

A case of Mitral valve replacement with Neurologic Manifestations during Pregnancy

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ARTICLE INFO	ABSTRACT
<p>Article type: Case Report</p> <hr/> <p>Article history: Received: 24-Jan-2016 Accepted: 14-Feb-2016</p> <hr/> <p>Keywords: Mitral valve replacement Pregnancy</p>	<p>Introduction: Cardiopulmonary bypass in pregnant patient is considered a high-risk procedure. Maternal mortality is similar to that of the non-pregnant females about 1.5-5%. Variations in the timing of surgical intervention, gestational age, maternal health status, perfusion protocol, and pharmacologic therapy are all factors that can influence fetomaternal outcome.</p> <p>Case Report: We present a case of 26-year-old pregnant woman (G1, Ab0, D0) in gestational age of 36 weeks with sudden CVA and neurological sequelae (disarthria, paresthesia of right side of face). In her past medical history, she had no positive history of neurologic problems, diabetes mellitus, hyperlipidemia or cardiovascular diseases. Left perisylvian encephalitis was reported in her brain MRI. In trans-thoracic echocardiography moderate Mitral Regurgitation (MR), severe mitral stenosis with gradient of 9mmHg, and valve surface of 1cm² was observed. In obstetrics consultation, a healthy male fetus with approximate gestational age of 37 weeks was reported. Finally the pregnancy ended by caesarean section under general anesthesia, with presence of cardiologist and a healthy newborn was delivered at age of 37 weeks. Four days after caesarean section, Mitral Valve Replacement (MVR) was measured which proceeded successfully.</p> <p>Conclusion: Due to the risk of further neurological complications in a pregnant mother who suffers from mitral valve stenosis, provided the gestational age permits harmless termination of pregnancy, it is possible to perform the mitral valve replacement procedure during the same hospital stay after termination of pregnancy.</p>

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Introduction

Heart diseases are estimated to occur in 0.5 to 1.0% of pregnancies, and they contribute to increased maternal-fetal morbidity and mortality rate (1).

Pregnancy imposes significant stress upon the cardiovascular system, with increase in cardiac output as a result of increased preload and heart rate.

Uterine blood flow is typically 3% of the cardiac output during the first trimester and increases to 10-15% during the third trimester.

Surgical intervention in the presence of acute heart failure and decompensation in a gravid patient with heart disease requires significant consideration.

Medical therapy remains the choice treatment approach to reduce fetomaternal risks (2).

On the other hand, cardiopulmonary bypass was first utilized for pulmonary valvotomy and closure of an

atrial septal defect at six weeks gestational age. The incidence of heart disease during pregnancy globally ranges from 0.4% to 4.1% (3).

The maternal mortality rate in patients undergoing cardiopulmonary bypass is consistent with that of the non-pregnant females (4, 5).

It is worth noting that neonatal mortality is 90% at 25 weeks gestational age, but decreases to less than 15% by week 30 (6).

Open heart surgery is seldom an issue in the gravid woman with heart disease, even less so in those with congenital heart disease (7). In this paper we presented a 26-year-old pregnant woman admitted with neurologic symptoms.

Case

A 26-year-old pregnant woman (G1, Ab0, and D0) in gestational age of 36 weeks was referred to our teaching hospital. Based on imaging findings, the patient was referred to neurology service. The neurologic findings were Broca aphasia, dysarthria, right facial nerve paresthesia and paralysis of right side of the body. Her chief complaint was dysarthria and paresthesia of the right side of the face and mobility limitation in right upper limb from 24 hours before admission. In past medical history she has no positive history of neurologic problems, diabetes mellitus, hyperlipidemia or cardiovascular diseases. Her pregnancy periods until the time of onset of aforementioned symptoms have been with no health problems. In brain MRI, left perisylvian encephalitis was reported. Trans-thoracic echocardiography showed moderate Mitral Regurgitation (MR), severe mitral stenosis with gradient of 9 mmHg valve surface of 1 cm², sinus rhythm, ejection fraction of 50%, normal right atrium and ventricle, dilated Left atrium without clots and normal left ventricle. The laboratory findings of her are listed in table 1.

Table1: Laboratory findings

Urea	28 mg/dl	Na	137 mmol/L
Creatinine	0.8 mg/dl	K	4.1 mEq/L
WBC	13300 mcL	SGOT	37 U/L
Platelet	124000 mcL	SGPT	30 U/L
Hb	11.9 g/dl	T Billirubin (Direct)	1 (0.4) mg/dL

On 31 May, 2014, the laboratory findings had no protein in urine and the other tests: ESR=50, WBC=11/94, LDH= 825 and CRP=positive.

The result of echocardiography is as follows: EF=50%, severe MS, moderate MR and moderate pulmonary hypotension. After consulting with the cardiologist patient was admitted to neurology intensive care unit and was started on heparin infusion at 1000 IU/h.

After consulting the Gynecologist, cesarean section was carried out first and then, she delivered her baby in full health. 4 days later, the patient underwent cardiac surgery for Mitral Valve Replacement (MVR). But management of this case had several challenging issues.

Surgical procedure

After P&D under GA median sternotomy was undertaken. Heparinizing 3mg/kg-ACT>480 s, long pericardiectomy was done. After cannulation of ascending aorta & SVC & IVC, CBP was established.

Systemic hypothermia (33 degree C) was initiated.

Aorta cross clamped. Infusion of cold cardioplegic started and followed by cardiac arrest. After left atrium opening, severe calcified MS was visualized. MVR was done by mechanical carbomedics no.27. Ascending

aorta condition was normal. Progressive rewarming was started, heart deaired and aorta unclamped.

Epicardial pacing wire was inserted. Weaning of the patient from CBP was successful. decannulation and achievement of hemostasis, followed by placing and fixing of the drains. Sponge count was correct, pericardium was left open, and sternum closed by steel wire no 7.

Skin closed and there was no problem on transport of patient to ICU.

Discussion

Cardiac surgery during pregnancy has been reported successful by many authors. In 1961, Leye reported successful repair of infundibular aortic valve stenosis with fetal survival (8).

In our case there was some serious challenges, first challenge was selecting time of delivery and time of MVR surgery. Finally, Caesarean section was performed under general anesthesia. Term male infant weighing 3600 g, Apgar score of 8-9, and cephalic position was born. After 4 days MVR surgery was done.

Second challenge was selecting the best time of valve replacement surgery; two options were available, performing the valve replacement surgery during initial hospitalization or some weeks after patient discharge. Due to high risk of recurrent cerebrovascular accident the surgery was performed during initial admission for delivery. Another question was selecting the type of valve (mechanical or biologic), due to lack of interest in further childbearing, So we select mechanical valve. Four days after cesarean section MVR was conducted.

The patient had severe mastitis in the first weeks in post-partum period that was successfully managed and in the last visits the patient and baby were healthy.

In neurologic examination the force of right upper limb was 4/5 and aphasia was recovered and just a mild facial paresis was remained.

The condition of this patient was complicated, so, we were in doubt regarding the time of ending pregnancy.

Besides, there was no clue to select the best method of delivery due to cardiac problems.

Finally, the pregnancy ended by cesarean section under general anesthesia with presence of cardiologist and a healthy newborn was born at age of 37 weeks.

Conclusion

Due to the risk of further neurological complications in a pregnant mother who suffers from mitral valve stenosis, provided the gestational age permits harmless termination of pregnancy, it is possible to perform the mitral valve replacement procedure during the same hospital stay after termination of pregnancy.

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