COMPOSITIONAL AND FUNCTIONAL PROFILE OF HIGH-DENSITY LIPOPROTEIN IN THE PATHOPHYSIOLOGY OF LEPROSY


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Introduction: The ability to synthesize and distribute the lipid serum levels is altered in lepromatous leprosy patients (Amaral et al., 2013), where high density lipoproteins (HDL), the main carrier of the reverse cholesterol transport, possesses altered distribution and functionality (Cruz et al., 2008). Objective: To investigate and compare the composition and functionality of HDL from tuberculoid and lepromatous leprosy patients. Materials and methods: HDLs were isolated from plasma of healthy individuals (H), borderline tuberculoid (BT) and lepromatous (LL) leprosy patients before and after multidrug therapy (MDT) by gel filtration HPLC. Human coronary arterial endothelial cells (HCAEC) response to HDLs was studied as expression of inflammatory marker (MCP-1), oxidative stress and cellular viability measured by ELISA, Flow Cytometry and Trypan blue (Microscopy), respectively. Cholesterol efflux was assessed by radioactivity counting of [14C]cholesterol in macrophages exposed to HDLs. Apolipoprotein A (Apo A), the main protein found in HDL, was measured by ELISA directly from blood plasma. Results: Compared with HDL-H and HDL-BT, HDL-LL before and after MDT did not decreased MCP-1 concentration in HCAEC. HDL-H reduced HCAEC oxidative stress, whereas HDL-LL before MDT was less effective and showed a reduced capacity to protect endothelial cells from induced cell death. HDL-LL before MDT showed a trend toward reduced capacity as cholesterol acceptor, compared to HDL-H and HDL-BT, but was able to recover this capacity after MDT. Apo A showed a low profile in plasmas from LL patients compared to BT patients and healthy individuals, but this capacity was recovered after MDT. Conclusion: Lepromatous leprosy impairs HDL function and protein composition. Even in the absence of long-standing and concomitant cardiovascular disease, Mycobacterium leprae infection, especially on the lepromatous form, alters specific HDL functions linked to control of inflammation, cholesterol reverse transport and endothelial stress.

Reference:


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