Case report

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POSTPARTUM CARDIOMYOPATHY IN THE CORONARY UNIT: A CASE REPORT

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Postpartum cardiomyopathy (PC) is a form of dilatative cardiopathy, an unclear etiology that occurs in previously healthy mothers. Criteria for diagnosing postpartum cardiomyopathy are based on heart failure from the last month of pregnancy up to 5 months after delivery, left ventricular ejection fraction (LVEF) <45%, absence of a known cause of heart failure, absence of heart disease before the last month of pregnancy and the absence of echocardiographically observed systolic dysfunction of the left chamber before pregnancy. The patient is placed in an intensive care unit. She complains of weakness, malaise, swelling and increased blood pressure. She was treated with medications, diuretics, an ACE inhibitor, a beta blocker and antiarrhythmics due to frequent episodes of ventricular tachycardia (VT) interrupted on 3 occasions by 100 J DC synchronous shock. The installation of a double chamber implantable cardioverter defibrillator was indicated, and it was implanted 5 days after the stabilization of symptoms.

Peripartal cardiomyopathy endangers the health of pregnant women and maternity. A clinical suspicion of the existence of a PC is extremely important for early diagnosis. Echocardiography with a PC is necessary for the diagnosis and monitoring of the course and outcome of treatment. Standard treatment for heart failure is recommended in patients with PC; however, the therapy should be adjusted taking into account the health of the fetus during pregnancy. Further research is needed to determine the pathophysiological mechanisms of this cardiomyopathy, biomarkers specific to the disease itself, effective treatments, and prevention measures for the emergence of a PC.

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Key words: *postpartum cardiomyopathy, implantable cardioverter defibrillator*

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Introduction

Postpartum cardiomyopathy (PC) is a form of dilated cardiomyopathy, an obscure etiology that occurs in a previously healthy woman in labor. It was first described in 1849 (1). So far, many risk factors for PC development have been defined, but the exact etiology is still unknown. Factors associated with the onset of the disease, based on studies to date, are: maternal age, multiparity, hypertensive disorders, pregnancy complications, multiple pregnancies, use of tocolytics, poverty, tobacco use, malnutrition, anemia during pregnancy, inflammation, viral myocarditis, abnormal immunologic abnormalities or hemodynamic response to pregnancy, apoptosis, hormonal abnormalities, impaired angiogenesis, increased oxidative stress. Its incidence shows marked geographical and ethnic variations. It is most commonly reported among women of African descent (2). Previous studies have evaluated the incidence of postpartum cardiomyopathy (PC) in 1 case in 1,455 live births to 1 case in 15,000 live births (3). Recovery rates range from 29% to 72%, while mortality rates range from 0% to 25%. In previous studies, patients were most often monitored only 6 to 12 months after diagnosis, and those who recovered after this time period were not further monitored (4).

Previous work has shown that PC can occur at any age, but its incidence is significant for women over 30 (5).

Criteria for the diagnosis of postpartum cardiomyopathy are based on cardiac weakness from the last month of pregnancy to 5 months postpar-

tum, left ventricular ejection fraction (LVEF) < 45%, no known cause of heart failure, absence of heart disease before the last month of pregnancy, and the absence of echocardiographically observed left ventricular systolic dysfunction before pregnancy (6).

Case report

Patient J. I., 32 years old, was admitted to the Clinical Center Niš, Clinic for Cardiology, because of general weakness, weight gain and high blood pressure, which was first registered the previous day (170/110 mmHg) in the Health Center. The patient denied earlier problems with the cardiovascular system, had three children, the last birth was one month before hospitalization. There were no heart patients in the family. She denied the existence of cardiovascular problems and illnesses until hospitalization. Until then, she had not used cardiac therapy.

After one day of hospitalization, the patient gave an anamnestic account of the appearance of swelling on both lower legs. The islands were doughy and most pronounced around the ankles. In the meantime, the patient reported shortness of breath and coughing with bleeding sputum, nausea, loss of appetite, heart palpitations. Auscultation of the lungs presented with impaired respiratory murmur with audible late-expiratory fissures on both basal sides. An ECG recording recorded sinus tachycardia, a heart rate of about 128/min, without changes in the ST segment, which would indicate ischemia. She was administered 40 mg furosemide injection every 12 h, 100mg Spironolactone orally at noon, 5mg Concor orally twice a day, 10mg Ramipril orally once a day, 20mg Controloc orally twice a day, and 40mg Clexane injection subcutaneously. Laboratory findings: platelet counts, transaminases, bilirubin, sodium, calcium, potassium, urea and creatinine were within the reference values, while B-type natriuretic peptide (GNP) and N-terminal precursor GNP (NT pro-GNP) were triple elevated. The B-type of natriuretic peptide was 1450 pg/mL, while NT pro-BNP was 4560 pg/mL, the C-reactive protein (CRP) was slightly increased 7.6 mg/L.

