PERINATAL JOURNAL

Case(s)
Perinatal Journal 2024;32(2):111-114

The atrioventricular complete heart block diagnosed on the preoperative routine test for caesarian section

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Abstract

Objective: The management of women presenting with with complete heart block during pregnancy remains very challenging.Untill now, there is not an established consensus for the most appropriate anaesthetic technique for caesarean section in women with complete atrioventricular block.

Case(s): On our case, the atrioventricular complete heart block was diagnosed on the preoperative routine test for Caesarian Section due to cephalo-pelvic disproportion. The patient had no regular antenatal check ups at a local hospital. Her parents reported rare episodes of syncope during childhood and adolescence and one more episode two year before. During pregnancy she did not report any sincope episode except from being tired . For obstetric reasons caesarean section was performed successfully under spinal anaesthesia with continuous monitorization during intraoperative time without a pacemaker .Even though the patient reacted well during administration of atropine a temporary pacemaker was found to be in case we would need it. A healthy baby boy of 3350 gram was delivered. During postpartum period the patient did not have any complains or syncope episodes. It was strongly recommended to her a regular follow up to cardiology department.

Conclusion: As suggested by our case, asymptomatic atrioventricular complete heart block in pregnancy can be managed successfully without pacemaker. 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. Management of the risk for cardiovascular and obstetrical complications is difficult in pregnant women with complete heart block. Asymptomatic complete heart block in late pregnancy should be managed without pacemaker by the pregnancy heart team with a cardiologist, anaesthetist and obstetrician, with experience in the management of high risk pregnancies.

Keywords: Pregnanacy, complete atrio ventricular heart block,temporary pacing,obstetrical complication

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]

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How to cite this article: Bele S, Banushi A. The atrioventricular complete heart block diagnosed on the preoperative routine test for caesarian section. Perinatal Journal 2024;32(2):111-114 DOI: 10.59215/prn. 24.0322003

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Case(s)

A 25-years -old women, in the 40 week of pregnancy was admitted to the hospital with labor pains since 3-4 h. The patient had no rregular antenatal check ups at a local hospital. She had no known history of heart disease or any other illnesses. She deneid any complaint before pregnancy and she had no evidence of prior ECG. 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 Her parents reported rare episodes of syncope during childhood and adolescence and one more episode two year before. On examination, she was conscious oriented with pulse rate of 46-53 beats/min and blood pressure of 140/70 mmHg. Her respiratory rate was 20 per minute, and chest was bilaterally clear. Listen with the stethoscope diaphragm were heard loud first heart sound ,normal second heart sound and no murmurs. The electrocardiogram showed sinus bradycardia in which not every narrow QRS complex followed a P wave, suggestive of Complete Heart Block . Echocardiography showed normal heart. All routine laboratory tests were normal. Serum electrolyte Na+, K+, Ca2+, Mg2+ were normal. The fetal heart rate was regular, and she was having regular uterine contractions of moderate intensity every 4-5 min. On vaginal examination, os was closed with a firm cervix of around 4 cm.She had a abnormally shaped pelvis ,android pelvis. 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 . The decision for cesarean section was taken in view of cephalopelvic disproportion. The diagnosis of complete heart block was confirmed by 12-lead ECG. After consulting together cardiologist, anaesthetist and obstetrician the woman was taken up for caesarean section under spinal anesthesia. under continuous ECG monitoring, pulse oximeter and noninvasive blood pressure. Patient and her husband were properly explained the condition. A temporary pacemaker was kept on standby to withstand any haemodynamic variations. Patient ,parents and her husband were properly explained the condition.The spinal anaesthesia was planned to keep the haemodynamics stable and drugs causing bradycardia were avoided. A healthy boy of 3350 kg with normal heart rate and normal Apgar score was delivered. The patient was transferred to the Intensive Care Unit for better continuous monitoring. During postpartum period the patient did not have any complains or syncope episodes. Postoperative period was uneventful and patient was discharged in good health on 6th postoperative day. It was strongly recommended to her a regular follow up to cardiology department. Follow-up for next 3 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] In women without a permanent pacemaker, temporary 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. Her parents reported rare episodes of syncope during childhood and adolescence and one more episode two year before. During pregnancy she did not report any sincope episode except from being tired 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 .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 cephalo-pelvic disproportion and she was taken up for caesarean section under spinal anesthesia.

On the other hand there are no specific recommendations concerning the most appropriate anaesthetic technique for immediate Caesarian Section in women with congenital complete heart block. Ideally, developing an anesthetic plan for a high-risk cardiac patient should begin preconception or early in pregnancy so the patient can better comprehend the risks involved with pregnancy and the anesthetic plan that may be best for the expectant mother.[19] On our case, the atrioventricular complete heart block was diagnosed on the preoperative routine test for Caesarian Section due to cephalo-pelvic disproportion 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 procedures for temporary pacing.

Conclusion

As suggested by our case, asymptomatic atrioventricular complete heart block in pregnancy can be managed successfully without pacemaker. 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. Management of the risk for cardiovascular and obstetrical complications is difficult in pregnant women with complete heart block. Asymptomatic complete heart block in late pregnancy should be managed without pacemaker by the pregnancy heart team with a cardiologist, anaesthetist and obstetrician, with experience in the management of high risk pregnancies.

