EuroSciCon

May 24-25, 2018
London, UK

EuroSciCon Conference on
Clinical Cardiology and Cardiovascular Disease

Interv Cardiol J 2018, Volume: 4
DOI: 10.21767/2471-8157-C1-003

RGC-32 DEFICIENCY PROTECTS ENDOTHELIAL CELL FROM INFLAMMATION AND ATTENUATES ATHEROSCLEROSIS

Shiyou Chen[1, 2], Xiao-Bing Cui[1], Jun-Na Luan[1], Kun Dong[1], Sisi Chen[1, 2], Yongyi Wang[3] and Wendy T Watford[1]

[1]University of Georgia, Athens, USA
[2]RenMin Hospital of Wuhan University (Hubei General Hospital), China
[3]Renji Hospital, Shanghai Jiaotong University, China

Atherosclerosis is a major cause of morbidity and mortality worldwide, but the underlying mechanisms are not fully understood. Recent studies have shown that response gene to complement 32 (RGC-32) is closely associated with atherosclerosis. Whether or not RGC-32 plays a functional role in atherosclerosis, however, remains to be determined. In the present study, we found that RGC-32 was significantly induced in endothelial cells (ECs) of atherosclerotic lesions from both Apo lipoprotein E-deficient (*ApoE-/-*) mice and human patients. RGC-32 deficiency *(Rgc32-/-)* attenuated the high-fat diet-induced and spontaneously developed atherosclerotic lesions in *ApoE-/-* mice without affecting serum cholesterol concentration. It appeared that *Rgc32-/-* mainly decreased the macrophage accumulation without altering collagen and smooth muscle contents or macrophage proliferation in the lesions. In addition, transplantation of wild-type (WT) mouse bone marrow to lethal irradiated *Rgc32-/-* mice did not alter *Rgc32* deficiency-caused reduction in lesion size and macrophage content, suggesting that RGC-32 in resident vascular cells, but not the macrophages, plays a critical role in the atherogenesis. Of importance, *Rgc32-/-* decreased the expression of intercellular adhesion molecule 1 (ICAM-1) and vascular cell adhesion molecule 1 (VCAM-1) in ECs both in vivo and in vitro, resulting in a decreased monocyte-EC interaction. Mechanistically, RGC-32 mediated TNF-α-induced ICAM-1 and VCAM-1 expression through nuclear factor (NF)-κB. RGC-32 appeared to directly interact with NF-κB and further facilitate NF-κB nuclear translocation and its binding to ICAM-1 and VCAM-1 promoters. Taken together, our data demonstrate that RGC-32 promotes atherosclerosis by facilitating monocyte-EC interaction, due to the induction of endothelial ICAM-1 and VCAM-1 expression through NF-κB signalling.

sc229uga.edu