

Epidural Anaesthesia a Saviour in a Case of Mitral Stenosis Posted For Emergency LSCS

Arjun¹, R Manickavasagan², P Praveen¹

¹Post Graduate Resident, Sundaram Medical Foundation, Chennai, Tamil Nadu.

²Senior Consultant and Head, Sundaram Medical Foundation, Chennai, Tamil Nadu.

Received: August 2019

Accepted: August 2019

Copyright: © the author(s), publisher. It is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

It is challenging for an Anaesthesiologist to provide correct anaesthesia technique to a patient with Mitral Stenosis posted for Emergency LSCS. In the presence of maternal heart disease, the circulatory changes of pregnancy may result in exacerbation of the hemodynamic changes leading to maternal and fetal morbidity and mortality. We report the successful anaesthetic management with graded epidural technique which minimises the hemodynamic perturbations. Successful management requires proper perioperative monitoring and thorough knowledge of the valvular heart disease.

Keywords: LSCS, Mitral Stenosis.

INTRODUCTION

Cardiovascular diseases complicate 1% - 3% of all pregnancies, responsible for 10% - 15% of maternal mortality.^[1] Rheumatic heart disease is the most common cardiac disease complicating pregnancy in developing countries.

In pregnancies with heart disease, circulatory changes result in exacerbation of the hemodynamic perturbations due to complex cardiac valvular lesions, leading to maternal and foetal morbidity and mortality.^[2] With advance anaesthetic care, the death rate of pregnant women with heart disease is lower in mitral stenosis compared with other congenital heart diseases like Eisenmenger's syndrome, pulmonary vascular obstructive disease and Marfan's syndrome with aortopathy.^[3] Although mitral stenosis is often associated with mitral regurgitation, morbidity is usually related to mitral stenosis.^[4] We report the successful anaesthetic management of a parturient suffering from Rheumatic Heart Disease with severe MS with mitral regurgitation under graded epidural anaesthesia.

CASE REPORT

A 28 years old primigravida of 37 weeks gestation

Name & Address of Corresponding Author

Dr. Arjun
Post Graduate Resident,
Sundaram Medical Foundation,
Chennai, Tamil Nadu.

with cephalo-pelvic-disproportion (CPD) was diagnosed with Rheumatic Heart Disease 3 months back, admitted in the emergency unit with labour pains. Patient gave H/o an episode of fever with chills, cough, breathlessness (NYHA grade III), orthopnoea, polyarthralgia at 6 months gestation & was diagnosed with RHD. There were no similar features in the childhood. Cardiologist prescribed the patient on Tab. Torsemide 10mg and T. Spironolactone 50mg OD, Tab. Metoprolol 50mg OD, inj. Benzathine Penicillin 1.2million IU IM 4thweekly.

On Preanaesthetic evaluation, Pulse Rate was 90bpm, Blood Pressure was 120/70 mmHg and SpO₂ was 100% at room air but JVP was not raised. On cardiovascular Examination, S₁, S₂ heard with loud P₂, Mid-diastolic murmur (grade 2) heard best in the left lateral position. Other systemic examination was normal. Biochemical & Haematological investigations were within normal limits. Electrocardiogram showed sinus tachycardia and P pulmonale. 3 months old 2D-Echo showed RHD, EF = 57%, severe mitral stenosis (MVOA 1.2sq.cm), severe MR, severe pulmonary hypertension, PASP 74mmHg). There was no fetal distress and NST was reactive.

Patient planned for emergency LSCS. Urinary catheterisation was done. A wide bore 16G i.v.cannula secured & RL started @ 10ml/kg. Inj. Metoclopramide 10mg & Inj. Ranitidine 50mg were slowly administered. Informed written consent was taken and patient and relatives were explained about the severity of the disease and the risks associated. Case was accepted under ASA class III(E). Standard

monitors (5-parameter ECG with ST segment monitoring, NIBP, Pulse oximetry) were connected. Epidural Block was performed using 16G Tuohy needles, epidural catheterisation done at L2-3 with patient in the sitting position. Patient turned supine, wedge placed below right flank & oxygen via face-mask at 6lt/min. was initiated. 15cc local anaesthetic (10cc 2% plain lignocaine + 5cc 0.5% Bupivacaine) inj. Epidurally via catheter in incremental doses (3+5+5+2) was given after negative aspiration of CSF/blood. Height of block achieved was T6. Intraoperatively, PR was maintained between 80 to 110 bpm with BP between 110-130/60-80 mmHg, SpO₂ = 98-100%, RR = 12-26/min. A single live, term female baby weighing 2.52kg delivered & cried immediately after birth. 5 IU oxytocin slow i.v. bolus & 15 IU oxytocin slow iv infusion was given; Uterus was well-contracted & abdomen was closed. Postoperatively, patient was shifted to ICU for the observation with maintenance of iv fluids at the rate of 50ml/hr & Epidural analgesia with 0.125% Levobupivacaine + 2 mcg/ml fentanyl at the rate of 4ml/hr supplemented. Patient was haemodynamically stable & rest of the Hospital stay was uneventful.

