MACK-3 and portal hemodynamics features association in non-alcoholic steatogepatitis patients

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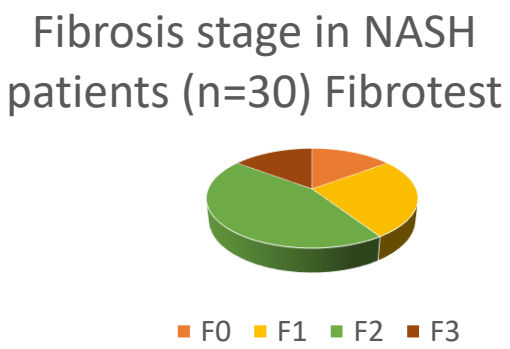
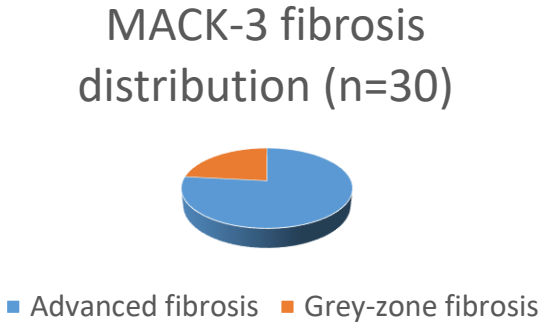
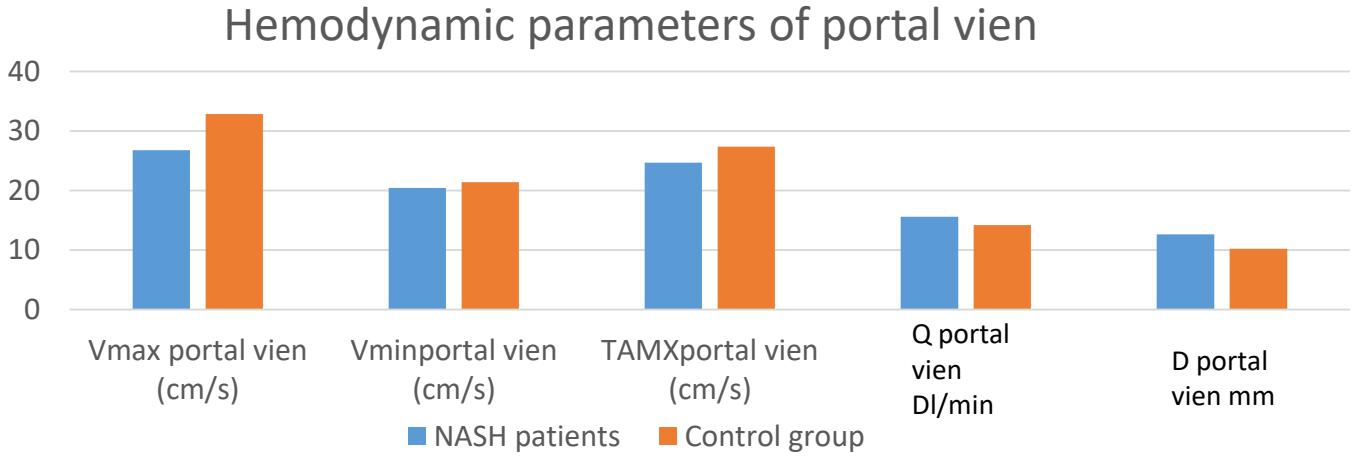
Nowadays non-invasive accurate tests for diagnosing liver fibrosis in patients with non-alcoholic steatohepatitis (NASH) is highly needed. Previously, it has been suggested that MACK-3 accurately identifies patients with fibrotic NASH.
Our aim was to assess the fibrotic state according to MACK-3 in NASH patients and its association with parameters of portal hemodynamics and intrahepatic blood flow.
MATERIALS AND METHODS: thirty adults with Fibrotest-proven NASH at the age of 30 to 60 years (mean age (46.36 ± 5.1) years)from independent Ukrainian cohorts were enrolled in our study. The control group consisted of 20 practically healthy volunteers. All patients were assessed by clinical and laboratory parameters of blood, urine and biochemical blood parameters, echosonographic examination of the abdominal cavity organs. MACK-3 was calculated using the online calculator using the following variables: fasting glucose, fasting insulin, aspartate aminotransferase (AST) and cytokeratin 18 (CK18). MACK-3 cut-offs ≤0.134 and ≥0.550 were used to predict absence and presence of fibrotic NASH, respectively.

- Results:

13,3% patients had F0 fibrosis stage and 86,7% had a significant fibrosis according Fibrotest results. MACK-3 score reports that all of the NASH patients had a fibrosis, where 76,7% patients have advanced fibrosis level and 23,3% - grey zone - needed additional examination. For all patients, NASH was characterized by an increase in the diameter and volumetric flow velocity of the portal vein. The maximum, minimum and maximum linear time-averaged velocity of blood flow in the portal vein in patients with NASH were lower than in practically healthy volunteers (< 0.001). MACK-3 correlated positively with time-averaged velocity blood flow in the portal vein - direct link - r = 0.44 (p<0.01), and indirect correlation with diameter of the portal vien and minimum linear blood flow r = -0.22 with, triglycerides r = -0.374 respectively (p <0.01).

Conclusion. In NASH patients, the parameters of portal hemodynamics are predominantly elevated and significantly differ from the control group. MACK-3 fibrosis score results were significantly associated with portal hemodynamics features in non-alcoholic steatogepatitis patients.