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Fund “Nauka” Project № 25014 Resume – Competition-based Session 2025:

“Predictors of survival and treatment compliance in patients with interstitial pulmonary fibrosis”

Project leader: Prof. Diana Petkova Gospodinova-Valkova, MD, PhD

Interstitial pulmonary fibrosis (IPF) is a rare, chronic, progressive interstitial disease characterized by connective tissue accumulation in the pulmonary parenchyma, impaired gas exchange, and reduced pulmonary function, leading to severe disability and death. Survival is poor: the average life expectancy is 2-5 years without antifibrotic therapy. The public and clinical significance of the disease is great: the increasing incidence, high mortality, limited treatment options, and severe impact on quality of life make IPF a priority for research efforts. The aim of this study is to identify biomarkers- microRNAs (miR-21, miR-29, miR-200b/c, let-7d,miR-155) and proteins-matrix metalloproteinase-7 (MMP-7) and Krebs von den Lungen (KL-6)- that can be used to predict survival and monitor patients' response to treatment, comparing them with controls from healthy individuals. The tasks include: determining the expression of micro-RNA in serum samples from patients and a control group; determining serum levels of MMP-7 and Krebs von den lungen-6, correlation and prognostic analysis between these markers and clinical data such as survival, disease progression, and adherence to therapy. The material will include serum samples from patients with pulmonary fibrosis and healthy controls, collected at the start of treatment and during follow-up. Methods: quantitative PCR for micro-RNA, ELISA for MMP-7 and KL-6 proteins, statistical analysis. The study is expected to identify a specific panel of serum microRNAs and protein markers that correlate with survival and treatment compliance in patients with IPF and may serve as reliable predictors of disease progression.

Expected results:

1. Determination of serum levels of specific microRNAs, MMP-7 and KL-6 in the serum of patients with idiopathic pulmonary fibrosis and establishment of their relationship with disease severity, survival, and therapeutic response;
2. Developing a potential prognostic model that can support a personalized approach to the management of patients with interstitial pulmonary fibrosis in Bulgaria;
3. Enriching scientific knowledge about the pathogenesis of interstitial pulmonary fibrosis and the role of molecular markers in progression and therapeutic response.