SUMMARY

THE EFFECTS OF ATORVASTATIN ON HEMATOLOGICAL AND INFLAMMATORY PARAMETERS

Chronic inflammation may play role in the development of atherosclerosis and its complications. In hypercholesterolemia, the evidences of chronic inflammation such as the stimulation of chemokines and cytokines, increase in endothelial adhesion molecules, and the immune reactions against oxidants on lipoproteins are detected. It was shown that statins had some beneficial effects on lipid parameters, thrombosis, endothelial dysfunction, smooth muscle proliferation and athersclerosis.

In this prospective study, the effects of atorvastatin on hematological and inflammatory parameters were investigated on hyperlipidemic patients.

Forty patients (14 male and 26 female) with primary hypercholesterolemia, according to Adult Treatment Panel for Third Report of National Cholesterol Education Program, included to our study. National and local ethical committees approved this study. The exclusion criteria were secondary hypercholesterolemia, acute coronary syndromes, liver and renal dysfunctions, diabetes mellitus, acute/chronic infection and inflammatory diseases, pregnancy, lactation, malignancy, and tendency to bleeding. Patients were treated with 20 mg/day atorvastatin for 12 weeks. At baseline, and 12th weeks, lipid parameters, hematological parameters such as whole blood cell counts, hemoglobin and fibrinogen levels, CD3, CD4, CD5, CD8, CD14, CD16, CD19, CD40, CD45 using flow-cytometry, inflammatory parameters such as interleukin-1 (IL-1), IL-6, IL-18, tumor necrosis factor-alpha (TNF-α), interferon-gamma, soluble CD-40, intracellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1, high-sensitive CRP, sedimentation rate, and enzymes including CK, AST, ALT were evaluated. The results were compared with two-paired student's-t test. Important adverse events were not seen in the patients at the end of the study.

At the end of study, atorvastatin decreased TC ($p<0.001$), LDL-C ($p<0.001$), TGs ($p=0.006$), VLDL-C ($p=0.012$), and HDL-C ($p<0.001$). While absolute lymphocyte ($p=0.003$) and platelet counts ($p=0.001$) were decreased with atorvastatin treatment, absolute monocyte count increased ($p=0.002$).Fibrinogen, high-sensitive CRP, sedimentation rate, AST levels were not influenced by atorvastatin theraphy. ALT

increased at the end of treatment (p=0.041). On flow-cytometric examination, the expressions of CD14 (p=0.015) and CD19 (p=0.039) on lymphocytes were decreased with atorvastatin. Moreover, atorvastatin decreased the levels of TNF-α (p<0.001), sCD40 (p<0.001), ICAM-1 (p<0.001), and IL-18 (p=0.024). IL-1, IL-6, VCAM-1 and IFN-γ levels did not changed at the and of the study.

In conclusion, the anti-platelet and anti-inflammatory effects of atorvastatin, independent from lipid-lowering effects, may play an important role on the prevention of atherosclerosis, in addition to its beneficial effects on lipid parameters.

Key words: atorvastatin, hematological, inflammatory