International Journal of Cardiology 293 (2019) 55

Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

Letter to the Editor

The role of remote ischemic perconditioning beyond myocardial infarction size reduction

Tao Zheng, Jun Yang *, Jian Yang

Department of Cardiology, The First College of Clinical Medical Sciences, China Three Gorges University, Yichang 443000, Hubei Province, China
Institute of Cardiovascular Diseases, China Three Gorges University, Yichang 443000, Hubei Province, China

ARTICLE INFO

Article history:
Received 14 April 2019
Received in revised form 30 April 2019
Accepted 15 May 2019

Dear Editor,

We have read an experimental study entitled "Remote ischemic perconditioning attenuates adverse cardiac remodeling and preserves left ventricular function in a rat model of reperfused myocardial infarction" written by Pilz and his colleagues [1]. They demonstrated that anti-remodeling and anti-inflammatory effects of RIPerc are through activating Neuregulin-1 (NRG-1)/ErbB3 signaling pathway. Moreover, upregulation of NRG-1 is associated with a significant decrease in influx of CD68+ macrophages and subsequently the expression of inflammatory cytokines and matrix metalloproteinases, all of which played a pivotal role in the remodeling of the reperfused myocardium.

In addition, Wei et al. [2] found that remote postconditioning (PostC) after myocardial infarction (MI) significantly reduced macrophage infiltration and inflammation levels in rats. The biggest difference between RIPerc and PostC is that RIPerc is performed earlier [3]. Recently, an interesting randomized controlled trial demonstrated that the combination of remote ischemic conditioning (RIC) and PostC significantly reduced the incidence of new congestive heart failure in patients with ST-elevation myocardial infarction (STEMI), indicating that it may be related to the attenuation of adverse cardiac remodeling and preservation of left ventricular function [4]. Taken together, the combination of RIC and PostC has shown cardioprotective effect on STEMI patients, especially on cardiac function. However, the mechanism remains to be further studied.

First of all, the mechanism of RIPerc affecting the expression of NRG-1 and ErbBs remains unclear. Second, the time and mode of RIPerc performed will also affect the results. In general, strengthening the understanding of RIC signal transduction mechanism and exploring its best mode will bring more benefits to clinical patients!

Declaration of Competing Interest

None.

Acknowledgments

This work was supported by National Natural Science Foundation of China (81770360; 81670333), Hubei Province Health and Family Planning Scientific Research Project (WJ2019Z004), Natural Science Foundation of Hubei Province of China (2018CFA044).

References

[1] P.M. Pilz, O. Hamza, O. Gidlöf, I.F. Gonçalves, E.V. Tretter, S. Trojanek, D. Abraham, S. Heber, P.M. Haller, B.K. Podesser, A. Kiss, Remote ischemic perconditioning attenuates adverse cardiac remodeling and preserves left ventricular function in a rat model of reperfused myocardial infarction, Int. J. Cardiol. 285 (2019) 72–79.
[2] M. Wei, P. Xin, S. Li, J. Tao, Y. Li, J. Li, M. Liu, J. Li, W. Zhu, A.N. Redington, Repeated remote ischemic postconditioning protects against adverse left ventricular remodeling and improves survival in a rat model of myocardial infarction, Circ. Res. 108 (2011) 1220–1225.
[3] G. Heusch, Molecular basis of cardioprotection: signal transduction in ischemic pre-, post-, and remote conditioning, Circ. Res. 116 (2015) 674–699.
[4] T. Stiermaier, J.O. Jensen, K.P. Rommel, et al., Combined intrahospital remote ischemic perconditioning and postconditioning improves clinical outcome in ST-elevation myocardial infarction, Circ. Res. 124 (2019) 1482–1491.

* Corresponding author at: Department of Cardiology, the First College of Clinical Medical Sciences, Institute of Cardiovascular Diseases, China Three Gorges University, Yiling Road 183, Yichang 443000, Hubei Province, China.
E-mail address: yangjun@ctgu.edu.cn (J. Yang).

https://doi.org/10.1016/j.ijcard.2019.05.031