University Journal of Surgery and Surgical Specialities

ISSN 2455-2860 2020, Vol. 6(1)

COMPLETE HEART BLOCK WITH PACEMAKER IMPLANTATION IN LABOUR A SUCCESS STORY

SHRUTHII NANJUNDAPPAN
Department of Obstetrics and Gynaecology, PSG INSTITUTE OF MEDICAL SCIENCE & RESEARCH

Abstract : Complete heart block with pacemaker implantation is rare in pregnancy. Most patients remain asymptomatic and only very few need pacemaker implantation which is usually removed postnatally after the cardiac output returns to normal prepregnant state, but not so in this case. This 28yr old Primigravida with 38weeks of gestation was admitted with draining pervaginum. She is a known case of severe Rheumatic mitral stenosis who underwent mitral valve replacement 3yrs back. On admission she was diagnosed with complete heart block. She underwent temporary pacemaker implantation following which emergency caesarean section for Nonprogression of labour due to deflexed head. The surgery was uneventful. Baby had ecchymosis with elevated INR levels which was managed with FFP. Removal of temporary pacemaker was attempted when she developed ventricular fibrillation and cardioversion was done . She underwent permanent pacemaker insertion and discharged on 10th post op day.

Keyword : pacemaker, cardioversion, ventricular fibrillation, mitral stenosis, Rheumatic heart disease

INTRODUCTION:

Complete heart block is rare during pregnancy. Majority of cases do not need any active intervention during pregnancy or delivery and are asymptomatic [3]. Permanent cardiac pacing is advocated in symptomatic cases during first and second trimester. Women may become symptomatic during labour due to further slowing of heart rate due to valsalva manoeuvre during second stage [4]. Temporary pacing helps to prevent cardiac complications during delivery [5]. Not many cases have been reported in India with pacemaker implantation in active labour. About 30 cases have been reported so far and almost all cases have had good obstetric outcome.

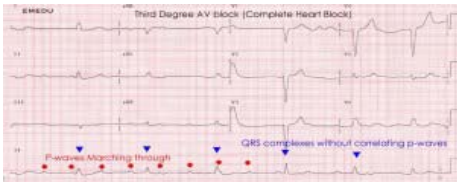
CASE SUMMARY

28yr old Mrs. S a primigravida at 38weeks+3days of gestational age came with complaints of draining pervaginum since 1 hour. She had antenatal care till 25 weeks at PSG after which she lost follow up. She is a known case of Rheumatic Heart Disease who developed rheumatic fever at 8yrs of age and underwent closed mitral commissurotomy at 9 yrs of age following which she was apparently normal for 16yrs.In 2010 she developed severe chest pain with dyspnoea (NYHA class III).ECHO was done which showed a EF-57% with severe Mitral valve stenosis with severe pulmonary arterial hypertension, hence she underewent Mitral Valve Replacement with 31M TTK Chitra heart valve. Post operative period was uneventful and she was on regular follow up for 1yr.She was started on oral anticoagulants after surgery.

OBSTETRIC HISTORY:

She conceived 2 months after marriage. She confirmed pregnancy by urine pregnancy test. She switched over to enoxparin 40mg twice daily from 45 days of amenorrhoea till 12 weeks and again switched back to warfarin after 12 weeks. Quickening felt at 20 weeks. She continued warfarin along with iron and folic acid supplements. Anomaly scan done and anomalies ruled out, fetal echo was normal, GCT was normal . Cardiothoracic surgery review obtained at 24 weeks and PT/INR was maintained at 2- 2.5 seconds .ECHO and cardiology opinion was advised but was not done .She was diagnosed with mild anaemia hence given 4 doses of iron sucrose taken at nearby Govt hosp. Growth scan was not done and she came with draining pervaginam at 38weeks to PSG. She was received in labour ward. On examination she was found to be comfortable at rest. Her pulse rate was 44/mt and BP was 120/70mmhg. Ascultation of her cardiovascular system revealed grade I pansystolic murmer in the mitral area. Respiratory system examination was normal. Per abdomen her uterus was relaxed, it was a cephalic presentation with fetal heart rate of 144bpm.Her pervaginal examination had a bishop's score of 3/13(cervix was 25% effaced, os was 1cm dilated, medium consistency, mid position,membranes absent,clear liquor draining, vertex was -3station,pelvis was gynacoid). The estimated fetal weight calculated using Jhonsons formula was 3kg.Her cardiotocogram (CTG)was reactive.

