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Perilipin1 deficiency in whole body or bone Marrow-Derived cells attenuates lesions in atherosclerosis-prone mice

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Aims: The objective of this study is to determine the role of perilipin 1 (Plin1) in whole body or bone marrow-derived cells on atherogenesis.

Methods and Results: Accumulated evidence have indicated the role of Plin1 in atherosclerosis, however, thesefindings are controversial. In this study, we showed that Plin1 was assembled and colocalized with CD68 in macrophages in atherosclerotic plaques of ApoE-/- mice. We further found 39% reduction of plaque size in the aortic roots of Plin1 and ApoE double knockout (Plin1-/-ApoE-/-) females compared with ApoE-/- female littermates. In order to verify whether this reduction was macrophage-specific, the bone marrow cells from wild-type or Plin1 deficient mice (Plin1-/-) were transplanted into LDL receptor deficient mice (LDLR-/-). Mice receiving Plin1-/- bone marrow cells showed also 49% reduction in aortic atherosclerotic lesions compared with LDLR-/- mice received wild-type bone marrow cells. In vitro experiments showed that Plin1-/- macrophages had decreased protein expression of CD36 translocase and enhanced cholesterol ester hydrolysis upon aggregated-LDL loading, with unaltered expression of many other regulators of cholesterol metabolism, such as cellular lipases, and Plin2 and 3. Given the fundamental role of Plin1 in protecting LD lipids from lipase hydrolysis, it is reasonably speculated that the assembly of Plin1 in microphages might function to reduce lipolysis and hence increase lipid retention in ApoE-/- plaques, but this pro-atherosclerotic property would be abrogated on inactivation of Plin1.

Conclusion: Plin1 deficiency in bone marrow-derived cells may be responsible for reduced atherosclerotic lesions in the mice.

Biography

Xiaojng zhao, MD, PhD, She is the researcher of Chinese PLA General Hospital and her main research direction is heart disease and atherosclerosis . She has published more than 10 papers in reputed journals.

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