Kallistatin as a new non-invasive marker in patients with non-alcoholic fatty liver disease combined with hypertension

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**Theoretical framework:** Non-alcoholic fattylLiver disease (NAFLD) affects between 15 and 50% of the adult population. Liver dysfunction and associated metabolic disturbances become a cause of a high mortality rate. One of the main tasks of the diagnosis is to determine NAFLD at the initial stage called fatty steatohepatosis. Increased blood pressure accompanies NAFLD in 30% of cases and contributes to the rapid development of non-alcoholic steatohepatitis (NASH). Biopsy is the most reliable method for determining the presence and stage of the disease. However, the procedure brings discomfort and soreness to patients, and it is associated with certain risks, such as bleeding or a false negative result. Diagnostics of NAFLD without biopsy are improved by searching for new biomarkers. Kallistatin is a recently discovered endogenous protein, inhibitor of inflammation, fibrosis, oxidative stress and angiogenesis. The number of studies related to the clinical and prognostic value of kallistatin in patients with NAFLD is insufficient, and for patients with a combination of NAFLD and hypertension there is no relevant data at all.

**Objective:** To study the role of kallistatin as a biomarker for the early diagnosis of NAFLD in patients with high blood pressure.

**Methodology:** We are going to examine 110 patients and divide them into three groups: 50 patients with NAFLD with hypertension, 40 patients with isolated NAFLD and 20 healthy individuals for control. We will perform the general examination of patients, measurement of blood pressure, standard clinical tests, biochemical determination of the parameters of the functional liver activity. The level of kallistatin in the blood plasma by the ELISA also will be determined. All patients will have instrumental examinations: ECG in standard leads, abdominal ultrasound, ultrasound elastography using the Soneus P7 ultrasound scanning system. The data will be analyzed using generally accepted statistical methods with PC programs (Microsoft Excel, Statistica).

**Results:** We expect that the study will first determine the function of kallistatin in patients with NAFLD and hypertension, which will allow using it as a non-invasive marker for the progression of liver fibrosis. We will develop an algorithm for estimating the prediction of NAFLD combined with hypertension, that will be the basis for detecting NASH in the early stages and predicting the risk of complications in order to prevent them.