The purpose of the present study was to assess the course of adhesion molecules (intercellular adhesion molecule (ICAM), vascular cell adhesion molecule (VCAM), e-selectin, p-selectin and monocyte chemotaxtractant protein 1 (MCP-1)), growth factors (transforming growth factor beta (TGFbeta) and basic fibroblast growth factor (bFGF)) and the cytokine tumour necrosis factor alpha (TNFalpha) after both angioplasty and cryoplasty. Recently cryoplasty has been suggested as a new method to oppose neointimal hyperplasia resulting in restenosis formation. While in vitro models have shown that the application of cryothermal energy to the endothelium during angioplasty leads to apoptosis induction and reduced proliferation rates, no human in vivo proof for an inhibition of neointimal hyperplasia exists. For restenosis initiation adhesion molecules, growth factors and cytokines play an important role. One possibility to investigate the endothelial response to angioplasty is the measurement of the soluble forms of adhesion molecules, growth factors and cytokines that are released into the circulation after denuding the vessel wall. In the present study we assessed the distribution pattern of the soluble forms of e-selectin, p-selectin, ICAM, VCAM, MCP-1, TGFbeta, bFGF and TNFalpha after angiography, angioplasty and cryoplasty of the femoropopliteal artery in the early course of 4 weeks in
29 patients with peripheral arterial occlusive disease. During the 4 weeks after intervention levels of e-selectin, ICAM, VCAM and MCP-1 increased after both angioplasty and cryoplasty. The course of the screened biomarkers was similar between angioplasty and cryoplasty. P-selectin and TGFbeta both decreased after cryoplasty, but not significantly. The present results show that the release of adhesion molecules, growth factors and cytokines is similar between balloon angioplasty and cryoplasty.

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