Dynamics of inflammatory biomarkers after femoropopliteal revascularization: a prospective pilot study

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Introduction: Peripheral arterial disease of the lower limb (PAD) is one of the most common clinical manifestations of atherosclerosis,which is an inflammation-driven process. Patients with PAD exhibit elevated baseline levels of inflammatory markers compared to the healthy population[1]. Revascularisation interventions cause an additional, acute increase in circulating inflammatory markers due to arterial wall injury. These markers mediate inflammatory and coagulation responses and are considered an early indicator of potential restenosis[2]. Successful revascularisation restores limb perfusion and can lead to a mid- and long-term reductions in inflammatory markers[3]. In this observational prospective pilot study, we aimed to investigate the dynamics of circulating inflammatory biomarkers in the first three months after revascularisation.

Patients and Methods: The study was conducted in the Catheterisation Laboratory of the Department of Vascular Diseases, University Medical Centre Ljubljana, Slovenia. Patients with successful percutaneous femoropopliteal revascularisation due to limiting intermittent claudication were included. Levels of interleukins 6 (IL-6), 8 (IL-8), and 10 (IL-10), C-reactive protein (CRP), and tumour-necrosis factor alpha (TNFα) were determined one hour before the procedure, one day after the procedure, and three months after the procedure.

Results: Among 28 participants, aged 50-79 years (median 69 years), 18 (64.3%) were male. Statistically significant differences among the three blood samples were observed for IL-6 ($p<0.001$), IL-10 ($p=0.012$), and TNFα ($p=0.016$). For IL-6, differences were present between all three time points: 1st vs 2nd ($p=0.011$), 2nd vs 3rd ($p<0.001$), and 1st vs 3rd ($p<0.001$). A difference between the 2nd and 3rd time point was also observed for IL-10 ($p=0.004$) and TNFα ($p=0.026$).

Conclusion: Restoration of blood flow appears to modulate systemic inflammatory activity and may potentially slow both local and systemic progression of atherosclerosis. More research is needed to determine implications of revascularisation procedures on short- and long-term biomarker levels and their correlation with clinical outcomes.

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LITERATURE

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