

Results and discussion. Patients with HFrEF and HFpEF were comparable in age (59 [49; 69] vs 60 [55; 67] years, $p>0.05$), prevalence of coronary artery disease (20 (83%) vs 27 (87%), $p>0.05$), hypertension (19 (79%) vs 28 (76%), $p>0.05$) and diabetes mellitus (3 (13%) vs 4 (11%), $p>0.05$). However, patients with HFrEF were predominantly male (21 (87%) vs 20 (54%), $p=0.013$) and more often suffered from myocardial infarction (10 (42%) vs 8 (22%), $p=0.048$) than patients with HFpEF.

According to the results of ECG analysis, patients of both groups didn't have significant differences in QT interval dispersion (72 [62; 85] vs 68 [51; 84] ms, $p=0.46$) and JT interval dispersion (69 [51; 83] vs 66 [52; 78] ms, $p=0.60$). However, fQRS was more frequent in patients with HFrEF compared with HFpEF (9 (38%) vs 5 (14%), $p=0.03$) and spatial QRS-T angle was also larger in patients with HFrEF (127 [102; 158] vs 77 [39; 109], $p<0.001$).

Patients of both groups didn't have differences in T-wave alteration prevalence and R wave asymmetry ($p>0.05$).

Conclusion. Patients with HFrEF had higher values of ventricular depolarization parameters such as fQRS and spatial QRS-T angle ($p<0.05$) in comparison with patients with HFpEF. However, there were no intergroup differences in ventricular repolarization markers ($p>0.05$). Reliability of the obtained results should be further checked on larger samples of patients.

ЛИТЕРАТУРА

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TAKOTSUBO CARDIOMYOPATHY – THE BROKEN HEART SYNDROME

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Introduction. Takotsubo cardiomyopathy also referred to as stress induced cardiomyopathy is a condition that most commonly seen in post-menopausal women^[1] with an average age of 68 years^[2]. This form of cardiomyopathy is very uncommon and accounts for 0.7 to 2.7% of patients who present with acute coronary syndrome. It should be acknowledged that the overall incidence is suspected to be

much higher. The highest prevalence of this form of cardiomyopathy is mostly seen in the 7th and 8th decades of life ^[2]. The pathogenesis of the disease still remains unclear but is suspected to be caused by an acute elevation of stress hormones which results in apical ballooning of the left ventricle (that takes the shape of an octopus trap which translates in Japanese to tako-tsubo) ^[1] due to alterations that disrupt the cardiac tissue micro circulation as a result of micro vascular spasms or toxicity affecting the cardiomyocytes ^[3].

Aim of the study. To analyze patient complaints, clinical as well as corresponding findings in diagnostic methods and detailing the effective management implemented for the treatment of this patient with Takotsubo cardiomyopathy.

Materials and methods. The patient in this case study was examined at the Grodno Regional Clinical Cardiology Centre. Information for this rare syndrome was collected by analyzing the case history of this 74 years old female patient which includes daily dynamic observation of the patient by doctors and clinical, functional as well as laboratory investigations. Patient details are kept confidential, while the article is written anonymously.

Results and discussion. A 74-year-old woman presented at Mostovskaya Central District Hospital from where she was sent to State regional clinical hospital with the diagnosis of acute coronary syndrome (ACS). Her chief complaints included chest pain, tachycardia, nausea, and severe general weakness following a state of severe stress due to a fire in her residential building that was accidentally caused by her. On admission the patient underwent coronary angiography (due to previously diagnosed ACS). Coronary angiography results stated that both left coronary artery and right coronary artery were without visible pathology, pronounced tortuosity throughout and preserved blood flow (Thrombolysis in Myocardial Infarction – grade 3). Meaning that the entry and exit of the contrast solution (Omnipaque-350) from the microvasculature was normal. After exclusion of obstruction of coronary vessels, the patient was recommended conservative non-surgical therapy. Other diagnostics conducted include electrocardiography (Holter monitoring) – sinus rhythm, heart rate 50-90 beats per minute throughout the period of Holter monitoring stable, ST elevation in V1-V4 chest leads, transitional AV block 1st degree and PQ interval of 230ms. Echocardiography shows circular akinesis of the middle and apical segments of the left ventricular myocardium with hyperkinesis in the basal segment. The ejection fraction on admission was noted to be 31%. There is a decrease in systolic function of the left ventricular myocardium, mitral regurgitation 2nd degree, tricuspid regurgitation 3rd degree, moderate pulmonary hypertension. On admission, the highly sensitive troponin level was elevated to 10484 ng/l (normal range 0-29 ng/l). During hospitalization, the patient had dyspnea indicating signs of developing heart failure, serum N-terminal pro b-type natriuretic peptide (NT-proBNP) level was 8286 pg/ml (normal range 0-125 pg/ml), that progressively decreased over time along with highly sensitive troponin levels. The glomerular filtration rate of the patient was 76 ml/min/1.73m².

