

FEBRILE CONDITION IN 23-YEAR OLD PREGNANT WOMAN**Asen Ivanov**“St. George” University Hospital – Plovdiv, Bulgaria, acevanov1988@gmail.com**Todor Gonovski**

Medical University – Plovdiv, Bulgaria, Department of Cardiovascular Surgery

tgonovski@yahoo.com**Hristo Stoev**

Medical University – Plovdiv, Bulgaria, Department of Cardiovascular Surgery

hristostoev87@gmail.com

Abstract: A 23-year-old woman in her 29th gestation week of pregnancy was admitted in Obstetrics and Gynaecology Department with symptoms of fever, dyspnea and shortness of breath. The blood test examinations showed significant leukocytosis and elevated c-reactive protein levels. Transthoracic(TT) echocardiography was performed showing severe mitral valve regurgitation with posterior cusp destruction confirming the diagnosis of infective endocarditis. The condition of the patient significantly deteriorated, and she was urgently transferred to the Cardiovascular Surgery Department for an emergent surgical treatment. She was admitted in the Intensive Care Unit with clinical signs of severe septic shock and severe left heart insufficiency. A consultation of gynaecologist was performed and fetal death in utero from fetal ultrasonography was diagnosed. A decision for an emergent simultaneous operation was taken. During the anesthesia induction the patient developed severe circulatory shock needing a cardiopulmonary resuscitation which restored the spontaneous circulation after one minute. At first, before heparinization sectio parva was performed confirming the diagnosis of fetal death. During the cardiac operation after the cardiopulmonary bypass(CPB) institution, mitral valve replacement and inspection of the tricuspid valve was performed. The CPB was discontinued with three catecholamine support. In the postoperative period she was febrile with severe multiple organ system failure(MOSF) manifestation, generalized single tonic-clonic seizure and in the following hours three seizures with focal onset(muscle contractions in the right facial half) were observed. On the postoperative day(POD) 2 she developed clinical signs of blue discoloration of the distal phalanx of the left foot. Doppler ultrasound examination showed subtle pulsations on the left dorsal pedal artery. Ultrahemofiltration with antiseptic filter was performed for cytokine removal. In the following days the condition of the patient improved. She was extubated on POD 4, transferred to the post-operative department on POD 7 and discharged on POD 23. Despite advances in medicine, the treatment of the infective endocarditis is associated with high mortality and complication rates. Multidisciplinary collaboration is crucial for achieving the best outcome.

Keywords: Infective endocarditis, pregnancy, cardiac surgery, mitral valve replacement.

CASE PRESENTATION

We present a case of 23-year-old woman in 29th gestation week of her second pregnancy admitted in Obstetrics and Gynaecology Department with four weeks history of intermittent fever, dyspnea and shortness of breath. She has one previous healthy term pregnancy without any complications. On admission the laboratory test examinations(Table 1) showed significant leukocytosis and elevated c-reactive protein levels.

Hemoglobin	137 g/l
Hematocrit	0.40 L/l
Erythrocytes	4.73 g/l
Leucocytes	28.5 g/l
Platelets	204 G/l
Total cholesterol	3.7 mmol/l
Triglycerides	1.03 mmol/l
Total protein	79 g/l
Albumin	42 g/l
Creatinine	96 µmol/l
Urea	5 µmol/l
Total bilirubin	19.9 µmol/l
Protrombin time	77.9 %
Fibrinogen	4.7 g/l
Glucose	9.8 mmol/l

Table 1: Laboratory test results;

