Abstract

The statins, most commonly used in the treatment of hyperlipidemia, have certain beneficial effects including improved endothelial function, plaque stability and decreased oxidative stress and inflammation, beyond their lipid-lowering effect in plasma. We evaluated the pleiotropic impact of atorvastatin on erythrocyte structural/mechanical properties and lipid peroxidation in dyslipidemias. The study group included 44 patients with dyslipidemia and was divided into subgroups according to triglyceride and cholesterol levels as hypercholesterolemic (n = 29) and mixed-type hyperlipidemic (n = 15). Subjects were given 10 mg atorvastatin per day for 12 weeks. Changes in serum lipid composition, lipid contents, Na(+)K(+)ATPase activity and osmotic fragility in erythrocytes and oxidative stress parameters of erythrocytes and plasma were studied. Atorvastatin therapy improved the serum lipid profile of both subgroups. This alteration was accompanied by a decreased level of cholesterol in erythrocyte membranes. Moreover, enhanced activity of Na(+)K(+)ATPase in erythrocytes reflected the improvements in membrane lipids of both subgroups. However, a significant change was observed in osmotic fragility values of the mixed-typed dyslipidemic group. This treatment lowered the lipid peroxidation in plasma and erythrocytes and increased plasma total antioxidant capacity in all groups. The present study shows that the use of atorvastatin reversed the structural and functional features of erythrocyte membranes in dyslipidemic subjects. Also, hypolipidemic therapy had a beneficial impact on a balance between oxidant and antioxidant systems.