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Complete Heart Block in Pregnancy and Manual Removal of the Placenta After Vaginal Delivery

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INTRODUCTION

Management of the risk for cardiovascular and obstetrical complications is difficult in pregnant women with complete heart block. Complete congenital or acquired atrioventricular block can detected for the first time during pregnancy and delivery but only few cases have been reported in the literature. The first case was reported in 1914 by Nanta [1]. The acquired variety is very rare during pregnancy as this type is mostly seen after 50 years of age[2].During pregnancy acquired heart block may be due to myocarditis, collagen vascular diseases ,following infective endocarditis of aortic valve with root abscess or as a complication of cardiac surgery. In acquired heart block, heart rate is usually 40 or less per minute with wide QRS in ECG. They are usually symptomatic with temporary loss of consciouness in the form of presyncope or syncope[3]. The prognosis is generally worse, but ultimately depends on the underlying cause [4]. Complete atrioventricular block detected for the first time during pregnancy is usually congenital. With an incidence of 1 in 20,000 live born infants [5],congenital complete atrioventricular block is a rare disease. The aetiology is not completely understood. However, complete atrioventricular block may be isolated or combined with congenital heart diseases in up to 53% of affected individuals[6] It may be caused by cardiac malformations or damaged by maternal antibodies .Family history of complete atrioventricular block is one of the risk factor for congenital atrioventricular block [7-8].

CASE REPORT

A 36-years -old multiparity women, in the 40 weeks of her fourth pregnancy was admitted in the hospital due to frequent contraction and probable immediate delivery. She had three normal vaginal delivery. She had presented weeaknes and vertigo at 19 weeks of this pregnancy.The electrocardiogram during that time of pregnancy showed sinus bradycardia in which not every narrow QRS complex followed a P wave, suggestive of Complete Heart Block.She was diagnosed with congenital complete heart block for the first time during 20 weeks of this pregnancy. Transthoracic echocardiography showed left atrium and ventrikul mildy increased, an ejection fraction of 60%, no regional wall motion abnormalities and mild mitral valve insufficiency. A Holter monitoring at that time of pregnancy showed a Complete Heart Block with longest pause duration of 2.5 second. She deneid any complaint before pregnancy and she had no evidence of prior ECG during other pregnancies. She did not have syncope,palpitations and dyspnea on efforts, besides fatigue in late pregnancy. She had no known history of heart disease or any other illnesses.A permanent pacemaker was not implanted because she presented no more symptoms and together with her husbend refused the procedure. Their third child 5 years old had been diagnosed with Down Syndrome and they were worried about the risks for the fetus. The morphology echography of the fetus showed no abnormalities. After that time she had no rregular antenatal check ups at a local hospital with no follow-up in the third trimester. During her present pregnancy she referred that remained asymptomatic besides fatigue in last days.On physical examination heart rate was 42 beats/minute, blood pressure was 130/70 mmHg . Her electrocardiogram(ECG) showed complete heart block with heart rate 42 beats/minute , and the QRS duration102 ms, (as can be seen in Figure 1"),

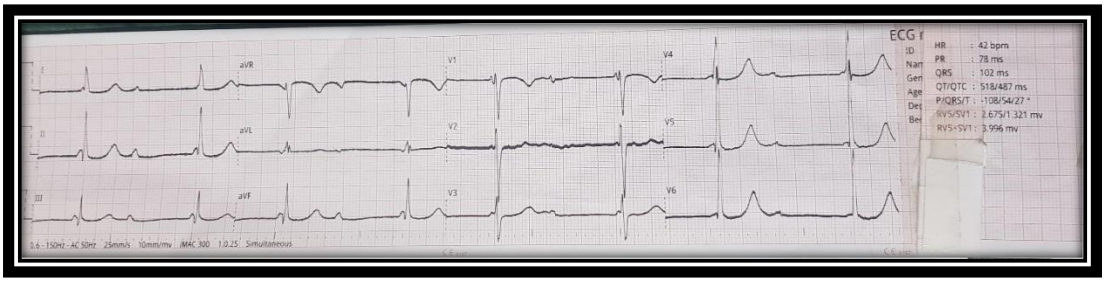

Figure-1. ECG showed Complete Heart Block with heart rate 42 beats/minute , and the QRS duration102 ms .

Respiratory system examination was normal. Obstetric examination showed term size uterus with fetus in cephalic presentation with regular uterine contractions, os was 4 centimetres dilated, cervix was effaced and membranes were intact. The cardiotocography had recorded regular fetal heart rate about 142 beats/minute. An doppler ultrasound showed a fetus about 3 kg with good biophysical profile .Her fetus had normal development, with no signs of growth retardation. Routine blood test results were all within normal limits. After consulting together cardiologist, anaesthetist and obstetrician we waited for spontaneous onset of labour under continuous ECG monitoring, pulse oximeter and and noninvasive blood pressure. Patient and her husband were properly explained the condition. During active labour heart rate dicreased to 38/minute once but it responded to atropine and hemodynamics remained stable. A healthy female baby of 3200 gram with normal Apgar score and normal heart rate was delivered. Her vagianal delivery was complicated with postpartum hemorrhage due to atony of the uterus. The placenta had not been expelled 30 minutes after delivery and manual removal of the placenta should be carried out under anaesthesia. Both minimal sedation with low doze fentanyl and propofol was administrated intravenously and an injection of the local lidocaine around the cervix. During that time the women responded normally to verbal communication and cardiovascular functions ,airway reflexes were unaffected. A successful attempt was made to remove the placenta manually. The estimated total blood loss was approximately 700 mililitres.The average heart rate of women remained at 48-60 beats/minute with intravenous injection atropine. Approximately 1800 mL of ringer's lactate solution was infused. The patient was transferred to the Intensive Care Unit for better continuous monitoring. During the postpartum period of hospital stay patient had no symptoms of complete atrioventricular block. The baby had normal sinusal rhythm. The patient was discharged stable on fourth postpartum day and advised to continue follow-up in cardiology. Follow-up for next 2 months was uneventful, and she is still under regular follow-up.