TT echocardiography was performed showing left ventricle ejection fraction(LVEF) of 67% and severe mitral valve(MV) regurgitation with posterior cusp destruction suspected for an infective endocarditis(IE) diagnosis. The condition of the patient significantly deteriorated, and she was urgently transferred to the Cardiovascular Surgery Department. She was admitted in the Intensive Care Unit with clinical signs of severe septic shock, severe left heart insufficiency with blood pressure of 75/50mmHg, heart rate of 130bpm. She was intubated, central venous catheter was inserted and catecholamine support with dopamine was initiated. A consultation with gynaecologist was performed and fetal death in utero from fetal ultrasonography was diagnosed. A decision for an emergent concomitant operation was taken and the patient was transferred to the operation theatre. The calculated EuroSCORE II (European System for Cardiac Operative Risk Evaluation) of the patient was 26.3%. During the anesthesia induction the patient developed severe circulatory shock needing a cardiopulmonary resuscitation which restored the spontaneous circulation after one minute. Second catecholamine (dobutamine) was initiated. Transesophageal echocardiography was performed(Figure 1) revealing severe MV regurgitation with posterior cusp destruction.

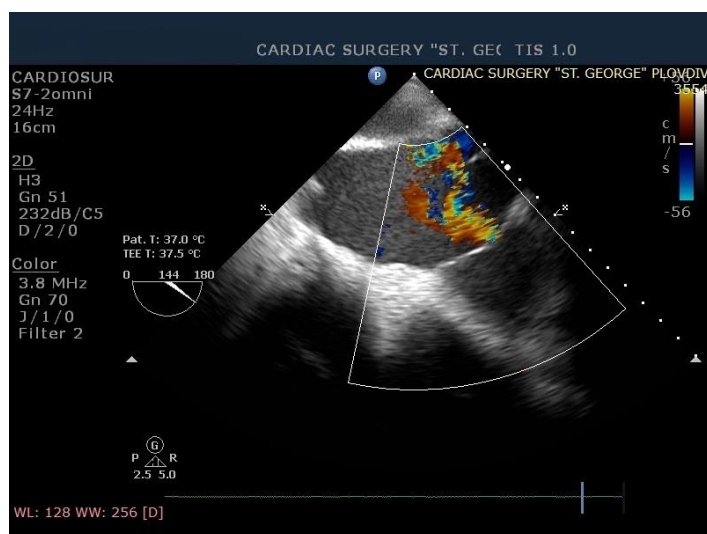


Figure 1: Transesophageal Echocardiography performed preoperatively;

Initially before heparinization, sectio parva was performed confirming the diagnosis of fetal death. After median sternotomy and CPB institution on mild hypothermy and cold crystalloid cardioplegia induced antegrade through the aortic root, the MV was exposed via left atriotomy approach. On inspection, the MV was found with destructed posterior cusp and multiple vegetations in both anterior and posterior cusps. The infected tissues were excised, specimen for microbiology investigation was collected and 33mm mechanical valve LivaNova Carbomedics(LivaNova, Saluggia, Italy) was implanted. The tricuspid valve was inspected via right atriotomy and was found without any remarks. The CPB was terminated with triple catecholamine support of dopamine, dobutamine and norepinephrine. The total CPB time was 58min. and cross-clamp time was 32min. In the postoperative period she was febrile with manifestation of MOSF. Generalized single tonic-clonic seizure and in the following hours three seizures with focal onset(muscle contractions in the right facial half) with duration of 2-3min. were observed. Intravenous citicoline in dosage 1000mg/twice daily was initiated. Computed tomography scan was performed(Figure 2) revealing ischemic brain stroke most possibly due to a septic embolization in the region of the left middle cerebral artery.

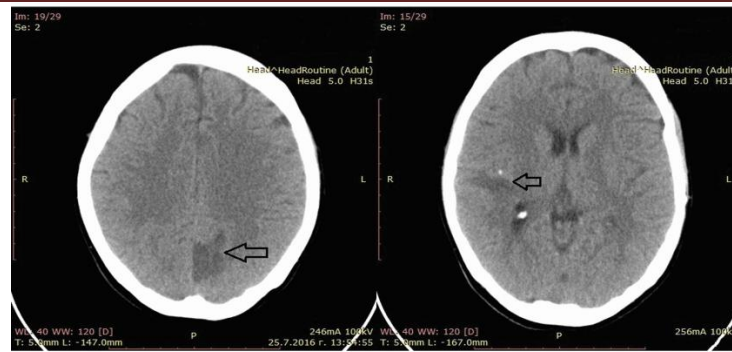


Figure 2: CT Scan performed on POD 2;