DISCUSSION

The goals for the anaesthetic management of patients with mitral stenosis are: (1) Avoid tachyarrhythmias and prompt treatment if develops and maintain sinus rhythm (2) avoid aortocaval compression, (3) maintain adequate preload and avoid decrease in SVR and (4) prevention of pain, hypoxaemia, hypercarbia and acidosis, which may further increase pulmonary vascular resistance

The choice of anaesthetic technique in this case was a challenge. It should be individualized based on the extent of disease, technique. Spinal anaesthesia may result in a sudden decrease in SVR, CO & haemodynamic collapse and is thus not recommended.^[5] General Anaesthesia causes stress response during laryngoscopy and tracheal intubation resulting in increase in pulmonary artery pressure,^[6] adverse effects of IPPV on venous return,^[7] use of volatile anaesthetics causing vasodilatation and use of nitrous oxide further increases pulmonary vascular resistance which has deleterious effects.

Hence, keeping all the pros & cons in our mind, we opted for epidural anaesthesia in a graded manner using small fractionated doses of local anaesthetic to ensure a gradual onset of block and minimize haemodynamic changes resulting from sympathetic autonomic blockade as neuraxial blockade in the form of graded epidural anesthesia allows a gradual onset of block with avoidance of hypotension by intermittent fluid bolus and judicious use of vasopressors.^[8,9] Hypotension if occurs is treated with cautious boluses of crystalloid solution and pure vasoconstrictors like Phenylephrine.

Invasive cardiovascular monitoring is must in a patient with severe cardiac disease as these patients are at a great risk of haemodynamic stress due to autotransfusion of blood from the uterus which can cause pulmonary hypertension, pulmonary oedema and cardiac failure.^[10] But we couldn't use as it was an emergency procedure & the patient couldn't financially afford the same.

Immediately after the delivery SVR and CO increases, which is very critical for the patient with pulmonary hypertension, so we kept the patient in intensive care unit for 2 days for post op monitoring.

CONCLUSION

Successful management depends upon the proper preoperative assessment of the patient, plan of anesthesia and intraop monitoring. Thorough understanding of the haemodynamic changes and the use of graded epidural in parturients with severe MS is safe for both the mother and the baby and thus results in decrease morbidity and mortality.

REFERENCES

1. Nanna M, Stergiopoulos K. Pregnancy Complicated by Valvular Heart Disease: an Update. J Am Heart Assoc Cardiovasc Cerebrovasc Dis. 2014 Jun 5;3(3):e000712
2. Khanom M, Hossain A. Valvular heart disease in pregnancy: A review. J Indian Coll Cardiol. 2015;5(3):177-182
3. Sawhney H, Aggarwal N, Suri V, Vasishta K, Sharma Y, Grover A. Maternal and perinatal outcome in rheumatic heart disease. Int J Gynaecol Obstet. 2003;80:9-14.
4. Elkayam U, Bitar F. Valvular heart disease and pregnancy. J Am Coll Cardiol. 2005;46:223-30.
5. Langesaeter E, Dragsund M, Rosseland LA. Regional anaesthesia for a Caesarean section in women with cardiac disease: A prospective study. Acta Anaesthesiol Scand 2010;54:46- 54.
6. Kuczkowski KM, van Zundert A. Anesthesia for pregnant women with valvular heart disease: The state of the art. J Anesth 2007;21:252-7.
7. Blaise G, Langleben D, Hubert B. Pulmonary arterial hypertension: Pathophysiology and anesthetic approach. Anesthesiology. 2003;99:1415-32.
8. Sharma SK, Gambling DR, Gajraj NM, Truong C, Sidawi EJ. Anesthetic management of a parturient with mixed mitral valve disease and uncontrolled atrial fibrillation. Int J Obstet Anesth 1994;3:157-62
9. Gash AK, Carabello BA, Kent RL, Frazier JA, Spann JF. Left ventricular performance in patients with coexistent mitral stenosis and aortic insufficiency. J Am Coll Cardiol 1984;3:703-11.
10. Shimoyama Y, Sawai T, Umegaki O, Agui T, Kadono N, Nakahira J, et al. Sudden onset of severe pulmonary edema after emergency cesarean section. JA Clin Rep 2016;2:23

How to cite this article: Arjun, Manickavasagan R, Praveen P. Epidural Anaesthesia a Saviour in a Case of Mitral Stenosis Posted For Emergency LSCS. Ann. Int. Med. Den. Res. 2019; 5(5):AN17-AN18.

Source of Support: Nil, **Conflict of Interest:** None declared