



Case Report

Asymptomatic complete heart block in labor: A case report of none response to atropine therapy

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ABSTRACT

Introduction: A complete heart block is a cardiac electrical conduction disorder with a very rare occurrence in pregnancy, which may be asymptomatic. There are no specific guidelines for the management of asymptomatic complete heart block in labor, vaginal delivery, and cesarean with only a few reports of cesarean management of patients with complete heart block.

Case report: A 30-year-old woman, Gravida 4, abortion 3, gestational age of 41 weeks without any specific problems, was referred to our maternity hospital. The pulse rate and blood pressure were 68 and 60/110, respectively. Labor was induced with oxytocin and, after three hours, was discontinued due to late decelerations of fetal heart rate. Electrocardiography confirmed a maternal pulse rate of 42. Cardiac consultation led to the diagnosis of a complete heart block. Due to the frequent late decelerations of fetal heart rate and no response to atropine therapy, the patient was a candidate for a cesarean. Before cesarean, the pacemaker was installed. Cesarean was performed with general anesthesia, and the infant was delivered in good condition. In Postpartum, the pacemaker was removed (PR=55, BP=125/80), and the mother was discharged the next day. Due to the lack of specific guidelines, fetal indication for an emergency cesarean, mother poor obstetrics history, and none response to atropine therapy, we chose to incorporate pacemakers and remove it after cesarean safely.

Conclusion: Vital signs assessment during pregnancy and childbirth is recommended to detect cases of complete heart block and provide optimal care.

Introduction

Complete heart block is a cardiac electrical conduction disorder in which the atrial impulses are not directed to the ventricle, and the atrium and ventricle have independent impulses. The incidence rate is estimated at 1 in 15,000 to 20,000 live births (1). An advanced complete heart block may be congenital or acquired. In most cases, complete heart block in pregnancy and labor was asymptomatic, except for a study that reported 21 pregnant women with complete heart block with syncope and palpitations (2).

There are no specific guidelines for the management of cases who are diagnosed with asymptomatic complete heart block in

pregnancy or labor. A handful of cases have been reported, with no definitive conclusions yet (2-13). Some reported that in asymptomatic patients, a permanent or temporary pacemaker might be required before labor or at the postpartum (13). On the contrary, some recently argued that a temporary pacemaker should not be used routinely for all asymptomatic women, and only for those whose heart rate does not increase in the exercise test, a temporary pacemaker is necessary (3-5, 7, 9). Others have recommended that a temporary pacemaker be inserted and be activated in patients with atropine-resistant bradycardia and grade 1 and 2 heart block (6).

In this article, we report the management of an asymptomatic complete heart block in a 30-year-old woman with a 41-week gestational age gave birth with cesarean delivery.

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Case Report

A 30-year-old woman, Gravid 4, abortion 3, with a 41-week gestation based on the sonography and menstruation history without any history of heart disease or symptoms, was referred to Mobini hospital affiliated with Sabzevar University of Medical Sciences, Sabzevar, Iran. The vital signs were as follows: PR=68, RR=12, BP=60/110. The patient's medical history indicated a fetal etiology for her previous abortions. On vaginal examination, a soft central cervix with 3 cm dilatation and 30% effacement was reported. Fundal height indicated a term pregnancy with no contraction. The fetal heart rate was normal (FHR=144). We started inducing of labor with oxytocin at 11 AM. At 14 o'clock, late decelerations in fetal heart rate were observed at 24 mU /mL (Milliunit per milliliter). Therefore, the induction was stopped, and the mother received a liter of ringer lactate solution and oxygen.

Maternal vital signs were checked (PR=42, BP=80/20), and an emergency heart consultation was requested (Fig. 1). According to the electrocardiography result, the cardiologist diagnosed a complete heart block, and it was recommended that the patient be referred to a tertiary hospital where both maternity and cardiac care were available to install a pacemaker in case of dropping the mother's heart rate to less than 40 beats per minute or dropping of her blood pressure. However, due to the possibility of fetal asphyxia during maternal dispatch to Mashhad and continued late decelerations in fetal heart rate, the woman was a candidate of cesarean with a fetal indication. We decided to perform a cesarean in the heart surgery room of Heshmatieh Hospital in Sabzevar. An anesthesiologist with heart fellowship was present at the time of the operation.