On the POD 2 the patient remained febrile despite the triple antibiotic treatment with meropenem 1000mg/thrice daily, vancomycin 1000mg/twice daily and amikacin 1000mg/daily. In the following hours she developed clinical signs of blue discoloration of the distal phalanxes of the left foot. The patient was consulted by vascular surgeon revealing subtle pulsations on the left dorsal pedal artery from Doppler ultrasound examination. Conservative therapy with intravenous pentoxifylline in dosage 500mg/twice daily and prostavasin in dosage 20µg/twice daily was immediately initiated. Ultrahemofiltration with antiseptic filter oXiris(Baxter) was performed for endotoxin and cytokines removal.

In the following days the condition of the patient improved with no new episodes of seizures, and improvement in the vascular pathology. The abdominal and mediastinal drainages were removed with an estimated total blood loss of 100ml and 460ml respectively.

E. faecalis and coagulase-negative *S. aureus* were isolated from the excised valvular tissue material and blood culture samples, sensitive to meropenem and vancomycin. The patient was extubated on POD 4 while the catecholamine support was gradually reduced and stopped on the POD 6. She was transferred to the post-operative department on POD 7 and discharged on the POD 23 on medical therapy with acenocoumarol(individualized scheme), furosemide 40mg/daily, metoprolol 25mg/twice daily and levofloxacin 500mg/daily for 7 days. On discharge there were no remaining signs of vascular pathology and no focal neurological signs except bradylalia. On the follow-up examination one week after the discharge the TT echocardiography revealed impaired LVEF of 33%, normally functioning MV prosthesis without pericardial and small pleural effusion in the right hemithorax. She reported for a single short subfebrile period of 37.6°C. On the second follow-up examination six months after the discharge she was doing well, afebrile with normally functioning MV prosthesis and LVEF of 62%.

DISCUSSION

Despite advances in medicine, the treatment of the IE is associated with high mortality and complication rates. And when it comes to pregnant women – the situation is even more dramatic. The incidence of IE in pregnant women is very low – around 0.006% in patients without congenital heart diseases(CHD) or acquired valve diseases and around 1.2% in patients diagnosed with CHD or acquired valve diseases¹. However, it is associated with very high maternal(11-33%) and fetal(14-29%) mortality rates².

The diagnostic criteria and management options in pregnant women are identical to those of the general population. The diagnosis is most common during the third trimester of pregnancy.

Around 50% of the patients are suitable for surgical treatment during the hospitalization. Hence early consultation with a cardiac surgeon is essential and in many cases can be a life-saving action.

The manner and timing in which the treatment should be provided still are and will remain highly disputable. When the condition of the patient is life-threatening, the decision is always for an urgent single-stage procedure, as it was in our case³. The most common reasons for an urgent surgical treatment are cardiogenic shock, refractory heart failure due to acute valve regurgitation as well as high risk of cerebral and peripheral embolism events³. Whenever possible, valve repair is always preferred to the valve replacement⁴. In our case it was not feasible to preserve the native valve. Valve replacement surgery in patients with active infection is associated with a higher risk of prosthetic valve endocarditis and dehiscence.

Regarding the prosthetic valve selection criteria, it is well known that mechanical valves offer long-term durability and superior haemodynamic performance compared to tissue valves especially in mitral position. However, the need of anticoagulation increases the risk of maternal and fetal mortality and morbidity^{5,8,9,10}. Switching from vitamin K

antagonists(VKA) to low molecular weight heparin is an option but is lacking adequate randomized trials⁶. Therefore, VKA still remain the safest regimen preventing valve thrombosis^{5,7}.

IE remains rare but life-threatening infection during pregnancy. Decision-making in individual patients with IE will remain crucial. Multidisciplinary collaboration is mandatory for achieving the best outcome.

Conflicts of interest: The authors have no conflicts of interest to declare.

Patient consent to publish: Obtained.

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