DISCUSSION

Guidelines for implantation of cardiac pacemakers have been established by a task force formed by the American College of Cardiology,the American Heart Association the Heart Rhythm Society[9] and The European Society of Cardiology[10].A pacemaker is indicated in the presence of symptoms like syncope, chest pain, dyspnea, palpitations, heart rate less than 40/minute,Q-T interval prolongation, wide QRS complex, ventricular dysfunction, or heart failure[11].Temporary transvenous pacing is traditionally an emergency procedure to stabilize patients suffering from hemodynamically unstable bradyarrhythmia.[12]. In patients with bradycardia and indications for pacemaker implantation, the importance of shared decision making and patient-centered care is endorsed and emphasized in this guideline in which treatment decisions are based not only on the best available evidence, but also on the patient's goals of care and preferences [9]. Women with complete atrioventricular heart block without a permanent pacemaker normally receive temporary pacing for labour and birth[12]. pacemakers have been inserted for labour and caesarean delivery probably to withstand any haemodynamic variations.Temporary pacing before delivery appeared to be beneficial for women in same cases [13]. But review of cases for temporary pacemaker showed that the insertion of temporary pacemaker is not without risk. In patients with temporary pacemaker for bradyarrhythmias during the waiting period for permanent pacemaker implantations,bedrest might not prevent adverse events, such as cardiovascular events and complications associated with temporary pacemaker[14].

Complications such as irradiation, bleeding, infection or embolism,malfunction leading to sudden hemodynamic instability are common[15].Now guidelines for management of women with cardiac disease are established to prevent unnecessary morbidity and expense of the procedure. According to 2018 European Society of Cardiology Guidelines states that isolated congenital complete heart block has a favourable outcome during pregnancy especially with narrow QRS [16] temporary pacemaker is unnecessary in stable patients but recommended in selected women with symptoms due to bradycardia and syncope.

Our patient was detected with congenital complete heart block and she was almost asymptomatic.She had no suffered of heart disease or any other illnesses.Her electrocardiogram showed complete heart block with heart rate about 42 beats/minute and QRS duration 94 ms. Isolated heart block block is relatively benign with narrow QRS complexes on ECG, and heart rate may increase with atropine or sympathomimetics. Patients with complete atrioventricular block who are asymptomatic, with narrow complex in ECG, ventricular rate between 40 and 60 and there is rise in heart rate with exercise or atropine, usually tolerate the pregnancy and delivery without any unfavourable events.Isolated congenital complete heart block in the mother has a favourable outcome during pregnancy, especially when the escape rhythm has a narrow QRS complex [17].

Our case had narrow QRS complex in ECG, responded to atropine and had an vaginal delivery without temporary pacing. However,antenatal care needs to be by the pregnancy heart team with a cardiologist, anaesthetist and obstetrician, with experience in the management of high risk pregnancies. In our case the fetus had normal development, with no signs of growth retardation.

Fetomaternal outcome is favourable in asymptomatic cases and in uncomplicated bradyarrhythmias without significant underlying heart disease[18

Our case was complicated with obstetrical complications such as postpartum hemorrhage due to atony of the uterus and

retained placenta.Although active management of the third stage of labour with administration of intravenous oxytocin, early cord clamping, transabdominal manual massage of the uterus, and controlled traction of the umbilical cord appeared insufficient and manual removal of the placenta should be carried out under anaesthesia [19]. Both minimal sedation with low doze fentanyl and propofol was administrated intravenously and an injection of the local lidocaine around the cervix.The retained placenta is danger obstetrical complication, successful and timely management is essential.The estimated mortality rates from a retained placenta in developing countries range from 3% to 9% [20].In case of an increased blood loss during third stage of labour ideally standardized operating procedures are already implemented. On the other hand there are no specific recommendations concerning the most appropriate anaesthetic technique for immediate hysterectomy in women with congenital complete heart block. There are quite a few anaesthetic problems in patients with complete heart block undergoing incidental surgeries. These include bradycardia, hypotension, arrhythmias, cardiac arrest or even sudden death [4]. Studies suggested that regional anaesthesia is safe in pregnant women with cardiac disease undergoing caesarean section. Fortunately in our case was not necessary the implementation of standardized operating procedures for retained placenta.

CONCLUSION

Pregnant women with complete heart block present a challenge not only to the obstetricians but also for cardiologist and anaesthetist. As suggested by our case, the women do not require a permanent pacemaker before delivery might be safely during vaginal delivery with obstetrical complication. However, careful monitoring, is necessity by the pregnancy heart team with a cardiologist, anaesthetist and obstetrician, with experience in the management of high risk pregnancies.

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