



## CHANGES IN TRIMETHYLAMINE-N-OXIDE IN RELATION TO AGE AND GENDER DIFFERENCES IN PATIENTS WITH ISCHEMIC HEART DISEASE

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### ABSTRACT

*Changes in trimethylamine-N-oxide in relation to age and gender differences were determined in patients with ischemic heart disease.*

If the gastrointestinal microflora is normal, internal organs and systems work harmoniously, and when dysbiosis develops, various diseases, including atherosclerosis, arise.

In recent years, a number of researches have been conducted in the direction of regulating intestinal dysbiosis, but its various transducing signals have not been fully studied until now. When the intestinal microflora changes, the concentration of trimethylamine-N-oxide in the blood increases. For this reason, the impact of dysbiosis on human health and its place in the origin of diseases continues to be studied.

**The purpose of the study;** changes in trimethylamine-N-oxide in relation to age and gender differences in patients with ischemic heart disease.

**The object of the study;** Research consists of clinical work. Clinical studies are conducted in 90 patients with ischemic heart disease. 30 of them were allocated to a healthy control group that did not suffer from ischemic heart disease.

**Research subject;** It consists of analyzing the results of clinical examination of patients treated in the therapeutic departments of the Andijan State Medical Institute, who are being treated for ischemic heart disease with angina pectoris.

Their average age was 58.5±1.2.

### 1-table. Data on gender and age of the groups involved in the study

Variables		1-group	2-group	3-roup	4-group	P	Total
		(N=30)	(N=30)	(N=30)	(N=30)		(N=120)
Gender	wom	17 (56.7%)	14 (46.7%)	20 (66.7%)	12 (40.0%)	0.112	63 (52.5%)
	an	13 (43.3%)	16 (53.3%)	10 (33.3%)	18 (60.0%)		



Age categories	30-49	5 (16.7%)	8 (26.7%)	6 (20%)	15 (50,0%)	<0,00 1	34 (28.4%)
	50-59	10 (33,3%)	12 (40.0%)	11 (36.7%)	11 (36.7%)		44 (36.6%)
	60-69	12 (40.0%)	7 (23,3%)	11 (36,7%)	2 (6.7%)		32 (26,7%)
	70	3 (10.0%)	3 (10.0%)	2 (6.7%)	2 (6,7%)		10 (8,3%)

As shown in table 1, all research participants were studied according to gender difference in 4 groups, and among them 63 (52.5%) women and 57 (47.5%) men. As much as possible, it was tried not to have a big difference between those involved in the research. When the gender difference was studied in each group, there were more women among patients in groups 1 and 3, and more men in groups 2 and 4 ( $r=0.112$ ). Recipients of research by age categories were divided as follows: 30-49 years old 34 (28.4%); 44 (36.6%) aged 50-59, 32 (26.7%) aged 60-69, 10 (8.3%) aged 70.

Among them, 5 (16.7%) patients aged 30-49 years, 10 (33.3%) patients aged 50-59 years, 12 (40.0%) patients aged 60-69 years, 3 (10.0%) patients aged 70 years were included in group 1. was selected. 30-49-year-olds - 8 (26.7%), 50-59-year-olds - 12 (40.0%), 60-69-year-olds - 7 (23.3%), 70-year-olds - 3 (10.0%); 30-49-year-olds - 6 (20.0%), 50-59-year-olds - 11 (36.7%); 60-69-year-olds - 11 (36.7%); 2 (6.7%) patients over 70 years of age.

The control group was selected by people who did not suffer from IUD, and the following young people were included in 4 groups; 15 people aged 30-49 (50%); 11 people aged 50-59 (36.7%); 60-69-year-olds 2 (6.7%) 70-year-olds 2 (6.7%) were included in the control group. An attempt was made to use closeness ( $r<0.001$ ) in grouping all patients and recipients.

When the confidence interval was studied, there was no significant difference between the age categories (table 2).

**2- table. Confidence interval indicators by age categories**

Variables		OR	95 CI		P
Gender	woman	Ref.			
	man	0,46	0,19	1,07	0,074
Age categories	70	Ref.			
	30-49	1,00	0,01	288	1
	50-59	1,00	0,03	229	0,995
	60-69	1,00	0,02	876	0,996

During the study, age-related conditions of trimethylamine-N-oxide concentration of TMAO in patients with IHD were studied. Information about them is presented in Table 3.



### 3-table.Changes in trimethylamine-N-oxide in relation to age and gender differences in follow-up patients

Variables		TMAO increased	TMAO norm	P	Total
		(N=90)	(N=30)		(N=120)
Gender	Woman	51 (56.7%)	12 (40%)	0.112	63 (52.5%)
	Man	39 (43,3%)	18 (60.0%)		57 (47.5%)
Age categories	30-49	19 (21%)	15 (50%)	<0.001	34 (28.3%)
	50-59	33 (36.7%)	11 (36.6%)		44 (36,7%)
	60-69	30 (33.3%)	2 (6.7%)		32 (26.7%)
	70	8 (9%)	2 (6,7%)		10 (8,3%)

Normal TMAO was observed in 18 (60%) males and 12 (40%) females in the control group. In the remaining age groups; At the age of 30-49 15 (50%), at the age of 50-59 - 11 (36.6%), at the age of 60-69 2 (6.7%), at the age of 70 2 (6.7%) normal TMAO indicator was observed ( $p < 0,001$ ).

Increased TMAO was observed in 19 patients aged 30-49 years (21.1%), 33 patients aged 50-59 years (36.7%), 30 patients aged 60-69 years (33.3%), 8 patients aged 70 years (9%) ( $r < 0,001$ ).

When the influence of gender and age factors on the increase in TMAO concentration was studied, it was clinically proven that the tendency to increase TMAO in "women" is 2 times higher than in "men" [OR = 0.46], but the confidence interval calculated on the basis of Euler's constant and Fisher's R value are statistically significant showed not to have [CI 95% (0.19-1.07)  $p$ -value = 0.074]. Subjects were categorized by age, the effect of TMAO concentration was evaluated, and those over 70 years of age were automatically selected in R studio as a reference group. The obtained results showed that increasing age does not affect the concentration of TMAO, and it was clinically justified [OR ("30-49 years" = 1); ("50-59 years old" = 1); ("60-69 years old" = 1)]. The confidence interval calculated on the basis of Euler's constant and Fisher's R value also confirmed that the obtained results were not statistically significant [CI 95% ("30-49 years" 0.01-288); ("50-59 years old" 0.03-229); ("60-69 years" 0.02-879),  $p$ -value (1; 0.995; 0.996)] (Figure 3.3). Figure 3.4 shows the increase in TMAO in women and men with age. It is observed in men at all ages, while in women it was noted mainly at older ages.

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