

GW23-e1213

EFFECT OF HIGH GLUCOSE ON THE EXPRESSION OF CONNECTIVE TISSUE GROWTH FACTOR IN THE CULTURED CARDIOMYOCYTES OF NEONATAL RATS

doi:10.1136/heartjnl-2012-302920a.89

Dai Qiming, Liu Naifeng. *Cardiology Department, Zhongda Hospital, Southeast University*

Objectives To investigate the effect of high glucose on the expression of connective tissue growth factor (CTGF) in the cultured cardiomyocytes of neonatal rats and the role of CTGF in the pathogenesis of diabetic myocardial fibrosis

Methods The cultured cardiomyocyte of neonatal SD rats were incubated with normal glucose (NG, 5.5 mmol/l), high glucose (HG, 25 mmol/l), high glucose and anti-CTGF antibody (Anti-CTGF+HG) or mannitol (25mmol/l), respectively. The survival rate and diameter of cardiomyocytes were measured. Furthermore, ELISA technique was used to measure the protein level of fibronectin and type III collagen in the conditioned media. The expression of CTGF mRNA and protein in the cultured cardiomyocytes of neonatal SD rats was dissected with realtime RT-PCR and western blotting technique respectively.

Results

- (1) 48 h after exposed to high glucose, the survival rate decreased and the diameter increased in the cultured cardiomyocytes compared with NG group ($p < 0.01$), and these changes could be partly reversed by anti-CTGF antibody.

- (2) Compared with NG group, the protein level of fibronectin and type III collagen in the conditioned media of cultured cardiomyocytes exposed to high glucose were significantly increased ($p < 0.01$), and with the treatment of anti-CTGF antibody the two protein level could be significantly decreased ($p < 0.01$), but was still higher than the level in the NG group ($p < 0.01$).
- (3) Cardiomyocytes cultured in high glucose, but not mannitol, showed an increased expression of CTGF mRNA and protein. Moreover, with the time lasting there was a higher expression of CTGF mRNA and protein ($p < 0.05$ or $p < 0.01$). The effect of high glucose on CTGF gene and protein expression could be significantly inhibited when the cardiomyocytes were incubated in high glucose combined with anti-CTGF antibody ($p < 0.01$).

Conclusions Our data suggest that high glucose can significantly upregulate the expression of CTGF mRNA and protein and stimulate the synthesis of fibronectin and type III collagen in the cultured cardiomyocytes of neonatal rats. Hypertrophy, increased diameter and the synthesis of fibronectin and type III collagen induced by high glucose in the cultured cardiomyocytes could be mediated partly by CTGF, and anti-CTGF antibody can block the effects of high on the cultured cardiomyocytes