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GUT MICROBIOTA AND CARDIOVASCULAR RISK FACTORS: MOSCOW STUDY

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Materials & methods: The study included 92 Moscow residents, 66 women and 22 men aged 25 to 78y/o carefully selected through exclusion of CVD by means of clinical and laboratory evaluation, ECG, treadmill test, ECHOCG, carotid ultrasound examination (including IMT measurement). CVR factors were considered as follows: 1st grade AH, dyslipidemia, obesity, except morbid, impaired glucose metabolism, smoking. Gut microbiota was studied by 16S rRNA sequencing; diet – by quantitative assessment. Statistical analysis was performed using the R3.1.0., Mann-Whitney tests (with FDR) and generalized linear models.

Results: Impaired glucose metabolism was detected in 23%, 1st grade AH in 37%, dyslipidemia in 78%, obesity in 25%, abdominal obesity in 55%, there were 17% of smokers. Average age was 52±13 y/o. The number of risk factors was associated with high prevalence of the genus Serratia ($p<0.001$). Prevotella were more presented in patients with newly diagnosed AH than in normotensive subjects ($p<0.001$). Obesity, abdominal obesity, and glucose metabolism impairment was associated with an increase in Serratia ($p=0.004$, $p = 0.004$, $p=0,003$ respectively), Prevotella ($p<0.001$, $p<0.001$, $p=0.003$ respectively) genera and decrese of Oscillospira ($p<0.001$). We did not find significant differences in smokers and patients with dyslipidemia, gender, and age risks. In 20 participants IMT was ≥0.9 mm (average 0.84±0.4 mm), thickening was associated with higher abundance of Serratia ($p=0.009$) and Blautia ($p=0.004$) genera. The average daily caloric intake was 2156.2±544.9 kcal; intake of carbohydrates 210.3±91 g; proteins 78.7±19.9 g; fat 106.5±32 g. Bifidobacterium ($p=0.008$) representation was increased and Serratia decreased ($p=0.008$) in those who consumed more starch. High fat consumption was associated with high Serratia ($p=0.014$) and low Oscillospira ($p=0.004$) abundance.

Conclusion: High representation of opportunistic bacteria was associated with CVR factors and subclinical atherosclerosis. These bacteria were more presented among those who consumed smaller amounts of starch, and beneficial bacteria abundance was lower in those who consumed a lot of fat.

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