Echocardiographic assessment of the left ventricular global wall motion score in patients with acute myocardial infarction and primary PTCA: two different designs and their relation to reperfusion.

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Background: The evolution of the left ventricular wall motion disturbances asessed by echocardiography often serves as a reference when angiographic and other reperfusion indices are evaluated in the setting of acute myocardial infarction (AMI) treated by primary PTCA.

Objective: To compare two different designs used for patient group definition when the 16 segment global wall motion score index (GWMI) is used for estimation of reperfusion indices: 1/ absolute cutoff value of the final GWMI; 2/ determination of the reversibility of left ventricular dysfunction.

Methods: Fifty six consecutive patients with AMI and successful PTCA < 12h (stents implanted in 93%, all LAD infarcts stented) are included. Three reperfusion indices were determined within 1h after the procedure: ST segment resolution (ST res)[1], corrected TIMI frame count (cTFC)[2], myocardial blush grade (MBG)[3]. Echocardiography was performed initially within 48h and finally (>=2 months). The global wall motion index was analysed using the 16-segment model of the American Society of Echocardiography with 6 basal, 6 mid and 4 apical segments[4]. A 4-grade scale for wall motion disturbances was utilized: 1 - normo- or hyperkinesia; 2 - hypokinesia; 3 - akinesia; 4 - dyskinesia or aneurysm[5,6]. Patients were divided in 2 groups according to the value of the final GWMI (GWMIf): Gr. Ia, n=17, significant LV dysfunction, GWMIf>=1,5; Gr. IIa, n=39, nonsignificant LV dysfunction, GWMIf<1,5. The same 56 patients were divided again according to the difference of the initial and the final GWMI (dGWMI) in other two groups: Gr. Ib n=12, irreversible LV dysfunction, dGWMI<0,15; Gr. IIb, n=44, left ventricular recovery, dGWMI>=0,15.

Statistical analysis: Continuous variables were presented as mean and standard deviation and analysed by ANOVA or Mann-Whitney test according to the normality of the variable distribution. Chi square and the two sided Fisher exact test were used for the analysis of categorical variables, although the data of MBG are presented as mean and standard deviation on the table.

Results are presented in Table 1.

Table 1. Reperfusion indices and patient groups

Gr	n	ST res	p	cTFC	p	MBG	p
Ia	17	43,1 +/-18,2		33,1 +/-12,2		1,3 +/-1,0 (n=15)	
IIa	39	61,3 +/-24,7	,002	24,1 +/-6,7	,110	2,7 +/-0,5 (n=35)	,000
Ib	12	36,5 +/-15,1		37,8 +/-11,1		0,9 +/-0,8 (n=11)	
IIb	44	61,0 +/-23,7	,001	23,8 +/-6,5	,000	2,6 +/-0,5 (n=39)	,000

Table legend: Gr - group, n - number, ST res - ST resolution, cTFC - corrected TIMI frame count, MBG - myocardial blush grade.

Conclusion: The patients with irreversible LV dysfunction represent a uniform group with severe impairment of reperfusion. The absolut cutoff value design does not allow the seggregation of patients with such a homogeneous reperfusion profile but reveals the advantage of MBG and ST res over cTFC.

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