

Atherosclerosis is a civilization disease, of which pathophysiology is based on chronic inflammatory response in wall of vessels that is caused by increase of proinflammatory substances. It is a big challenge for diagnostics and pharmacology. This disease occurs in over 60% population above 70 years old. There are multiple factors which are responsible for this process. Among them are products of metabolism of arachidonic acid – leukotrienes, especially leukotriene E4 (LTE4). Endothelium, the vascular wall inner layer, which plays significant role in proper functioning of whole cardiovascular system, is first area of atherosclerotic lesions. It is responsible for i.e. regulation of the blood flow and blood pressure, regulation of vascular wall tension or regulation of the blood clotting.

Process of restenosis after endovascular treatment is a manifestation of changes that occurring in arterial endothelium, which mechanism is still unexplained. The aim of this project is to investigate the disability of the endothelial function in patients with peripheral artery occlusive disease (PAOD), in whom the restenosis appeared after the endovascular treatment – peripheral transluminal angioplasty (PTA). It is also important to define the dependence between occurrence and type of the disability and the level of leukotrienes and endothelial progenitor cells, including correlation between tested parameters and failure occurrence in 12-months post PTA observation.

During last few years we conducted a prospective study, which helped us to evaluate the dynamics of leukotrienes and tromboxane levels in patients with PAOD, who underwent PTA. We established for the first time the dependence between the increased level of uLTE4 and restenosis or reocclusion occurrence, which causes the necessity of further procedures and decrease of the quality of life. Process of restenosis after PTA is a manifestation of changes that are taking place in arterial endothelium, which mechanism is still unexplained.

Within the project performed in the Angiology Department, 2nd Chair of Internal Medicine patients suffering from PAOD and fulfilling all inclusion criteria, will be recruited. Among all patients population, during whole 12 month of follow-up, clinical state, ultrasound and hemodynamic parameters will be examined as well as uLTE4 levels measurements will be performed. Additionally full endothelial function examination will be conducted.

The mechanisms, which lead to restenosis are still not fully understood, and currently used methods of treatment – antiplatelets, antiproliferative drugs and anticoagulants, as well as endovascular procedures - are not fully effective. Thanks to this research, the knowledge about treatment and prevention of atherosclerosis will be increased, which will be connected with better patients care, especially patients with PAOD. The results of our study will be published in high impact factor journals and will be presented during many prestigious polish and international conferences and congresses, promoting polish science on the international stage.