

7<sup>th</sup> International Conference on Gastroenterology

October 27, 2022 | Webinar

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<u>Non-invasive evaluation of metabolic dysfunction with a focus</u>
on the liver

Metabolic dysfunction is actively discussed both in relation to the general health state and in various diseases. After 2020, there has been a proposal to replace non-alcoholic fatty liver disease (NAFLD) to <u>fatty liver disease</u> associated with metabolic dysfunction (MAFLD). However, the criteria for metabolic dysfunction assessment are not specific to liver metabolism.

**Aim:** To determine the non-invasive assessment possibilities of metabolic dysfunction based on the difference in chronological (CHR-age) and biological (or metabolic- METage) age and induction of the liver ketogenesis (KETO-liver).

**Methods and materials:** MET-age was determined using tetrapolar spectral and vector bioimpedansometry (BIM). KETO-liver was estimated by ketones breath test before and after the induction of ketosis by the amino acid L-lysine (IKL). Blood biochemical, hematological parameters and urine chemical analysis was performed.

**Results:** 30 people (CHR-age 45,0(95%CI 42,1-47,9)) without signs of any pathology including metabolic disorders were examined, the <u>dyspepsia</u> symptoms were allowed. Indicators were determined three times: baseline, after 2 and 4 weeks. Two groups were distinguished: group A with MET-age more than 1 year older CHR-age and group B MET-age more than 1 year CHR-age younger. A/B-mean(95%CI): Fate mass(kg)

27,9(25,3-30,5)/14,7(13,7-15,6); Body cell mass fraction 43,8%(42,8-44,9)/50,5(50,0-51,1); blood glucose 6,0(5,4-6,7)/5,5(5,3-5,7); cholesterol 6,2(5,6-6,6)/5,8(5,3-6,1); C-Reactive Protein 3,5(2,3-4,8)/1,9(1,5-2,3). In randomly selected 13 people without any pathology including <u>metabolic</u> <u>disorders</u> BIM results were compared with ketosis (AUC values). Correlation (R Spearman): Body cell mass and ketosis AUC0,61(p=0,0008); values intracellular fluid 0,59(p=0,001). There was a significant relationship between the degree of liver-induced ketosis and the difference between biological and chronological age (0,44 at t(N-2) = 2,42, p=0,02), The smaller the age difference(MET-age younger), associated with higher lysine-induced ketosis (metabolic flexibility).

**Conclusion:** The results obtained allow us to propose a new approach to the metabolic dysfunction assessment based on the difference between biological and chronological age and the severity of lysine-induced ketosis.

## **Biography**

Marakhouski Y has completed his Doctor of Medical Sciences at the age of 45 years from Central Research Institute of Gastroenterology, Moscow. He is the Head of Department Gastroenterology and Nutrition of Belarusian Medical Academy of Postgraduate Education, Belarus. He has over 300 publications and cited over 2955 times, and his publication H-index is 16 and has been serving as an editorial board member of reputed Journals.

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Received dates: June 21, 2022; Accepted dates: June 23, 2022; Published dates: October 31, 2022