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Relationship of plasma ST2 level with anatomical features of coronary artery lesion in patients with NSTEMI

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Objective: Relationship determining of ST2 plasma level and comparing it in patients with NSTEMI, determining of ST2 plasma level gradations.

Methods: We studied 90 patients with NSTEMI aged of 35 to 79 years (mean 60.7 ± 0.8 , median - 61, interquartile range 54 and 69). Plasma ST2 level was determined and analyzed in the NSTEMI group of patients, the gradations of the stimulating growth factor level (ST2) and the correlation with the character of coronary artery lesions were highlighted. The degree of damage to the coronary arteries was determined by the SYNTAX score. All of research corresponding to the principles of the Declaration of Helsinki of the World Medical Association.

Results: Using the variational statistics method, the ST2 level gradations group were selected. Thus, the relatively low level (RL) corresponded to less than 25, and the relatively high (RH) level of ST2 to more than 75 persons in the group, respectively. For patients in the main group, these levels were < 26 and > 56 ng / ml, respectively. Instead, the relatively moderate (or intermediate) ST2 level (RM) for these patients was 26-56 ng/ml (Fig. 1). Analysis of the anatomical damage of the coronary arteries showed a reliable relationship of a relatively high level of ST2 with atherosclerotic lesion of the left coronary artery (LCA) trunk, while a relatively moderate level of ST2 was determined in the case of lesions of the circumflex branch (CB) of LCA (Fig. 2). The highest degree of coronary artery stenosis was determined in patients with relatively high ST2 levels, while relatively low ST2 levels were observed in the absence of hemodynamically significant stenosis (Fig. 2).

Conclusion: 1. There are 3 groups of levels of stimulating growth factor in patients with NSTEMI: relatively low level (<26 ng / ml), relatively moderate level (26-56 ng / ml), relatively high level (> 56 ng / ml).

2. A relatively high level of ST2 was observed in the lesion of the LCA trunk, while a relatively moderate level of ST2 was determined in the case of the CB LCA lesion.

3. The level of ST2 with high probability allows to predict the severity and character of the lesion of the coronary arteries.

Fig. 1.

Conventionally selected ST2 level gradations	Patients number	Variational statistics indicators		
		Min -- Max	Mean \pm Standart error	Median (25 i 75 Percentile)
Relatively low level (< 26 ng/ml)	23	12,7-25,9	20,6 \pm 0,9	21,9 (17,1; 24,2)
Relatively moderate level (26-56 ng/ml)	44	27,4-55,3	37,9 \pm 1,2	36,2 (31,6; 43,8)
Relatively high level (> 56 ng/ml)	23	56,1-233,8	105,6 \pm 11,5	89,1 (70,8; 131,0)

Fig. 2

Fig.2

Anatomic lesions features of the coronary bed	4. RL level ST2	5. RM level ST2	6. RH level ST2	P
Patients number	23	44	23	--
A/p presence in the LCA trunk	1 (4,3%)	2 (4,5%)	6 (26,1%)	P1-3=0,04 P2-3=0,01
HSS in the CB LCA	4 (17,4%)	18 (40,9%)	8 (34,8%)	P1-3=0,05
Stenosis severity in points (by SYNTAX Score)	2 (1; 2)	2 (2; 3)	3 (2; 3)	P1-3=0,03
Absence of HSS of coronary artery	7 (30,4%)	5 (11,4%)	1 (4,3%)	P1-3=0,02

Notes:

1. A/p - atherosclerotic plaques, HSS - hemodynamically significant stenosis (> 50%), LCA - left coronary artery, CB LCA - circumflex branch of the left coronary artery; RL, RM, RH are relatively low, relatively moderate and relatively high, respectively;

2. Comparison of percentages between groups was performed by the criterion χ^2 , absolute values - by Kruskal-Wallis ANOVA & Median test.