All baseline investigations were done and her Haemoglobin was 8.7mg/dl and platelets was 1,66000.Her coagulation parameters prothrombin and partial thromboplastin time was elevated (PT 26.9 sec , APTT 42.6 sec) with an INR of 2.57.Urine routine was normal. ECG was done which showed a complete heart block.



TREATMENT:

She was started on antibiotics.Inj atropine 2 ampules given , and there was no increase in heart rate. Urgent cardio opinion was obtained. ECG done- showed Complete heart block hence immediate temporary pacemaker insertion done, and PR set at 80/mt.Echo done which showed good LV systolic function, with mild RA/RV dilatation, severe TR, RVSP 40mm/Hg and mild Pulmonary Artery Hypertension. Following pacemaker insertion she developed pulmonary congestion due to high pulse rate setting and her respiratory system showed mild crepitations. Hence Pacemaker setting reduced to 50/mt. She was transfused with 2 units Fresh Frozen plasma .P/V reassessement after 4 hrs- cx 50% effaced, os 2 cm dilated, small caput +, membranes absent, deflexed head, hence Emergency LSCS in view of Non progression of labour due to deflexed head was done under General Anaesthesia. She was transfused with 1 unit packed cell during the surgery. Patient not extubated immediately and was on spontaneous (SIMV) mode of ventillation for 6hrs, after which she was extubated and was stable.

BABY DETAILS: She delivered a boy baby of weight 2.26 kg with an Apgar 6/10 & 7/10 at 1 & 5 minute respectively. Baby had small echymotic spots on thigh (?warfarin induced), and INR values were elevated (3.5) hence 2 units of FFP was transfused following which INR improved to 1.5.On second post natal day the baby developed a small hematoma abt 2x2 cm over lumbosacral region. EEG and MRI done was normal. Screening ECHO done was normal. The hematoma spontaneously resolved by 7 days and was doing well .

On the 6th post op day TPI removal was attempted, when she developed one episode of ventricular fibrillation and she was reverted with 200 joules Cardioversion?"Bradycardia induced VT due to temporary loss of pacing" .And she underwent Permanent pacemaker insertion on the 10th post op day under Local anaesthesia. The approach was through left subclavian vein .It was a Single chamber Right ventricle pacing with VVI mode and had a pulse rate setting of 60/mt .2 units packed cell transfused post op She was discharged with oral anticoagulants and asked to review with repeat PT/INR after 1 week. She was instructed to check pacing after 6 weeks, then every 3 months for one year then twice yearly.

DISCUSSION

Pregnancy and puerperium are associated with important cardiocirculatory changes that may lead to marked clinical deterioration in women with heart disease. These changes include increased blood volume; anemia due to the increase in plasma volume faster than that of erythrocyte mass; progressive increase in cardiac output from the fifth to the twenty-fourth week of gestation; reduction in blood pressure due to decreased systemic vascular resistance. Mitral stenosis is an important cause of hemodynamic decompensation in pregnant women. Most of the patients with moderate to severe mitral stenosis show deterioration of one or two NYHA functional classes during pregnancy(1).Pregnancy is associated with a higher incidence of arrhythmias in women whether with or without structural heart disease (2,3) Advanced Atrio-Ventricular Block was found in 0.02% of a series of 92000 pregnancies(3,4). It may be diagnosed in asymptomatic patients by means of the findings of an electrocardiogram required for other reasons, or it may manifest with clinical complaints such as dyspnea, presyncope and syncope. In asymptomatic patients, temporary pacemaker implantation may be necessary before labor, or even permanent pacemaker implantation for symptomatic patients(5). Most often patients with complete heart block are asymptomatic. Symptoms if they occur, are related to the slow heart rate resulting in hydrops foetalis, heart failure of the neonate or exercise intolerance of the child. Longer pauses may cause presyncope, syncope in the form of classical Stoke Adams attack, or even sudden cardiac death. These symptoms are present in patients with resting heart rate of 50 beats/min or less. Prolonged recovery times of escape foci following rapid pacing, slow heart rates on 24-hour ECG recordings and occurrence of paroxysmal tachycardia may be the predisposing factors to the development of symptoms(6) Electrolyte imbalance such as hyperkalemia, metabolic derangements such as hypothyroidism, or medications such as beta-blockers, calcium-channel blockers, or digitalis are the easily remediable causes of bradycardia during pregnancy.(9) Complete heart block presenting for the first time in pregnancy is a therapeutic challenge. Management involves use of cardiac pacemaker in symptomatic patient, which should be implanted whenever heart block is diagnosed in pregnancy to maintain cardiac function. However, prophylactic placement of a pacemaker is not indicated in asymptomatic patients.9, 10 For symptomatic patients in the first and second trimesters, permanent pacemaker implantation is the therapy of choice; it can be performed under echocardiographic control.(4, 11) In symptomatic patient, who present at or near term, temporary pacing followed by the induction of labour at the Earliest possible time is suggested, to prevent complications of prolonged temporary pacing.9 Overall maternal and neonatal outcome is unaffected in such cases. In our case the malady is identified at full term pregnancy in labour with quite a low heart rate (44 beats/min). Emergency caesarean section was carried out under temporary pacing coverage and later a permanent pacemaker was implanted resulting in excellent symptom free status. To our knowledge this is the first such case report from TamilNadu.

