



CLINICAL AND ELECTROPHYSIOLOGICAL PARALLELS IN STRESS-INDUCED CARDIOMYOPATHY

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Summary

In recent years, great importance has been attached to the study of cardiomyopathies and, in particular, stress-induced cardiomyopathy (SCMP). SCMP is characterized by transient dysfunction of the left ventricle (LV), as a result of physical or mental stress with clinical signs of acute coronary syndrome (ACS), described mainly in postmenopausal women, signs of IHD, with a relatively favorable prognosis.

Keywords: stress-induced cardiomyopathy, clinical manifestations, electrophysiological disorders.

Relevance

Stress-induced cardiomyopathy (SCM) or takotsubo cardiomyopathy is a disease characterized by transient systolic dysfunction predominantly of the left ventricle, clinically manifested by acute myocardial infarction in the absence of coronary artery obstruction [1, 2].

Currently, one of the possible theories of the pathogenesis of MCMP is considered to be increased sympathetic-adrenal activity [1], followed by the development of catecholamine-induced multiple coronary spasm [2], coronary microvascular dysfunction, direct cardiotoxic effect of catecholamines (CA) and catecholamine stunning (stunning) of the myocardium [four]. The leading role is given to extreme or prolonged stress and the participation of CA in this process [4].

The aim of the study was complex study of clinical and electrocardiographic parallels in patients with stress-induced cardiomyopathy.

Material and Research Methods

Research and collection of clinical material was carried out on the basis of the cardiology departments of the clinics of the Andijan State Medical Institute.

Examined 6 patients with different clinical variants of the course of SCMP. The mean age of the patients was 64.21 ± 4.62 years. The comparison group consisted of 10 patients with a diagnosis of coronary artery disease AMI with Q wave, aged 61-75 years.





The criteria for verifying the diagnosis were the diagnostic criteria for SCMP of the European Council of Cardiology (ESC, 2016), including 7 criteria for the disease [4]. All patients were examined in the hospital. General clinical studies, ECG, EchoCG and MSCT of the heart were performed on the 1-5-10th day of admission to the hospital. All patients underwent coronary angiography.

Results

The main clinical parameters are presented in table. one.

Table 1
Clinical parameters of patients included in the study

Indicators	Control (n= 10)	SCMP (n= 6)	IHD, AMI with Q (n=10)
Men, %	2 (20.0%)	-	2 (20.0 %)
Women, %	8 (80.0%)	6 (100%)	8 (80.0%)
Age, years	65.2 ±5.0	67.21 ±4.62	65.15 ±5.62
SBP, mm Hg Art.	120.9 ±3.7	133.3 ±5.8	165.2 ±7.5
DBP, mm Hg Art.	83.2 ±2.1	89.3 ±4.0	105.1 ±3.2
Blood hemoglobin, g /l	112.2 ±3.8	91.1 ±3.1	108.6 ±3.5
creatinine , mmol/l	87.2 ±3.4	92.6 ±2.9	90.4 ±3.5
Transaminases : AST, mmol/l	0.25 ±0.02	1.2 ±0.06	2.28 ±0.37
PTI, %	82.5 ±2.7	95.2 ±5.3	109.4 ±6.8
Fibrinogen, mg/l	2390.2 ±35.1	4015.3 ±39.5	7555.6 ±52.8

Race showed that 2 races were present among patients with SCMP: Mongoloid – 5 patients (83.3%) and Caucasoid – 1 patient (16.7%). Among the examined SCMP there were 6 women (100%). The examined patients were aged from 61 to 75 years; the mean age in the group of patients with SCMP was 64.21 ± 4.62 years.

Among the complaints of SCMP patients were: acute retrosternal pain and/or pain in the left half of the chest (100% of patients), lasting 40-50 minutes, in 3 patients more than 60 minutes, not stopped by drugs (100% of patients); shortness of breath, aggravated by the slightest exertion (83.3%), suffocation (83.3%); palpitations and arrhythmias (80%); nausea, dizziness (50%), fainting (33.3%); 4 patients (66.7%) had signs of acute left ventricular failure. There were also signs of a vegetative syndrome – a wave of heat from the chest to the neck and head and a feeling of fear of death, swelling in the head and neck (100% of patients). In patients with coronary artery disease, AMI with Q, similar complaints were noted, but to a lesser extent (Table 2).



