

Decreased low-density lipoprotein receptor-related protein 1 expression in pro-inflammatory monocytes is associated with subclinical atherosclerosis

Albertini, Ricardo A., Nicolas, Juan Carlos, Actis Dato, Virginia, Ferrer, Darío G., Tinti, María E., Capra, Raúl H. and Chiabrando, Gustavo A. (2022) *Decreased low-density lipoprotein receptor-related protein 1 expression in pro-inflammatory monocytes is associated with subclinical atherosclerosis*. *Frontiers in Cardiovascular Medicine*, 9. ISSN 2297-055X

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URL Oficial: <https://www.frontiersin.org/articles/10.3389/fcvm....>

Resumen

Subclinical atherosclerosis (SCA) occurs in asymptomatic individuals. Blood peripheral monocytes are involved in the development of atherosclerosis. Circulating monocytes acquire pro-inflammatory profiles, and they are involved in the early stages of atherosclerosis development. Low-density lipoprotein Receptor-related Protein 1 (LRP1) is expressed in monocytes, mainly in classical and intermediate subsets. Although LRP1 is highly expressed in macrophages and vascular smooth muscle cells (VSMCs) in atherosclerotic plaque formation, its expression in circulating monocytes has not been studied in SCA. The aim of this study was to characterize the LRP1 expression level in circulating monocytes of individuals with SCA and compared with individuals with low (LR) and intermediate (IR) risk of cardiovascular diseases, both without evidence of

atherosclerotic lesions in carotid and coronary arteries. LRP1 and additional markers (CD11b, CD11c, and CD36) at cell surface of monocytes were analyzed by flow cytometry assays, whereas LRP1 and pro-inflammatory factors gene expressions were measured in isolated monocytes by quantitative RT-PCRs. Both LRP1 protein and LRP1 mRNA were significantly reduced in monocytes in SCA and IR respect to LR. Conversely, CD36, CD11b, and CD11c monocytic markers showed no significant changes between the different study groups. Finally, increased gene expressions of TNF- α and IL-1 β were detected in monocytes of SCA, which were associated with decreased LRP1 expression at the cell surface in total monocytes. In summary, we propose that the decreased LRP1 expression at cell surface in total monocytes with pro-inflammatory profile is associated with the development of atherosclerosis in asymptomatic individuals.

TIPO DE DOCUMENTO: Artículo

DOI: <https://doi.org/10.3389/fcvm.2022.949778>

PALABRAS CLAVE: Aterosclerosis subclínica. Cardiovascular. Citoquinas. Lipoproteínas. Lípidos.

TEMAS: [Q Ciencia > Q Ciencia \(General\)](#)
[R Medicina > R Medicina \(General\)](#)

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