CONCLUSIONS

Atrioventricular block in pregnancy is progressive; pacing is not always required but all patients should be closely monitored during and after pregnancy. In patients paced before pregnancy, pacing is well tolerated. Outcome is usually good.

REFERENCES

1.Hameed AB, Karaalp IS, Tummala PP, Wani OR, Canetti M, Akhter MW, et al: The effect of valvular heart disease on maternal and fetal outcome in pregnancy. J Am Coll Cardiol. 2001; 37: 893-9

2. Shotan A, Ostrzega E, Mehra A, Johnson JV, Elkayam U. Incidence of arrhythmias in normal pregnancy and

relation to palpitations, dizziness and syncope. Am J Cardiol. 1997; 79: 1061-4
3.Dalvi BV, Chaudhary A, Kulkarni HL. Therapeutic guidelines for congenital complete heart block presenting in pregnancy. Obstet Gynecol. 1992;79:802–804. [PubMed]
4. Sharma JB, Malhotra M, Pandit P. Successful pregnancy outcome with cardiac pacemaker after complete heart block. Int J Gynecol Obstet. 2000;68:145–146. Doi: 10.1016/S0020-7292(99) 00206-4. [PubMed] [Cross Ref]
5. Cevik B, Colakoglu S, Ilham C. Anesthetic management of cesarean delivery in pregnant women with a temporary pacemaker. Anesth Analg. 2006;103:500–501. doi: 10.1213/01.ANE.0000227203.80338.B4. [PubMed] [Cross Ref)
6.Wolbrette D. Treatment of arrhythmias during pregnancy. Curr Womens Health Rep 2003; 3: 135-9
7. Lau CP, Lee CP, Wong CK, Cheng CH, Leung WH. Rate responsive pacing with a minute ventilationsensing pacemaker during pregnancy and delivery. *Pacing Clin Electrophysiol* 1990; 13: 158–163
8. Douglas P. Zipes. Specific Arrhythmias: Diagnosis and Treatment.in: Braunwald E, editor. *Heart disease*. 5th. ed. New york; W B Saunders Company; 1997.
9. Kenmure ACF, Cameron AJV. Congenital complete heart block in pregnancy. *Br Heart J* 1976; 29: 911–913
10. Dalvi BV, Chaudhuri A, Kulkarni HL, Kale PA. Therapeutic guidelines for congenital complete heart block presenting in pregnancy. *Obstet Gynecol* 1992; 79: 802–804
11. Gudal M, Kervancioglu C, Oral D, Gurel T, Erol C, Sonel A. Permanent pacemaker implantation in a pregnant woman with the guidance of ECG and twodimensional echocardiography. *Pacing Clin Electrophysiol* 1987; 10: 543–545

An Initiative of The Tamil Nadu Dr. M.G.R. Medical University
University Journal of Surgery and Surgical Specialities