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Ischemia post conditioning attenuates myocardial ischemia reperfusion injury by up-regulating cardiac adiponectin expression in mice

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Abstract

Ischemic heart disease (IHD) remains the leading cause of mortality and morbidity in diabetic patients. Ischemia postconditioning (IPostC) has been shown to be a effective way in combating myocardial ischemia-reperfusion injury, but the cardioprotective effects of IpostC is compromised or diminished in patients with diabetes, a metabolic disease that was associated with reduced levels of adiponectin (APN). Adiponectin (APN) is a protein that is secreted primarily from adipose tissue, which confers cardioprotection by enhancing myocardial nitric oxide production, a key mediator in IPostC cardioprotection, however, its role in IPostC mediated cardioprotection has not been investigated. The aims of the present study were to determine the role of APN in IPostC mediated cardioprotective effect and investigate the underlying molecular mechanisms. Wild-type (WT) and APN knockout (AKO) mice were subjected to 30 min coronary artery ligation 0066ollowed by 2 hours of reperfusion, at the absent or present of IPostC achieved by 3 episodes of 10s reperfusion and 10s re-occlusion immediately after ischemia. Myocardial functions were assessed by pressure volume (PV) conductance system. Post-ischemic myocardial infarct size was higher in AKO relative to WT, which was associate with significant reduction of myocardial p-eNOS expression and end systolic PV relation, a reliable measure of ventricular systolic function, in AKO. In contrast, IPostC significantly reduce infarct size and improve end systolic PV relation, together with significant increase expression of myocardial APN, in WT but not in AKO. It is concluded that enhancement of myocardial APN may represent a key mechanism by which IPostC confers cardioprotection.

Biography

Zhengyuan Xia had served as a cardiovascular anesthetist for more than 10 years in China before he completed his Ph.D study at the University of British Columbia (UBC), in Canada in 2004 and postdoctoral studies at UBC and University of Calgary in 2007. He is Assistant Professor and Honorary Associate Professor and Deputy Director, Anesthesiology Research Laboratory of the Department of Anesthesiology at the University of Hong Kong. His major focus of research is cardiac protection during ischemia-reperfusion in diabetes. He has published more than 70 papers in reputed journals and is serving as an Executive Editor of Journal of Diabetes & Metabolism.