Table 2
The main clinical symptoms in patients with SCMP

Complaints	Patients with SCMP (n=6)		Patients with IHD, AMI with Q (n =10)	
	abs.	%	abs.	%
Cardiac Syndrome:	6	100.0	10	100.0
chest pain	6	100.0	10	100.0
irradiation of pain in the left arm, shoulder	6	100.0	10	100.0
pain duration >30 min.	6	100.0	10	100.0
pain relieved by drugs	6	100.0	10	100.0
AHF syndrome:	5	83.3	8	80.0
suffocation	4	66.7	8	80.0
dyspnea	5	83.3	8	80.0
Arrhythmic syndrome:	3	50.0	5	50.0
Dizziness	3	50.0	5	50.0
Syncope	2	33.3	-	-
Vegetative syndrome	6	100.0	3	33.3
heat wave from chest to neck	6	100.0	-	-
feeling of fear of death	3	50.0	3	33.3

The provoking factors in patients with SCMP were: the death of a loved one (50%), public speaking (25%), excitement, anxiety (25%).

Cardiac arrhythmias in patients with SCMP were presented: ventricular tachycardia – 66.7%, ventricular extrasystole – 16.7%, LBBB – 33.3%.

Electrocardiographic signs in patients with SCMP were: ST segment elevation in chest leads V2-V3-V4 – in 100% of patients; inversion and increase in the amplitude of the T wave – in 100% of patients; pathological Q wave – in 50% of patients; prolongation of the QT interval and pathological U wave – in 33.3% of patients; cardiac arrhythmias – in 83.3% of patients; depression of the ST segment in the inferior leads – not detected; an increase in the difference in ST segment elevation in lead II than in lead III in 100% of patients. A distinctive ECG sign of SCMP from AMI was a concordant change in the T wave and ST segment (100% of patients) [3]. Also, in these patients, there were signs of new criteria for differential ECG diagnosis of anterior MI and SCMP using inferior leads [3,4]: 100% of patients had no ST segment depression in the inferior leads, especially if ST segment elevation in lead II more than in lead III, which indicates the presence of SCMP [3] (Table 3).



Table 3
ECG changes in patients with SCMP

No.	Types of changes on the ECG	Patients with SCMP (n=6)		Patients with IHD, AMI (n= 10)	
		abs.	%	abs.	%
1.	ST segment elevation in leads V2-V3-V4 expressed moderate	6	100.0	ten	100.0
		-	-	ten	100.0
		6	100.0	-	-
2.	Inversion and increase in the amplitude of the T wave	6	100.0	ten	100.0
3.	Pathological Q wave	3	50.0	ten	100.0
4.	QT interval prolongation Pathological U wave	four	66.7	5	50.0
		2	33.3	2	20.0
5.	Heart rhythm disorders ventricular tachycardia ventricular extrasystole LBBB	6	100.0	eight	80.0
		four	66.7	eight	80.0
		one	16.7	one	10.0
		2	33.3	2	20.0
6.	ST segment depression in inferior leads	-	-	eight	80.0
7.	The increase in the difference in ST segment elevation in the resp. II than in resp. III	6	100,0	-	-

A distinctive feature in patients with SCMP was the rapid positive dynamics of ischemic-necrotic processes on the ECG. So, in comparison with the group of patients with AMI with Q, where positive changes were noted on the 10-12th day of the disease – this is the transition to the subacute stage of the process, in 100% of patients with SCMP the transition to the subacute stage was already noted on the 5-7th day of the disease. Positive ECG changes were accompanied by positive dynamics of the clinical process.

Conclusions

1. Among all patients with SCMP, postmenopausal women aged 61-65 years predominated. The main reason for the development of SCMP was a psychosocial stress factor.
2. The disease was manifested by signs of severe angina pain behind the sternum and shortness of breath (100% of patients); in 60% of patients with signs of AHF, cardiac asthma.
3. Electrocardiographically – signs of anterior MI with a Q wave are characteristic with ST rise, but with fast positive dynamics of the process.



Used Sources

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