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Fund “Nauka” Project № 21016 Resume – Competition-Based Session 2021:

“Significance of plasma miRNAs as epigenetic markers in some forms of juvenile idiopathic arthritis”

Project leader: Prof. Boryana Borisova Varbanova, MD, PhD

Studies in recent years have identified some microRNAs as diagnostic markers in adult patients with ankylosing spondylitis (AS).

The main goal of this research is to determine the expression levels of certain microRNAs in children with enthesitis-related arthritis (ERA) compared to patients with other forms of juvenile idiopathic arthritis (JIA) as well as to a control group of healthy individuals and to determine their potential as epigenetic biomarkers of diagnostic and prognostic significance. Such studies in foreign language literature are scarce, and in Bulgarian literature – non-present.

Patients up to 18 years of age will be included in the study. They will be divided into three groups: patients diagnosed with ERA; patients with another form of JIA and positive antinuclear antibodies (ANA) and healthy controls.

Laboratory analysis includes molecular biological method: extraction and quantitative characterization of plasma microRNAs by real-time PCR.

The prospective result of this study is to establish the significance of some microRNAs in both clinical presentation and evolution of ERA, and to compare it to AS and other forms of JIA, as well as to establish those microRNA-s as new biomarkers of diagnostic and prognostic value for early diagnosis and timely treatment.

Data Collection and Processing: Collection and storage of biological material following the signing of informed consent; analysis of pre-selected parameters; processing of collected data; organization and systematization of results; and the formulation of conclusions.

The results obtained from the analysis of samples across all study participants revealed statistically significant differences in several of the investigated parameters, both between the two patient groups and between patients and controls. These findings confirm the potential of the studied microRNAs as diagnostic markers and/or indicators of activity and prognosis in the pathology under investigation.

Unfortunately, a comparative analysis of the microRNA results against other activity markers did not demonstrate a statistically significant correlation between the values of established and potential activity markers. However, a correlation analysis

between the microRNA levels and the frequency of relapses in the included patients revealed a moderate to strong positive correlation for certain microRNAs, with statistical significance.

This project represents the first study conducted in the Republic of Bulgaria to investigate the levels of these specific microRNAs in patients with JIA.