Takotsubo cardiomyopathy is managed mainly by empirical method and is individualized for each patient. Numerous reports suggest anticoagulant therapy in

some of these patients, whereas vasodilators such as calcium channel blockers, endothelin antagonists and adenosine are to become established in future trials ^[2]. Accordingly, this patient underwent inpatient treatment and early rehabilitation adapted to 3A mode. The patient was discharged and advised to avoid heavy physical activity and recommended a diet with limited animal fats, table salt, and easily digestible carbohydrates. Daily walking was encouraged.

The patient was given the following medications:

- aspirin 75 mg, 1 tablet per day (lunch);
- metoprolol 25 mg, 1 tablet 3 times a day under control of pulse rate (at least 50 beats/min) and ECG (assessment of AV conduction) dose adjustment of the drug according to indications;
- ramipril 2.5 mg, 1 tablet 2 times a day (recommended twice a day due to blood pressure lability);
- spironolactone 25 mg, 1 tablet per day (lunch);
- gastroprotective therapy courses (lansazole 30 mg, 1 capsule per day for 2-3 weeks in autumn/spring).

After a period of 3 weeks from the date of admission, the patient was discharged due to a satisfactory state and positive dynamics in health condition. ECG before discharge shows all ST segments in isoline and negative T wave in V3-V5. On echocardiography before discharge, zones of akinesis were absent and the ejection fraction was noted to be 48%. There was also a clear decrease in the levels of highly sensitive troponin and NT-proBNP in a background of effective treatment. These dynamics confirm the temporary nature of this condition with symptoms resolving in a matter of weeks.

Discussion. Takotsubo cardiomyopathy also known as transient left ventricular apical ballooning syndrome, Gebrochenes-Herz syndrome, Broken-heart syndrome, was initially explained in Japan ^[4]. Multiple pathogenetic mechanisms exist, but the exact cause is uncertain ^[2]. The most common clinical presentations include breathlessness, chest pain, dizziness, syncope and mimic an acute myocardial infarction ^[3]. Patients with Takotsubo cardiomyopathy often present after an episode of severe and heightened emotional and physical stress or after medical procedures.

Takotsubo cardiomyopathy is usually seen in post-menopausal women, that are in the 7th and 8th decade of their life, who present with acute coronary syndrome. It is common knowledge that Takotsubo cardiomyopathy is a diagnosis of exclusion that is made primarily following a coronary angiography to assist distinguishing it from ACS ^[1]. It is also necessary to detect a very characteristic association between unobstructed coronary arteries on angiography and apical dyskinesia in the initial stages of the disease in the case of the classic apical form of Takotsubo cardiomyopathy ^[2].

Diagnosis is usually made when patients with an acute myocardial infarction are found to have no coronary blockage. The following are included in the Mayo Clinic Diagnostic criteria ^[3]:

- 1) Transient dyskinesia of left ventricle mid segments.

2) Regional wall motion abnormalities beyond one single epicardial vascular distribution.

3) Absence of acute plaque rupture or coronary artery disease.

4) Modest level of troponin elevation or recent electrocardiographic abnormalities.

5) Absence of pheochromocytoma as well as myocarditis.

In accordance with the above-mentioned criteria, the patient upon admission underwent a coronary angiography that confirmed the absence of obstruction in both the left and right coronary arteries. The echocardiography that was carried out on the same day shows the presence of circular akinesia of the middle and the apical segments of the left ventricle myocardium with hyperkinesis in the basal segments. The ECG (Holter monitoring) shows stable ST-T changes, atrioventricular block 1 degree, PQ interval up to 230ms. Cardiac biomarkers indicate elevated levels of highly sensitive troponin and NT-proBNP. Normal blood pressure for age, absence of clinical features for pheochromocytoma such as headache, sweating, tremors as well as normal adrenal gland structure on ultrasound imaging, assisted in the exclusion of pheochromocytoma (plasma free metanephrine test was not carried out). Absence of a viral prodrome or fever greater than 38 degrees Celsius within the preceding 30 days assisted in the exclusion of myocarditis (Cardiovascular Magnetic Resonance imaging or Endomyocardial biopsy was not conducted).

Conclusion. Overall, Takotsubo cardiomyopathy, is a condition in which your heart muscle suddenly becomes weakened, usually due to severe emotional or physical stress. It was a diagnosis of exclusion in which coronary angiography was used to exclude the diagnosis of ACS and echocardiography was used to identify regional akinesia and dyskinesia of the left ventricle. Management was done with lifestyle modification and conservative therapy.