SUMMARY

Inflammatory and prothrombotic factors play a crucial role in the atherogenesis. Dyslipidemia and diabetes mellitus as well are associated with the endothelial and leukocyte activation, which facilitate the inflammatory infiltration of the subendothelial space and deteriorate endothelial dysfunction, and thus contribute to the development of premature atherosclerosis. Furthermore, diabetes is associated with a number of platelets and coagulation factors abnormalities that participate in atherogenesis by other mechanisms and may be involved in the acute atherothrombotic events progression. Therefore, the factors that could favourably influence these actions become the subject of interest.

In this work, we examined leukocyte expression of cell adhesion molecules in patients with hypercholesterolemia and type 2 diabetes, and thrombogenic molecules on leukocytes in type 2 diabetes, and also soluble endothelial and thrombogenic markers. In these patient groups, we investigated the effect of lipid lowering and antidiabetic treatment on these markers.

Patients with severe hypercholesterolemia were examined at the baseline and after 10 weeks of atorvastatin treatment. Patients with type 2 diabetes mellitus were examined at baseline and after 5 months of rosiglitazone treatment. Both patient groups were compared to healthy controls. Expression of cell adhesion and thrombogenic molecules on blood leukocytes was measured by flow cytometry and quantitative real-time PCR, and circulating serum/plasma markers were measured by immunometric assays.

In patients with hyperlipidemia and diabetes, we demonstrated an increased leukocyte expression of most cell adhesion and thrombogenic molecules studied, which was considerably decreased after the atorvastatin and rosiglitazone treatment. In contrast, there was nearly no effect of the hypolipidemic and antidiabetic treatment on the serum/plasma endothelial and thrombogenic molecules. Leukocyte molecules may therefore be a more sensitive marker of atherogenesis than circulating endothelial molecules or plasma/serum concentration of thrombogenic markers. Our results support the role of increased leukocyte adhesiveness and prothrombotic abnormalities in the development of atherosclerosis.

Examination of gene expression of these molecules by real-time PCR brought in inconsistent results that are difficult to interpret. With regard to method complexity and the fact that this was the pilot project just implemented in our lab, we most likely attribute this to methodical problems.