Summary

Based on the results of our study, we concluded that the degree of brachial artery flow endothelium-dependent dilatation is difficult to evaluate using predefined cut-off points as a single-measurement screening test to indicate endothelial dysfunction. On the contrary, the variation of endothelial function after a defined stimulus (dietary, medication) examined at a predefined interval using an identical protocol can help to assess enhanced or reduced efficacy of endothelium-dependent vasodilatation.

In the next study, we demonstrated that a high-fat load applied at a single dose does not significantly affect brachial artery vasoreactivity in young, healthy volunteers after four weeks of low- and high-fat diets. In contrast with atherosclerosis, the effect of hypercholestrolemia on adhesive molecule levels has been a source of controversy.

We demonstrated that 3-month therapy with fluvastatin does not decrease cICAM-1 levels despite normalization of cholesterol levels. The implication is cholesterol may not induce endothelial activation by the initial upregulation of this adhesive molecule.

Endothelial dysfunction can be considered the initial, functionally relevant stage of atherosclerosis, demonstrable still before morphological changes. In patients with advanced obliterative atherosclerosis, endothelial impairment substantially contributes to the clinical outcome by induction of vascular spasms or thrombotic complications. In conclusion, there are currently several options of detecting and, possibly, quantifying endothelial dysfunction generally perceived as the initial stage of atherosclerosis. However, the value of these examinations for the individual patient has not yet been clearly determined, as confirmed by results of our studies. Still, further research is warranted to be able to establish to what extent these data can be generalized and applied to the general population, to specify their contribution to determining the cardiovascular risk of individuals, the cost and availability of these individual tests in everyday practice, and to see whether some of these will be incorporated into their recommended algorithms of tests to be performed as part of preventive programs. Determination of any of the endothelial dysfunction markers including FMD remains to be a research method and its use in clinical practice cannot yet be recommended.