PROINFLAMMATORY CYTOKINES AND TRIMETYLAMINE N-OXIDE LEVELS IN PATIENTS WITH ATHEROSCLEROSIS AND ATRIAL FIBRILLATION

Anil Rani
Medical student 4th course
O.O.Bogomolets National Medical University, Ukraine

Melnychuk I.O.
PhD
O.O.Bogomolets National Medical University, Ukraine

Scientific director: Lizogub V.G.
MD, professor
Internal medicine department # 4
O.O.Bogomolets National Medical University, Ukraine

Relevance: Atherosclerosis (AS) is a multifocal, smoldering, immunoinflammatory disease of medium-sized and large arteries fuelled by lipids. It is caused ischemic heart disease (IHD) [1]. IHD and atrial fibrillation (AF) have prominent correlations and the many common risk factors they share may play important roles in their development [2]. Gut microbiota condition by its metabolites have a huge influence on cardiovascular health. Trimethylamine N-oxide (TMAO) and trimethylamine (TMA) are the main gut microbiota metabolites. It is known that their values increase in case of IHD, but their role in AF pathogenesis still unknown [3]. In addition, inflammatory process is an important base in AS pathogenesis, by the literature data it is characterized by increasing C-reactive protein (CRP) and interleukin-6 (IL-6) levels [1]. Nevertheless, it is no exact data between levels of inflammatory markers and gut microbiota metabolites.

Materials and methods: 258 patients were investigated. All investigated were divided into 3 groups: control group – 50 patients (58,13±2,28 years) without AS; comparable group – 72 patients (64,83±3,51 years) with AS but without arrhythmias and mean group – 136 patients (65,53±2,72 years) with AS and AF. Carotid ultrasound and Holter ECG monitoring were used for diagnosis verification. Plasma TMAO and TMA levels were determined by gas chromatography with mass electron detection. Plasma CRP and IL-6 levels were determined by immunoturbidimetric method.

Results: Compared with controls, IL-6 (392±29 pg/ml) and CRP (5.35±0.96 mg/l) were significantly elevated in comparable and mean groups (525±41 pg/ml
There was no difference in CRP between those with comparable and mail groups. Nevertheless, IL-6 levels were significantly higher in mean group (p=0.02). Compared with controls, TMA was significantly elevated in comparable (23.94±1.56 mmol/l) and mean (25.85±1.18 mmol/l) groups. TMAO (4.22±0.30 mmol/l) was significantly elevated in mean group comparable with controls and comparable group. Significant direct strong correlation were determined between IL-6 and TMAO levels (r=0.634; p<0.01).

**Conclusion:** Gut microbiota metabolites (TMAO, TMA) and proinflammatory cytokines were increased in patients with AS. That shows us connections between inflammatory processes and changes of intestinal microbiota in patients with AS. In case of AS and AF combination proinflammatory cytokines are increased even more than for patients without rhythm abnormalities, that shows important role of inflammation in AF pathogenesis. TMAO and IL-6 strong direct correlation and their growth in AS and AF patients mean that gut microbiota can play important role in AF development in AS patients.

**References:**

