



Epidural Anaesthesia and Subarachnoid Fentanyl during Elective Caesarean Section of 38 years old Multigravida (G9P3L3A5) with Congenitally Corrected Transposition of Great Vessels and Complete Heart Block: A Unique Case Report.

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ABSTRACT: Incidence of Congenital complete heart block (CCHB) during pregnancy is reported to be very much rare. Literature search is scarce about standard technique and guidelines of anaesthesia management of such parturient. Involvement of multidisciplinary team, thorough evaluation of pregnant patient and keeping temporary pacemaker intervention ready, results in successful outcome. General anaesthesia is of choice during emergency caesarean deliveries; spinal anaesthesia is reported sometimes.

Epidural anaesthesia along with subarachnoid Fentanyl for caesarean section in such case is not reported in literature to date.

We report a unique case of anaesthesia management of elective caesarean section in 38 years elder multigravida (G9P3L3A4 with 36 weeks amenorrhoea) with known case of CCHB and Congenitally Corrected Transposition of Great Vessels (ccTGA) under epidural anaesthesia combined with subarachnoid fentanyl.

KEY WORDS: Complete heart block, Caesarean section, Epidural Anaesthesia, Subarachnoid Fentanyl, Temporary pacemaker.

I. INTRODUCTION:

Incidence of complete heart block (CHB) is reported 1 in 15,000-22,000 live births. [1]. CHB may be congenital or acquired. Acquired CHB occurs after 50yrs of age. Congenital CHB (CCHB), being very rare, reported first time during pregnancy and delivery. Pregnancy, labour and

delivery are generally well tolerated in these patients, may be asymptomatic but few patients with CHB may have sudden cardiac death (SCD)[1] especially during labour. Congenital heart disease is associated risk factor for congenital CHB, may require emergency pacing.[2]. Permanent pacemakers implanted before pregnancy are occasionally encountered. In symptomatic CHB during first and second trimesters, permanent pacemaker is indicated. Prophylactic pacemaker is not indicated in asymptomatic CHB pregnant. [3-5]. Caesarean section done under regional and general anaesthesia has been reported in literature [6,7]. General anaesthesia is of choice during emergency caesarean deliveries; spinal anaesthesia is reported sometimes. Solely second-degree or third-degree atrioventricular block is rare in pregnant and commonly seen in patients with congenital heart disease.[5].

Epidural anaesthesia combined with subarachnoid Fentanyl for elective caesarean section is not reported in literature to date. Our elder multigravida was diagnosed of CCHB and ccTGV during her fifth caesarean section. The anaesthesia management of caesarean section in case having ccTGV with CCHB is unique to report in literature.

II. CASE DETAILS:

A 38 yr old parturient (G9P3L3A5) was admitted tertiary care hospital at 9 months of amenorrhoea for elective LSCS in view of previous LSCS and diagnosis of congenitally corrected Transposition of Great Vessels (ccTGA) with



complete heart block (CCHB). During present antenatal period, reported occasional chest pain and breathlessness on routine activities (NYHA grade 3) without syncope.

Obstetric History: G1: full term normal vaginal delivery at home. G2: spontaneous abortion at 6 wks. G3: full term normal vaginal delivery at home. G4: spontaneous abortion at 12 weeks. G5: elective LSCS was done 3yrs back under spinal anaesthesia and during this, was diagnosed of congenital acyanotic heart disease with complete heart block. She was advised Tab. Lasilactone which she discontinued on its own. G6: MTP at 8 wks. G7: MTP at 12 wks. G8: Spontaneous abortion at 6 wks. G9: current pregnancy (9 mths amenorrhea). **On examination:** Thin built, BMI 19.5kg/m², pulse rate- 40/min regular, BP- 120/70 mmhg in supine position in right upper arm. Cardiovascular, respiratory and CNS examination was normal. **Blood investigations** & TFT were normal. ECG showed complete heart block with atrial rate of 78/ min and ventricular rate of 42/min and narrow QRS complex. 2D ECHO revealed ccTGA, moderate left sided AV valve regurgitation, mildly compromised RV systolic function, Ejection fraction 45-50%.

III. ANAESTHESIA MANAGEMENT:

Patient was permitted for anaesthesia under ASA grade 3 with high cardiac risk, consented for emergency temporary pacemaker insertion if necessary and postoperative ICU management. Pt was ensured nil per mouth for 8 hrs. In operation theatre, Defibrillator and cardiac drugs (Inj. Isoprenaline, Inj. Ephedrine, Inj. Atropine, and Inj. Adrenaline) were kept ready. Monitors attached (Electrocardiogram, Pulseoxymeter and Non-invasive Blood Pressure Monitor). IJV fast Cath was inserted by cardiologist in supine position with wedge under right buttock and temporary pacemaker was kept standby. Preloading started with 200 ml colloid slowly. Epidural catheter (16G) inserted in L1-L2 space in sitting position with asepsis. After epidural test dose of 3ml Lignocaine (2%) with adrenaline, intrathecal 25 mcg fentanyl was given with 25G spinal needle in L3-L4 space and supine position was given with left uterine displacement. Total 9ml Inj. Lignocaine (2%) with adrenaline given in graded doses till T6 level was achieved.