To evaluate the cardiac response to atropine, 2-mg atropine at three-minute intervals was injected, which revealed no increase in ventricular rate. Therefore, the installation of a pacemaker was indicated. In the cat lab ward, a pacemaker was inserted

through the right femur, and then the woman was transferred to the operating room with PR=75 for general anesthesia and cesarean.

Anesthesia was induced with Nesdonal 350 mg, atracurium 35 mg, and fentanyl 100 µg. A Cesarean was performed, and a healthy female infant weighing 3100 g was born with an Apgar score of 8-10. After surgery, the patient was transferred to the CCU ward, and 24 hours later, due to hemodynamic stability, the cardiologist switched off the pacemaker. The patient with a good condition (PR=55, BP=125/80) was transferred to the surgical ward and eventually discharged with a heart outpatient examination recommendation one month later. Because she was not symptomatic, no need to further test at the time of discharge. We asked the patient for a three-month postpartum visit when the pregnancy hormones declined to test the anti-phospholipid level.

Discussion

Complete heart block in pregnant women is very rare, and the management of pregnancy and delivery with asymptomatic complete heart block is controversial. Our case did not respond to atropine, and we had to choose a safe procedure in this patient and inserted a pacemaker before the cesarean. However, there have been few reports of cesarean in the asymptomatic complete heart block without an active pacemaker (9-11). There is a report of a 30-year-old woman with asymptomatic complete heart block, with a mean pulse rate of 34-50 who had terminated seven pregnancies with four-term babies, one abortion, and two stillbirths without installing a pacemaker (5).

Although vaginal delivery is a preferred method of childbirth in the absence of fetal or obstetrics indication, we performed cesarean delivery in the present case due to the late deceleration of fetal heart rate (12). In the Mandal report, 25 out of 28 cases gave birth by a normal delivery (2).

Appropriate anesthesia in the complete heart block is controversial. Spinal anesthesia is not recommended because of

the possibility of blockage at high sympathetic levels, which may cause dangerous bradycardia (14). On the other hand, during general anesthesia, some problems such as bradycardia, hypertension, arrhythmia, and cardiac arrest may occur. Inhaled gases and injectable drugs may also have a profound effect on hemodynamics. In general, anesthesia, drugs that have the least depressant effect on heart rates, such as bupivacaine, fentanyl, ketamine, pancuronium, and isoflurane, which do not cause bradycardia, are preferred (8). There have been several case reports on the type of anesthesia in asymptomatic complete heart block. In one case report, an emergency cesarean was performed with spinal anesthesia and atropine therapy without installing a temporary pacemaker (10). In the next case, the patient underwent a cesarean with a temporary pacemaker and the combination of bupivacaine-fentanyl with spinal anesthesia (8).

The pregnancy in our patient was uncomplicated, but some papers have reported complications such as preterm labor or preeclampsia (12). Therefore, drugs such as labetalol (in case of preeclampsia) and nifedipine (in preterm labor), which exacerbate the heart block, are contraindicated. In addition, medications such as atropine and Isoxsuprine should be available in the management of these patients (12). Our patient gave birth to a neonate with normal weight, whereas three neonates in Suri report were low birth weight or intrauterine growth retardation (12).

Conclusion

Due to the low total fertility rate in the country, pregnancy is allowed in women with chronic illnesses and therefore need optimal care. Due to the lack of a specific guideline and the patient's non-response to atropine, we chose to safely incorporate the pacemaker and remove it after delivery in our patient with asymptomatic complete heart block. A complete heart block is a challenge for a gynecologist and requires a

multidisciplinary approach involving the cardiologist, anesthesiologist, and obstetrician. Considering the vital signs of women during pregnancy and childbirth is recommended to detect heart block cases and provide optimal care.

Ethical issues

Patient consent for this report was obtained. The approval ethical code for publication of this case report is IR.MEDSAB.REC.1399.089.

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Conflict of interest

The authors report no conflict of interest.

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