



MANAGEMENT OF SEVERE PREECLAMPSIA IN COMPLETE HEART BLOCK: A RARE COMBINATION

Obstetrics and Gynaecology

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ABSTRACT

Complete heart block is rare during pregnancy. It may be congenital or acquired. There are no proper guidelines regarding its management, posing a great challenge for obstetricians. It is further compounded, if it is associated with severe preeclampsia. Normal physiological hemodynamics and cardiac changes pose challenges in the setting of cardiac lesions like congenital heart block. When it is associated with preeclampsia it has profound effects over the cardiac function. Pregnancy with rare combination of complete heart block and severe preeclampsia warrants cautious use of antihypertensive drugs and pacemaker implantation. Commonly used antihypertensives drugs like labetalol used as the first line of treatment in preeclampsia is contraindicated in case of complete heart block. Here we present challenges faced and its management by a multidisciplinary team when a case of complete heart block associated with severe preeclampsia reported in emergency at term gestation.

KEYWORDS

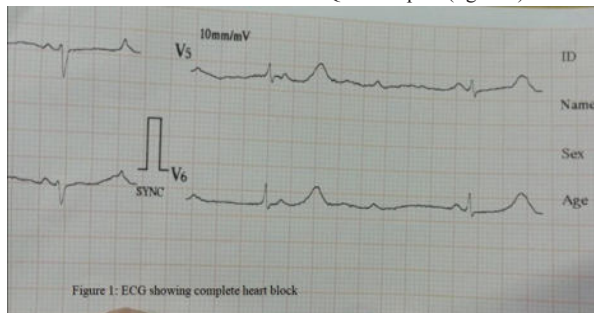
complete heart block, pacemaker, labetalol, pre-eclampsia, pregnancy

INTRODUCTION:

Complete heart block is rare during pregnancy with incidence ranging from 1 in 15000 to 1 in 20000 live births [1]. For an obstetrician it possesses significant challenge when it presents in emergency. There are no clear guidelines regarding its management during pregnancy. This is further compounded when pregnancy is complicated with preeclampsia. The choice of antihypertensive agent and the treatment modality of the heart block need to be decided taking into account the effect of one on another and its net effect on the pregnancy. We report a rare case of complete heart block who presented at term gestation with complete heart block and severe preeclampsia.

CASE REPORT:

A 32 year old female, with body mass index of 44, G2P1001 with previous one lower segment cesarean section (LSCS) presented to our emergency department at 38 weeks period of gestation with the history of shortness of breath for 2 weeks on climbing stairs (NYHA 2). Her pregnancy was well supervised in a private nursing home. There was no history of chest pain, palpitations, syncopal attacks, orthopnea, hypertension, or any other known heart disease. Also there was no history of fever, irradiation and bleeding per vaginum in the first trimester. She underwent LSCS 8 years back for fetal bradycardia. Upon admission she had pulse rate 36 beats per minute, blood pressure 170/100 mmHg, respiratory rate 24 per minute and urine albumin 2 plus by dipstick. Auscultation of the chest was unremarkable. Her abdomen uterus was term size and relaxed. Biophysical profile was 10/10. Aneuploidy screening, anomaly scan and oral glucose tolerance were normal. Laboratory blood parameters of preeclampsia were within normal limits. Antinuclear antibody too was negative. Chest X ray showed cardiomegaly. In ECG there was complete atrio-ventricular dissociation with a narrow QRS complex (figure 1).



Echocardiography showed all four chambers mildly dilated, moderate aortic (PHT 253), mitral, and tricuspid regurgitation (RVSP = RAP

+30), mild left ventricular systolic dysfunction (ejection fraction 55 %) and grade 2 diastolic dysfunction. There was no clot or vegetation. Compression ultrasound was negative for deep venous thrombosis. The client needed termination of pregnancy in view of preeclampsia and was planned for LSCS as the patient was not willing for vaginal delivery after the 1st caesarean section. Her hypertension was controlled using tab nifedipine, 10 mg twice daily. Her pulse rate was refractory to oral deriphyllin SR 150 mg and intermittent salbutamol nebulisation. A temporary pacemaker was implanted through a transfemoral route and paced at 80 beats per minute. Emergency lower segment cesarean section with bilateral tubal ligation was done under spinal anesthesia. A live born baby weighing 2.5 kg was delivered with APGAR of 8 and 9. Her hemodynamic parameters remained stable throughout the perioperative period. She was implanted with a permanent pacemaker on 5 th postoperative day. Mother and baby discharged in stable condition on day 7 postoperative day. She was started on telmisartan 40 mg and 12.5 mg chlorthalidone.

DISCUSSION:

Complete heart block can either be congenital or acquired secondary to cardiac surgery, infective pathology, rheumatic heart disease, autoimmune disorders..or prolong antihypertensive drug use. It can be completely idiopathic and can also be a result of passive autoimmunity with cardiac ailment in response to active transport of maternal IgG autoantibodies to fetal circulation, as in SLE. About 30% of congenital variety remain undiscovered until adulthood and may therefore present during pregnancy. Isolated congenital CHB is relatively benign with narrow QRS complexes on ECG, and heart rate may increase with atropine or sympathomimetics [2]. Prognosis in acquired heart blocks is generally worse. Our case had a narrow QRS complex suggesting congenital CHB with recent onset of symptom.

