



Clinical Case Report

Anaesthetic Management for LSCS in severe pulmonary hypertention- A Case Report

Authors

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Abstract

Pulmonary hypertention is rare progressive, fatal pathological entity, which when present in pregnancy associated with high mortality rate. Pulmonary hypertention is generally developed in patient with long standing rheumatic heart disease. Here we report a case of a pregnant lady with severe pulmonary hypertention who successfully underwent LSCS under combine spinal and epidural anaesthesia, and discuss major perioperative anaesthetic issue related to it.

Keywords; Pulmonary hypertension, pregnancy, CSE.

Introduction

Pulmonary hypertention is rare pathological entity, which is present in pregnancy and associated with high mortality rate. Pulmonary hypertention is generally developed in patient with long standing rheumatic heart disease. Pulmonary hypertention is define as mean PAP >25 mm Hg, or peak systolic pressure >40mm Hg. Pulmonary hypertention is classified as severe when mean PAP is > 45mm Hg, or systolic PAP >60mm Hg. PH in milder form remains undiagnosed till late pregnancy, and diagnosed as casual finding in echocardiography. But when PH is severe, it causes dyspnea at rest. In these type of patient, physiological raised blood volume which is common in pregnancy is very detrimental and causes several comorbidity like thromboembolic events, cardio-embolic stroke, cerebrovascular accident etc. In spite of proper and aggressive anaesthetic management these patients carries very high mortality rate.

We report the case of a pregnant lady with severe pulmonary hypertention who successfully underwent LSCS under combine spinal and epidural anaesthesia, and discuss major perioperative anaesthetic issue related to it.

Case Report

A 30 year old term pregnant women with G4, P3, L2 came to this Hospital with complain of term gestation and shortness of breath on exertion. On her examination she told that she was under care of cardiologist for Dyspnea for 2 months and was diagnosed as primary pulmonary hypertension. She was on Tablet sildenafil 20 milligram TDS, Tablet digoxin 0.25mg OD, Tablet Torget Plus (spironolactone, torsemide) 10mg OD. She had a history of right heart failure during last pregnancy. On examination Pulse 88/min, regular in rhythm, Blood pressure 100/70.

Her respiratory rate was 18 per minute and chest bilateral clear on auscultation.

ECG shows normal sinus Rhythm and the right Axis deviation.

Echo-Cardiography showed that dilated Right Atrium and Right Ventricle, Severe tricuspid regurgitation, Severe Pulmonary artery hypertension, Mean Pulmonary Artery Pressure is 128mm of Hg, although contractility is within normal range, ejection fraction is 64%, no regional wall motion abnormality is seen.

Her Investigation report in complete complete blood count haemoglobin 12gm %, TLC 11280 per cubic millimetre (N66.7%, L26.6%, M3.5%, E0.9%, B0.8%) Platelet 1,92,000, PT 12.6sec, INR 0.93 LFT. Total bilirubin 0.42, Direct bilirubin 0.20, SGOT 82, SGPT 102, ALP 192, total protein 5.87 albumin 2.9 gram per decilitre.

KFT... BUN 9.7, Creatinine 0.85, Serum Na⁺ 140, Serum Potassium 4.2, S. chloride 100, S. calcium 8.0, Random Blood Glucose 65 mg/dl, blood group O positive.

After explanation of poor outcome and Post-operative ventilator need of ventilatory support and intensive cardiac Care Unit (ICCU) need, high risk consent is taken.

Then Patient is taken for elective LSCS. Oxygen supplementation @ 4-6L/minute is given continuously.

All the monitor is attached including Pulse Oximetry, Continuous ECG monitoring, Non invasive blood pressure monitoring, also invasive Arterial Blood Pressure monitoring is attached after giving local anaesthesia.

Patient had heart rate 98/minute, SPO₂ 99% on Oxygen @ 6L/minute, ECG showing normal sinus rhythm.

Combined spinal epidural (CSE) anaesthesia is given at L2-L3 space in sitting position without any difficulty. 25 micrograms Fentanyl 0.5 ml + 0.5 ml NS is given in sub-arachnoid block space through the spinal route and epidural anaesthesia is given by 0.5% Bupivacaine 5 ml + 50 microgram Fentanyl. After 10 minute further 3 ml of 0.25% Bupivacaine is given through epidural

catheter and assessment of block is done. Which showed that block up to the level of T8 is present. Whole intra-operative period remains uneventful. Patient was given syntocinon 10 unit intramuscularly and 10 unit in IV infusion. Total blood loss is about 800 ml and total intra operative fluid given was about 1100 ml of crystalloids. A live healthy baby is delivered weighing 2.6 kg with APGAR of 5 and 9 at 1 AND 5 minutes postoperatively. Patient was continued on Oxygen @ 4L/ minute through mask for next 24 hours, and post-operative analgesia is given by intravascular PCM 1 gram TDS for next 2 days.

Discussion

Overall mortality rate of pregnant lady with pulmonary hypertension is very high in spite of adequate and proper anaesthesia care, So pregnancy is always discourage and early termination of pregnancy is considered, if accidental Pregnancy occurred

Pre-Operative Management

For best management in this type of case it is recommended that they should be admitted in the hospital at 20 week of gestation onwards. At this time major hemodynamic change of pregnancy occurs and if pulmonary hypertension is diagnosed in pregnancy Pulmonary vasodilators like (Calcium channel blocker, Prostanoids, Phosphodiesterase 5 inhibitors like sildenafil) are usually initiated. Oxygen inhalation may be administered.

Venous thromboembolism risk is increased in pregnancy so anticoagulant is used and low molecular weight heparin (LMWH) is agent of choice. Insulin receptor antagonist (bosentan), Warfarin is avoided due to potential teratogenicity.

If Pulmonary hypertension is diagnosed preoperatively and surgery is mandatory then disease specific treatment is started in postoperative period as soon as possible.

Consideration Regarding Anaesthesia

In this type of Patients our goal are...

1. Maintain oxygenation prevent hypoxemia, hypercarbia, acidosis.
2. Maintenance block to avoid Pain,
3. Avoid for the increase in pulmonary vascular Vascular Resistance.
4. Avoid mark decrease in Venice return.
5. Avoid mark decrease in systemic vascular resistance.
6. Avoid myocardial depression.

In the post operative Period the risk of right sided heart failure or sudden cardiac arrest is significantly increased in patient with Pulmonary artery hypertension.

This may be due to...

1. Increase Right ventricular afterload,
2. Inadequate right ventricular preload,
3. Hypoxemia,
4. Hypotension,
5. Dys-arrhythmia, or
6. Pulmonary thromboembolism.

We have two choices either regional anaesthesia or general anaesthesia.

In R A... Epidural Anaesthesia in gradual increasing dose is preferable now a days. As it causes less hemodynamic fluctuation but sometime Combined Spinal Epidural (CSE) is advocated Where only opioids is used in low dose in sub arachnoid block to maintain dense block and local anaesthetic agent + opioids (0.5% bupivacaine+ fentanyl) is given through epidural route in gradual incremental dose.

For General Anaesthesia

There are multiple conflict regarding this, nitrous oxide increased pulmonary vascular resistance in pre existing pulmonary hypertension patients, we should avoid ketamine as it increases pulmonary vascular resistance.

Opioids, Propofol, Thiopentone, NDMR can be used safely.

Conclusion

Mortality rate in parturient with PPH is very high as PPH may worsen after delivery. Close co-ordination required between anaesthesiologist, obstetrition, cardiologist, intensivist for

management of these type of patiens. Ideal anaesthetic management in parturient with PPH is still under research, but combine spinal epidural have better result than others.

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