Intraoperative oxygen supplementation was provided with Hudson mask at 4L/min. Vitals were stable with no any reports of hypotension. A healthy male child weighing 2650 kg was delivered with an Apgar score of 8/10 in 1st min and 10/10 in

5th min. Inj Oxytocin 10U started slowly by infusion with consistent monitoring of uterine tone and bleeding to avoid hypotension and tachycardia. Surgery duration was 40 min with blood loss 350ml. Intravenous fluid: 200 ml colloid (6% Hetastarch) and 800 ml of Ringer lactate. Urine output was 100ml.

Post-op patient was monitored in ICU and epidural analgesia 6 hrly with Inj. Bupivacaine 0.0625%, 5ml. Catheter was removed after 24 hrs. Patient was shifted toward after 48 hrs and started Tab. Isoprenaline 10 mg BD and was advised permanent pacemaker after 6 weeks by cardiologist.

IV. DISCUSSION:

The causes of CHB include idiopathic fibrosis, chronic structural heart disease, acute ischemic heart disease, medication toxicity, nodal ablation, electrolyte abnormalities, and post-operative heart block after surgical or transcatheter aortic valve replacement percutaneous coronary interventions. [11] Other causes are Lyme disease, collagen vascular disorders, amyloidosis, sarcoidosis, and systemic lupus erythematosus. Drugs associated CHB include Anti-arrhythmic and Digoxin.

Recommendations are unclear about need of temporary pacing during labour and delivery. Some of the principal indications for pacemaker placement (e.g., symptomatic bradycardia, periods of asystole greater than 3 seconds, escape rhythms below the atrioventricular node with rates < 40 beats per minute) appear to be appropriate indications for parturient; the decision to electively place either temporary or permanent device should be made by multidisciplinary team. Patients who develop hemodynamic instability due to bradycardia should receive a temporary venous pacemaker. Transcutaneous pacing may be alternative in acute condition. [5]

In CHB heart rate will be less than 45-50 beats/min, hemodynamically unstable and is unresponsive to atropine and exercise. Usually, they may present with generalized fatigue, tiredness, chest pain, shortness of breath or syncope. The medical history should rule out cardiovascular disease, diabetes mellitus, hypertension, dyslipidemia, smoking, etc. If heart rates below 40/min, patients might present with heart failure, respiratory distress, and hypoperfusion (tachypnoea, altered mentation, cold skin). We should check for heart failure urging immediate pacing.

Investigations: Check ECG for ischemia. Correct electrolyte abnormalities and glucose,



Troponin level if suspecting myocardial infarction, Digoxin level to exclude digoxin toxicity, chest radiograph and complete blood count is necessary to evaluate for CHB causes.

Management of Pregnancy with CHB: Atropine acts at AV node ineffective in increasing heart rate in CHB. Hence treatment of symptomatic bradycardia include dopamine and epinephrine, isoprenaline, but may serve as a temporary supporting measure and might be unsuccessful in improving the patient's heart rate in CHB, may require pacing. We had interventional cardiologist team with transvenous temporary pacemaker (**Medtronic Single Chamber Temporary Pacemaker**) kept ready during surgery. The recommendation is that pacemaker is placed in patients with persistent third-degree AV block.[8] An Italian survey of over 24000 patients found that 21% received pacing for third-degree AV blocks.[9]

Anaesthetic problems in patients with CHB include bradycardia hypotension, arrhythmias, cardiac arrest or even sudden death. The anaesthetic technique that least alters the cardiac stability should be planned. General anaesthesia carries potential risk because inhalational and intravenous agents alter the hemodynamic. [6-8] if general anaesthesia is planned, drugs with minimal effects in depressing the heart rate have to be preferred, such as ketamine for induction, pancuronium for relaxation and isoflurane for maintenance. Although the risk of hypotension is less with epidural technique; it may not be suitable in emergent situations. Combined spinal epidural is another option, Modi *et al.* successfully managed such a case with the epidural anaesthetic technique. [9].

Under spinal anaesthesia, level of T6 is required in caesarean section for adequate analgesia and muscle relaxation. This may lead to uncompensated hypotension in case of CHB. General anaesthesia is safer if temporary or permanent pacing is not available in emergency surgery. Drugs which are known to cause bradycardia or hypotension should be avoided. Inj. Isoprenaline, a pharmacological pacemaker, should be used throughout intra and postoperative period if needed. For elective surgery in patients with CHB, pacemaker should be inserted or kept ready to optimize the heart rate. However isoprenaline with controlled general anaesthesia with set desired goals can be a very useful alternative in emergency situations. [9] Caesarean delivery might be safely contemplated without temporary pacing in asymptomatic CHB who demonstrated

chronotropic responses to atropine. In our patient, hemodynamic stability was maintained throughout the surgery because of epidural anaesthesia and intrathecal Fentanyl, achieving adequate anaesthesia with minimal effects on cardiovascular system. [10].

Fetal Apgar score is generally normal if mother is at term or near term, in our case a healthy baby with Apgar score 8/10 in 1st min and 10/10 in 5th min and weighing 2.4 kilograms was born.

V. CONCLUSION:

A full term elder multigravida with antenatal diagnosis of ccTGV and CHB scheduled for elective LSCS was managed by epidural anaesthesia and subarachnoid Fentanyl with successful fetomaternal outcome in tertiary care centre by multidisciplinary team. Intra and postoperative epidural analgesia benefitted stable hemodynamic in this CHB case. Postnatal education and advised for permanent pacemaker after 45 days of delivery by cardiologist.

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