OBJECTIVES: To assess prospectively the early time course of Transforming Growth Factor beta-1 (TGFbeta-1), basic Fibroblast Growth Factor (bFGF) and Tumor Necrosis Factor alpha (TNFalpha) as possible contributors to restenosis development after angioplasty.

DESIGN: Prospective Study.

METHODS: The levels of the soluble forms of these factors in the early response to Percutaneous Transluminal Angioplasty (PTA) in the arteries of the lower limb were prospectively assessed. 32 patients with peripheral arterial occlusive disease (PAOD), presenting with intermittent claudication (Fontaine stage IIb) were scheduled for angioplasty treatment. Serum levels of TGFbeta-1, TNFalpha and bFGF were assessed before intervention, 15 and 60 minutes after, 24 hours after as well as 2 and 4 weeks after intervention. We compared the distribution patterns between patients treated with balloon angioplasty and patients who required secondary stent implantation. Endpoint was the development of restenosis within 6 months after interventional treatment, defined as a lumen diameter reduction of more than 50% by ultrasound measurement compared to the result after PTA.

RESULTS: The patients who later developed restenosis had significantly higher levels of TGFbeta-1 at 15 minutes, 24 hours and 2 weeks after PTA (p<0.05).
TNFalpha and bFGF were only detected in a few patients and no significant change of serum levels was observed. CONCLUSION: The results demonstrate a possible role of TGFbeta-1 in the formation of restenosis after PTA.