Echocardiography revealed a dilated left ventricle with diffuse hypokinesia of the left ventricle walls and decreased systolic function; the LVEF was 32%, with mid-level mitral regurgitation and slightly enlarged left atrial dimensions. On the tricuspid flap, moderate to severe regurgitation was observed with normal systolic pressure in the right ventricle, SPDK 30mmHg. A minimal amount of pericardial effusion was recorded in the pericardium.

During ECG monitoring, several episodes of VT duration over 60 sec were observed in the Intensive Care Unit, interrupted twice by a 100J synchronous DC shock in short-term general anesthesia. In addition to beta-blocker therapy, the patient was treated with amiodarone, first parenterally, and then 3x200mg orally a day. The patient was placed in the intensive care unit. The incorporation of a two-chamber implantable cardioverter defibrillator in secondary prevention of sudden cardiac death has been indicated (6), which was done after 5 days of symptom stabilization.

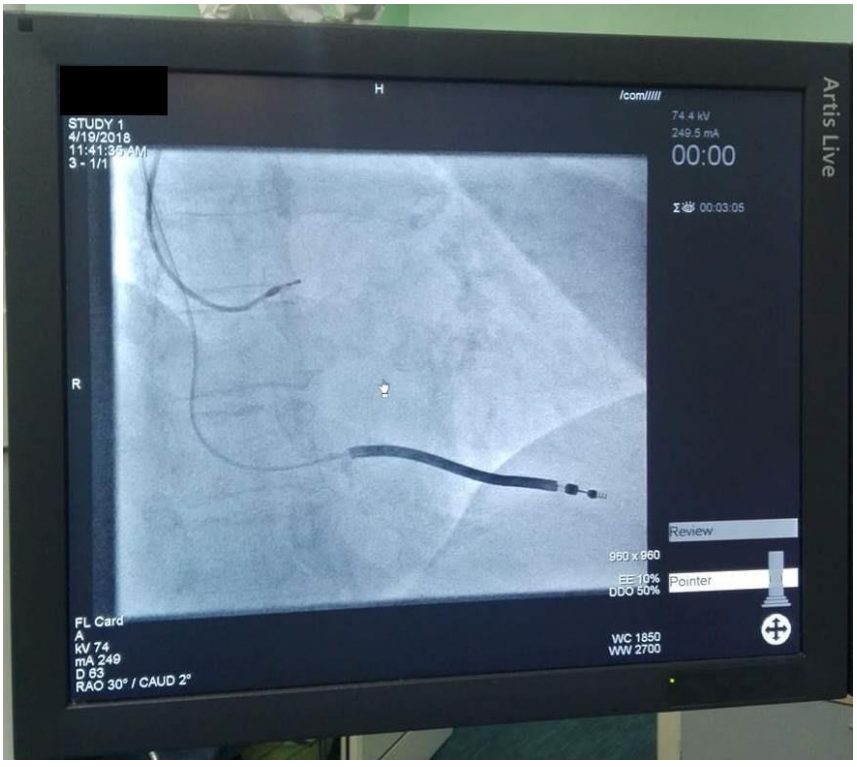

Figure 1. Implantation of a two-chamber implantable cardioverter defibrillator

A St. Judedevice was implanted, St. Jude Fortify Assura DR CD 2359-40C, with active electrode in 65cm long SJM Durata 7122 chamber and with passive electrode in 52cm long SJM Isoflex-Optim 1944 chamber. The fitting parameters were the following p wave 5mV, R wave 13mV, atrium threshold 0.6, ventricular threshold 0.5, atrial impedance 670Ω and ventricular impedance 850Ω (Figure 1).

In the further course of treatment, the patient was hemodynamically and rhythmically stable, cardiac compensated, without significant subjective problems by the cardiovascular system. The control echocardiographic finding is consistent with the previous one. On release, the patient was receiving ramipril at a dose of 5mg, furosemide 40mg on day II, spironolactone 25mg on day II, bisoprolol 5mg twice a day and magnesium once a day.

At the follow-up cardiac examination after 3 months, the patient stated that she was feeling well and had no similar problems after being discharged from the hospital. Routine laboratory assays as well as GNP were in the range of reference values (GNP 37 pg/mL). At the echocardiographic examination of the left ventricle of neat endocavitary dimensions and wall thickness, easily reduced global contractile function, LVEF 50%, left atrium of neat dimensions, mild mitral regurgitation (MR 1+) were present.

Other findings were without abnormalities. A shorter episode of non sustained VT was observed on the PM control. She continued to take 2.5mg Ramipril and 5mg Bisoprolol twice a day. The screening was scheduled for 3 months.

