

# Assessment of treatment effectiveness of cardiac patients with metabolic syndrome

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**Introduction.** Information about existence or absence of metabolic syndrome (MS) in the patient has limited value as it doesn't reflect degree of expression of metabolic disorders and, respectively, degree of risk of development of pathological process.

**Materials.** Ball assessment of deviation degree of the main and additional MS components was defined in 123 men hospitalized with the main diagnosis of hypertonic disease in therapeutic department. Patients were examined at the beginning of treatment and 14 days after.

Previously we have received the patent of the Russian Federation № 2444298 "Method of diagnosing the metabolic syndrome"

**The purpose of the study** was to analyze treatment effectiveness of patients with cardiovascular diseases using ball assessment of metabolic syndrome

**Table 1. The ball assessment of the degree of deviation of the main and additional components of the metabolic syndrome from reference values for men.**

№	Main components	Man				Interpretation of balls	
		Ball 0	Ball 1	Ball 2	Ball 3		
1	Abdominal obesity (WC/HC, c.u.)	<0,95	0,95 - 0,99	1,0- 1,04	≥1,05	Risk of MS development	Sum of balls
2	Hyperglycemia (fasting glucose, mmol/l)	<5,6	5,6 - 6,0	6,1 -6,9	≥7,0	Low	0,5 - 1,5
3	Insulin resistance (HOMA, c.r.)	<2,77	2,77- 3,70	3,71 -5,31	≥5,32	Moderate	2 - 3,5
4	Hypertriglyceridemia (triglycerides, mmol/l)	<1,7	1, 7 - 1,97	1,98 -2,67	≥2,68	High	4 - 5,5
5	High-density lipoprotein low level (HDL, mmol/l)	≥1,0	0,99 - 0,90	0,89 -0,80	<0,8	The risk of MS development was determined at the presence of less than 3 main components of MS and at the sum of balls less than 6.	
6	Arterial hypertension SAD, mmHg DAD, mmHg	<130 85<	130 - 159 85 - 99	160-179 100-109	≥180 ≥110		
	<b>Additional components</b>	<b>Ball 0</b>	<b>Ball 0,5</b>	<b>Ball 1</b>	<b>Ball 1,5</b>	<b>Severity of MS</b>	<b>Sum of balls</b>
7	Overweight (BMI, kg/m2)	<25	25-29,9	30-34,9	≥35	Light	6 - 8,5
8	Hyperuricemia (uric acid, mmol/l)	<401	401-440	441-468	≥469	Medium	9 - 11,5
9	Hypercholesterolemia (total cholesterol, mmol/l)	<5,0	5,0-5,6	5,7-6,3	≥6,4	Heavy	12 and more
10	Non-alcoholic fatty liver disease: Ultrasound signs, yes / no AST, U/l ALT, U/l	no <40 <40	yes <40 <40	yes and/or 40-59 40-59	yes >60 >60	MS was diagnosed at the presence of 3 main components at least and at the sum of balls more than 6.	

The effectiveness of treatment was assessed by change in the number of balls. Improvement (reduction from 1,5 and more), without changes (0±1,0), deterioration (increase from 1,5 and more).

**Table 3. The risk of development and severity of metabolic syndrome in patients before and after treatment.**

		Risk of MS development				Severity of MS			
		Low	Moderate	High	Sum	Light	Medium	Heavy	Sum
Before treatment	n	-	11	17	28	42	32	21	95
	%	-	8,9	13,8	22,8	34,1	26,0	17,1	77,2
After treatment	n	9	16	21	46	37	29	11	77
	%	7,3	13,0	17,1	37,4	30,1	23,6	8,9	62,6

**Table 4. Number of cases of improvement and deterioration of metabolic syndrome components in patients after treatment (n =123), %.**

Components	Improvement	Without changes	Deterioration
Abdominal obesity	13,8	86,2	0
Hyperglycemia	8,2	89,4	2,4
Insulin resistance	23,5	54,5	22
Hypertriglyceridemia	25,2	56,1	18,7
High-density lipoprotein low level	9,8	83,7	6,5
Arterial hypertension	57,7	42,3	0
Overweight	10,5	89,5	0
Hyperuricemia	12,2	77,2	10,6
Hypercholesterolemia	34,1	42,3	23,6
Non-alcoholic fatty liver disease	31,2	39,8	26
Metabolic syndrome	56,9	37,4	5,7

**Conclusion.** The employment of the method of ball assessment of degree of risk development and severity of MS, as a cluster of risk factors for the development of cardiovascular diseases allows to define efficiency of therapy objectively, to reveal pathogenetic significant components of the MS and to optimize the treatment of patients.