References

1. Jaffe R, Gruber A, Fejgin M, Altaras M, Ben-Aderet N. Pregnancy with an artificial pacemaker. Obstet Gynecol Surv. 1987;42(3):137-39. [PubMed][CrossRef]
2. Perloff J , Marelli A. Perloff JK. The clinical recognition of congenital heart disease. Elsevier; 7th Edition - June 25, 2022 eBook ISBN: 9780323547826 Hardcover ISBN: 9780323529648
3. Sasmita Swain, Satyanarayan Routray, Sandhyarani Behera, Swayamsiddha Mohanty. Pregnancy with complete heart block. BMJ Case reportes.Volume 15, Issue 1 [PubMed] [CrossRef]
4. Kumar AU, Sripriya R, Parthasarathy S, Ganesh B A, Ravishankar M. Congenital complete heart block and spinal anaesthesia for caesarean section. Indian J Anaesth. 2012;56(1):72-4. [PubMed][CrossRef]
5. Michaelsson M, Allen Engle M. Congenital complete heart block: an international study of the natural history. Cardiovasc Clinics. 1972;4:85–101.
6. Balmer C, Bauersfeld U. Do All Children with Congenital Complete Atrioventricular Block Require Permanent Pacing ? Indian Pacing Electrophysiol J. 2003 Jul-Sep; 3(3): 178–183.Published online 2003 Jul 1.
7. Skog A, Lagnefeldt L, Conner P, Wahren-Herlenius M, Sonesson SE. Outcome in 212 anti-Ro/SSA-positive pregnancies and population-based incidence of congenital heart block. Acta Obstet Gynecol Scand. 2016;95(1):98–105 [PubMed][CrossRef]
8. Martínez-Sánchez N, Pérez-Pinto S, Robles-Marhuenda Á, Arnalich-Fernández F, Martín Cameán M, Hueso Zalvide E, et al. Obstetric and perinatal outcome in anti-Ro/SSA-positive pregnant women: a prospective cohort study. Immunol Res. 2017;65(2):487–94 [PubMed][CrossRef]
9. Fred M. Kusumoto,Mark H. Schoenfeld, Coletta Barrett at al.2018 ACC/AHA/HRS Guideline on the Evaluation and Management of Patients With Bradycardia and Cardiac Conduction Delay: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines, and the Heart Rhythm Society Originally published6 Nov 2018
10. Glikson M, Cosedis Nielsen J, Kronborg MB et al. 2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy: Developed by the Task Force on cardiac pacing and cardiac resynchronization therapy of the European

Society of Cardiology (ESC) With the special contribution of the European Heart Rhythm Association European Heart Journal, Volume 42, Issue 35, 14 September 2021, Pages 3427–3520

11. Dalia T, Bashar SA. Pacemaker Indications NCBI Bookshelf ID: NBK507823 Last Update: August 22, 2022
12. Hidaka N, Chiba Y, Kurita T, Satoh S, Nakano H. Is intrapartum temporary pacing required for women with complete atrioventricular block? An analysis of seven cases. Int J Obstet Gynaecol. 2006;113:605-07. Epub 2006 Mar 27 [PubMed][CrossRef]
13. Wang K, Xin J, Huang G, WangX ,Yu H. BMC Pregnancy and Childbirth Pregnancy maternal fetal outcomes among pregnancies complicated with atrioventricular block volume 22 Article number: 307 (2022) [PubMed][CrossRef]
14. Hama T, Morita N, Ushijima A. Impact of bedrest on cardiovascular events and complications associated with temporary pacemakers in patients waiting for permanent pacemaker implantation. J Arrhythm. 2021 Mar 30;37(3):669-675. [PubMed][CrossRef]
15. Hidaka N, Chiba Y, Fukushima K,Wake N. Pregnant women with complete atrioventricular block: perinatal risks and review of management.Pacing Clin Electrophysiol.2011;34(9):1161-76 [PubMed][CrossRef]
16. Regitz-Zagrosek V, Roos-Hesselink JW, 2018 ESC guidelines for the management of cardiovascular diseases during pregnancy. Eur Heart J 2018;39:3165–241. [PubMed][CrossRef]
17. Mohapatra V, Panda A, Behera S. Chandra Behera J. Complete Heart Block in Pregnancy: A Report of Emergency Caesarean Section in a Parturient without Pacemaker J Clin Diagn Res. 2016 Oct; 10(10): QD01–QD02Published online 2016 Oct 1.
18. Suri V, Keepanasseril A, Aggarwal N, Vijayvergiya R, Chopra S, Rohilla M. Maternal complete heart block in pregnancy: Analysis of four cases and review of management. Jounal Obstet Gynaecol. 2009;35:434-37. 10 June 2009 [PubMed][CrossRef]
19. Nicholas E. Hill , Brianna Granlund.Anesthesia For Labor, Delivery, And Cesarean Section In High-Risk Heart DiseaseIn: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan. 2023 Feb 21. Bookshelf ID: NBK574578