In normal physiological changes of pregnancy there is an increase in cardiac output by 30 to 50% due to increased heart rate, stroke volume, blood volume and decrease in peripheral resistance. These alterations pose a substantial challenge in the setting of fixed maternal heart rate situations like CHB. With slow heart rate, long standing filling period increases end diastolic volume and fiber length augmenting myocardial contractile force and thereby results in increased stroke volume, which maintains the cardiac output. So pregnancy may be well tolerated till certain times without any symptom. However, chronically high stroke volume and dilated ventricle creates a limited capacity to further augment end-diastolic volume and stroke volume. This hemodynamic alteration is unable to acclimatize with the further increase in cardiac output with the progress of pregnancy.

When pregnancy gets complicated with preeclampsia, there is

increased vascular resistance, secondary increase in left ventricular mass and resulting diastolic dysfunction which becomes most marked in the severe and early-onset preeclampsia. This is associated with adverse maternal and fetal outcomes.

Mandal et al reported 21 pregnant women with complete heart block in which syncope and palpitation was noted in 29 % and 38 % respectively [3]. He also reported complications like IUGR (14 %), oligohydramnios (7 %), preterm labor (11 %) in the 21 patients studied. Suri et al. also reported IUGR in two out of the four cases studied with absent and reversed diastolic flow leading to a preterm delivery by cesarean section. (4). Caesarean section is indicated only for obstetric reasons. Till now whether to do pacing in pregnant women with CHB is still a debatable issue. AHA/ACC guidelines indicated pacemaker implantation in third degree AV block with syncope, second and advanced third degree AV block with associated symptomatic bradycardia, congestive cardiac failure and decreased cardiac output.

Hidaka et al quoted that most women with complete heart block who are asymptomatic does not require permanent pacemaker before delivery and can be managed safely during labour without pacing[5]. Experience by Suri et al show out of four patient two had temporary pacemaker whereas other two developed syncope within four hours of delivery. In asymptomatic patient with intra operative blood loss, hemodynamics was stable did not require pacemaker activation[6] Atropine resistant bradycardia, first and second degree AV block and atrial fibrillation with ventricular bradycardia are some of the criteria put forth for temporary pacemaker by Kharde et al[7]. A pacemaker is indicated if the patient is symptomatic, QT prolongation, wide QRS complex, ventricular dysfunction and cardiac failure [8]. Permanent pacemaker is implanted anytime during pregnancy whereas temporary pacing is done during delivery. Temporary pacemakers have their own complications such as irradiation, bleeding, infections and embolic phenomenon. it may malfunction unexpectedly resulting in hemodynamic instability [9].

In the index case pregnancy was complicated by both complete heart block and preeclampsia with recent onset of shortness of breath suggesting increased chances of perioperative heart failure warranting careful control of blood pressure and pacemaker insertion. Our patient required LSCS in view of previous LSCS with severe preeclampsia not willing for vaginal birth. A temporary pacing before LSCS was inserted to avoid perioperative heart failure. For blood pressure control methyldopa, labetalol and calcium channel blocker which is usually drug of choice should be avoided in view of risk of further decrease in heart rate. Hydralazine, nitroglycerine or nifedipine may be administered. We chose nifedipine for the control of blood pressure as it has peripheral action.

CONCLUSION:

Pregnancy with complete congenital heart block when associated with changes in underlying rhythm or development of symptoms or complications such as preeclampsia warrant cautious use of anti-hypertensive and pacemaker implantation.

REFERENCES:

- [1]. Perloff JK. The clinical recognition of congenital heart disease. 5th ed Philadelphia: Elsevier; 2003.
- [2]. Kumar AU, Sriprya 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.
- [3]. Mandal S, Mandal D, Sarkar A, et al. Complete Heart Block and Pregnancy Outcome: An Analysis from Eastern India. *SOJ Gynaecol Obstet Womens Health.* 2015;1(1):5.
- [4]. 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. *J Obstet Gynaecol Res.* 2009;35(3):434-37.
- [5]. 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.
- [6]. Rai V, Shariffuddin II, Chan YK, Muniandy RK, Wong KK, Singh S. Peri-operative management of hysterostomy in a parturient with complete heart block, placenta accreta and intrauterine death. *BMC Anesthesiol.* 2014; 14:49
- [7]. Kharde VV, Patil VV, Vh Dhulkhand, et al. A parturient with complete heart block for cesarean section. *J Anaesth Clin Pharmacol.* 2010;26:401-402.
- [8]. Chohan U, Afshan G, Mone A. Anaesthesia for caesarean section in patients with cardiac disease. *J Pak Med Assoc.* 2006 Jan; 56(1):32-8
- [9]. Ganjoo P, Navkar DV, Tandon MS. Complete heart block complicating intracranial aneurysm surgery in a pregnant patient. *Neurol India.* 2010 Jan-Feb; 58(1):146.