Discussion

Postpartum cardiomyopathy is a rare disease of young women with a poor prognosis. A wide range of prevalence values have been reported in various populations, such as 1 in 1149-4350 woman in labor in the United States, 1 in 1000 in South Africa, and 1 in 300 in Haiti (7, 8).

Diagnosis can often be masked by the fact that dyspnea, palpitations, and lower extremity edema, which are classic findings in PC, are relatively common in healthy pregnant and lactating women. (9).

Postpartum cardiomyopathy has been the focus of attention for the past 10 years. Recently, the first prospective registry for the monitoring of about 100 patients with PC was published. The European Association of Cardiologists (ESC), supporting the formation of the PC HFA Working Group in 2010, has significantly raised awareness of this condition through its website, creating dedicated sessions at the annual ESC Congress and supporting research into this condition. The PC Patient Registry is part of the association's significant EURObservational Research program. Data are collected not only in ESC Member States, but worldwide (10).

Peripartal cardiomyopathy threatens the health of pregnant women and women in childbirth. Clinical suspicion of PC is of great importance for early diagnosis. Echocardiography with PC is necessary to diagnose and monitor the course and outcome of treatment. Standard treatment for cardiac weakness is recommended in patients with PC, and according to the European Association of Cardiologists in the postpartum period includes an ACE inhibitor or angiotensin receptor blocker (ARB), a beta blocker and an aldosterone receptor blocker with diuretic, and ivabradine may be considered. The use of hydralazine, nitrates, beta-blockers and possibly diuretics is recommended in the prepartum period; however, therapy should be tailored to the fetal health during pregnancy (11). Further research is needed to determine the pathophysiological mechanisms of this cardiomyopathy, the disease-specific biomarkers, effective treatments, and prevention measures for the emergence of PC (12).

Conclusion

Our patient registers improvement in LVEF and withdrawal of subjective symptoms of cardiac weakness. Diuretics are excluded from therapy. Controls (including echocardiographic) are planned in 3 months and then every 6 months for up to one year, depending on the condition of the disease. There are no major randomized major studies (due to the low prevalence of the disease itself) that compare the success of treatment with ICD implantation in the primary prevention of sudden cardiac death compared with medication alone. There is consensus that ICDs should be implanted after 3 to 6 months in patients who have no increase in left ventricular ejection fraction (13). Please note that our patient's ICD is embedded in secondary prevention of ISS. Incorporating ICD early in primary prevention can even be detrimental (14). Holland (2009) found that only 0.03% of patients with ventricular arrhythmias had an ICD pacemaker implanted in the early disease period (15). Further research is needed in this direction.

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Prikaz bolesnika

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POSTPARTALNA KARDIOMIOPATIJA U KORONARNOJ JEDINICI – PRIKAZ SLUČAJA

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Postpartalna kardiomiopatija (PC) je oblik dilatativne kardiomiopatije, nejasne etiologije, koja se javlja kod prethodno zdrave porodilje. Kriterijumi za postavljanje dijagnoze postpartalne kardiomiopatije donose se na osnovu srčane slabosti nastale od poslednjeg meseca trudnoće do 5 meseci nakon porođaja, ejekcione frakcije leve komore (LVEF) < 45%, odsustva poznatog razloga za nastanak srčane slabosti, odsustva srčane bolesti pre poslednjeg meseca trudnoće i odsustva ehokardiografski uočene sistolne disfunkcije leve komore pre trudnoće. Bolesnica je smeštna u jedinicu intenzivne nege nakon trećeg porođaja, prirodnim putem, mesec dana pre prijema. Žali se na slabost, malaksalost, otoke i porast krvnog pritiska. Lečena je medikamentno, diureticima, ACE inhibitorom, beta blokatorom i antiaritmicima, zbog uočenih čestih epizoda ventrikularne tahikardije (VT), koje su u 3 navrata prekidane DC sinhronim šokom od 100 J. Indikovana je ugradnja dvokomornog implatabilnog kardioverter defibrilatora, što je nakon 5 dana od stabilizacije simptoma i urađeno.

Peripartalna kardiomiopatija ugrožava zdravlje trudnica i porodilja. Klinička sumnja na postojanje PC je od izuzetnog značaja za ranu dijagnozu. Ehokardiografija kod PC je neophodna za dijagnozu i praćenje toka i ishoda lečenja. Standardni tretman za srčanu slabost preporučuje se kod bolsesnika sa PC; međutim, terapiju treba prilagoditi imajući u vidu i zdravlje fetusa tokom trudnoće. Potrebna su dalja istraživanja radi određivanja patofizioloških mehanizama ove kardiomiopatije, biomarkera specifičnih za samu bolest, efikasnih tretmana, kao i mera prevencije za nastanak PC.

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Ključne reči: *postpartalna kardiomiopatija, implantabilni kardioverter defibrilator*