



Fund “Nauka” Project № 23010 Resume – Competition-Based Session 2023:

“Endothelial dysfunction after treatment for ALL in childhood”

Project leader: Assoc. prof. Milena Ivanova Beltcheva, MD, PhD

The current multimodal risk-oriented treatment and the advance in molecular therapies result in a growing number of childhood ALL survivors. Cardiovascular diseases take a leading place in the structure of morbidity and mortality in pediatric ALL survivors.

The **aim** of the study is to evaluate the vascular status of patients after therapy for ALL in childhood with a focus on finding early and specific indicators for endothelial dysfunction and subclinical atherosclerosis.

Patients in long-term ALL remission and appropriate controls according to age and sex will participate in the study.

The main goals are:

1. Evaluation of markers for endothelial activation, inflammation and thrombosis;
2. Analysis of the expression of specific microRNAs, associated with endothelial dysfunction and atherogenesis;
3. Evaluation of vascular wall parameters and elasticity with modern techniques (sonographic measurement of the intima/ media thickness of the common carotid artery and arteriographic measurement of the aortic pulse wave velocity);
4. Correlation of the results with cardiovascular risk parameters and treatment parameters.

The **results** of the study will give a current and detailed notion on the endothelial function of patients in long-term remission after treatment for ALL in childhood. Early signs of endothelial dysfunction will be identified with the option for timely cardioprotective measures and a set of microRNAs, associated with endothelial function and atherogenesis will be investigated.

By conducting the current study we expect to gather detailed information on the vascular status of the subjects in several aspects:

1. Data from the sonographic measurement of the carotid intima/ media thickness;
2. Data from the arteriographic measurement of the aortic pulse wave velocity (PWVao), aortic augmentation index (AIXao), central systolic blood pressure (SBPao) and other hemodynamic parameters, related to arterial stiffness;
3. Data on the expression of microRNAs, related to endothelial dysfunction;

4. Data from the analysis of biochemical markers for endothelial activation, inflammation and thrombosis.