47)\%$ vs $(19.02\pm0.30)\%$, $(47.33\pm2.73)\%$ vs $(35.69\pm1.50)\%$, $p<0.01$); LVEDd and LVEDs in group IC were much greater than in group I ((7.59 ± 0.48) mm vs (6.30 ± 0.34) mm, (4.76 ± 0.42) mm vs (3.90 ± 0.23) mm, $p<0.01$), whereas LVEF of group IC ($(60.20\pm3.52)\%$ vs $(74.40\pm1.58)\%$, $p<0.01$) was significantly lower. Higher expression of Bim and caspase3 protein in group I and IC than in group S ($p<0.01$), and these two proteins were significantly higher in group IC than group I ($p<0.01$).

Conclusion Co-exposure to myocardial ischemia and cold stress aggravates the cardiac injury and increases the expression of pro-apoptosis protein Bim which may play a detrimental role in this situation.