



Pregnancy in a patient with univentricular circulation: A case report and literature review

Ayşe Zehra Ozdemir^a, Hasan Ulubasoglu^b, Davut Guven^{a*}

^a Department of Obstetrics and Gynecology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

^b Department of Obstetrics and Gynecology, Dr. Munif Islamoglu State Hospital, Kastamonu, Turkey

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ABSTRACT

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Univentricular heart is a complex congenital heart disease. With pregnancy, the complexity of this disease increases and it has many risks for fetus and mother, including maternal mortality. A pregnant woman has univentricular heart has a healthy pregnancy and delivery period which is a rare medical event.

* Correspondence to:

Davut Guven

Department of Obstetrics and Gynecology,

Faculty of Medicine,

Ondokuz Mayıs University,

Samsun, Turkey

e-mail: dguven@omu.edu.tr

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1. Introduction

In pregnancy, congenital heart diseases are more common than acquired one in developed countries (Pitkin et al., 1990). With the progress in surgical and medical management of pediatric congenital heart disease, patients can reach the childbearing age. Univentricular heart is a rare congenital heart disease mixing of pulmonary and systemic circulation in ventricle level. Hemodynamic changes during pregnancy makes a full term pregnancy rare and threatens these patients' life (Buckland and Pickett, 2000). We herein report a case of pregnancy in a patient with univentricular circulation.

2. Case report

We present a 27 year old primigravida who has an univentricular circulation (Fig. 1). In her past medical history, at the second month of her life her parents noticed her voice fall at the time of crying, cardiac catheterization showed an univentricular heart and transposition of great vessels with pulmonary stenosis. She regularly visited her pediatric cardiologist and any cardiac surgery wasn't considered to this case and transplantation was excluded, she was generally asymptomatic and her exercise tolerance is well but she sometimes troubled with dyspnea, cardiac pain, syncope and arrhythmia episodes, and sometimes she needed

hospitalization and medication for these problems. Her doctor strongly warned her about pregnancy and when the pregnancy was confirmed the doctor repeated the danger of this pregnancy in her own life, and related obstetric problems such as: Miscariage or preterm delivery. The patient chose to continue the pregnancy. She was regularly seen by an obstetrician and a cardiologist. She was anticoagulated with enoxaparine during her pregnancy. She sometimes troubled with arrhythmia but didn't need any medication.



Fig. 1. Univentriculer which is not separated by a septum: Echocardiographic imagine

The fetus was assessed regularly with growth measurements and flow velocity of umbilical artery and amniotic fluid. A detailed fetal ultrasonographic scan was performed to exclude any cardiac anomaly at 20th week. At 31th week of gestation the abdominal circumference of fetus is 0.1 percentil, biparietal diameter, and femur length was consistent with 31th week, so that an asymeric intrauterine-growth restriction (IUGR) was confirmed and 24 hours after administration of second dose of celestone, an elective caesarean section performed, anesthesiologist were informed about this, and finally she gave born a female 1460 gram infant with Apgar score 7-8.

The patient didn't need intensive care unit at the end of the surgery, but the baby because of respiratory distress sendrome (RDS) transferred neonatal intensive care unit, postoperative anticoagulation continued and the patient was discharged successfully six days after her surgery, the baby stayed in neonatal intensive care unit because of RDS but no congenital heart disease was detected.

3. Discussion

Univentricular heart accounts for 3.2% of congenital cardiac abnormalities (Theodoridis et al., 2005). It is a circulation that systemic and pulmonary venous return mix in single ventricle (Bernstein, 2008). If the patient maintains balanced systemic and pulmonary circulations, the patient survives without any operation.

Pregnant women with congenital heart disease have some maternal and fetal risks and it is very important to predict which patient has increased risk for maternal and fetal complications.

A study by Presbitero et al. (1994) examining the outcomes of 96 pregnancies in 44 women with a variety of cyanotic congenital heart disease (CHD) reported that the arterial oxygen concentration at rest (>85%) and the hemoglobin concentration at the beginning of pregnancy (<20 g/dL) are the main determinants of live birth. Values of our case were the arterial oxygen concentration at rest (90-95%) and the hemoglobin concentration at the beginning of pregnancy (15-16 g/dL).

They noticed that women with CHD can continue their pregnancy with low risk for them but there is a high incidence of miscarriage, premature births, and low birth weights (Presbitero et al., 1994). Values in our case were compatible with the literature and birth has achieved with multidisiplinary approach.

Risk of any congenital heart disease in fetus is 3%-6% up to a 10-fold increase over the general population (Siu and Colman, 2001). So a detailed fetal ultrasonographic scan is very important.

In a prospective study of pregnancy outcomes in women with heart disease; no association between the type of delivery and peripartum cardiac event rate was found (Burn et al., 1998).

Vaginal delivery is recommended for patient who has univentricular heart (Cunningham et al., 2010). But some obstetric indications make cesaerean more common in these pregnancies, in our patient an asymmetric IUGR and unfavorable cervix are the indications.

Congenital heart disease patients may survive relatively long times so it is very important to learn more about a pregnancy complicated with maternal congenital heart disease.

If our knowledge about these pregnancies increase, a multidisiplinary management including a cardiologist, obstetrician and obstetric anesthesiologist will encourage this patient for pregnancy.

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