DOI: 10.14260/jemds/2014/2682

CASE REPORT

ANESTHESTIC MANAGEMENT OF ELDERLY PATIENT WITH SEVERE MITRAL STENOSIS ASSOCIATED WITH ATRIAL FIBRILLATION AND RENAL FAILURE POSTED FOR RIGHT TROCHANTER DHS FIXATION UNDER CONTINOUS LOW DOSE SEGMENTAL EPIDURAL ANESTHESIA

A. Naveen Kumar[1], B. Vijayabhaskar[2]

HOW TO CITE THIS ARTICLE:
A. Naveen Kumar, B. Vijayabhaskar. "Anesthetic Management of Elderly Patient with Severe Mitral Stenosis Associated with Atrial Fibrillation and Renal Failure Posted for Right Trochanter DHS Fixation Under Continuous Low Dose Segmental Epidural Anesthesia". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 21, May 26; Page: 5911-5915, DOI: 10.14260/jemds/2014/2682

ABSTRACT: We present a case of elderly patient aged 65 years who is suffering with severe mitral stenosis associated with atrial fibrillation, pulmonary artery hypertension and renal failure posted for right subtrochanter DHS fixation under continuous low dose segmental epidural anesthesia. Atrial fibrillation, pulmonary artery hypertension and renal failure carry high morbidity and mortality during surgery. General anesthesia is associated with high morbidity and mortality in patients with severe mitral stenosis associated atrial fibrillation, pulmonary hypertension and renal failure. In order to avoid high mortality associated with general anesthesia, we opted for continuous low dose segmental epidural anesthesia, which provided excellent Intraoperative hemodynamic stability and postoperative analgesia. This case highlights the advantage of continuous low dose segmental epidural anesthesia over general anesthesia in patients with severe mitral stenosis with atrial fibrillation and renal failure.

KEYWORDS: Low dose continuous Epidural anesthesia, Mitral stenosis, Atrial fibrillation, Pulmonary artery hypertension, Renal failure.

INTRODUCTION: Mitral stenosis is the commonest valvular heart disease. Most common cause of mitral stenosis is rheumatic heart disease. Other causes are carcinoid syndrome, left atrial myxoma, severe mitral annular calcification, thrombus formation, cor triatriatum, rheumatoid arthritis, systemic lupus erythematosus and congenital mitral stenosis. Normal size of the mitral valve orifice is 4-6cm.[2] Severity of mitral stenosis is measured by Echocardiogram.

	Mild	Moderate	Severe
Mean valve gradient	6	6-10	>10
Pressure half time(ms)	100	200	>300
Mitral valve area(cm^2)	1.6-2.0	1.0-1.5	<1.0

[1]In severe mitral stenosis dilation of left atrium causes stasis of blood, when combined with atrial fibrillation there is high risk of systemic thromboembolic episodes. Oral anticoagulants should be stopped 5 days before surgery and INR should be less than 1.5 on the day of surgery. In view of high risk of systemic thromboembolism in patients with atrial fibrillation, low molecular weight heparin is administered subcutaneously twice a day after stoppage of oral anticoagulants and continued till second post-operative day, when oral anticoagulants are again started.[2, 3]

DOI: 10.14260/jemds/2014/2682

The prime concern of the anesthesiologist in the anesthetic management of severe mitral stenosis with atrial fibrillation is to avoid sinus tachycardia or rapid ventricular rate and control rhythm during surgery. Marked increase in central blood volume as associated with over transfusion (or) head down posture should be avoided.

Drug induced decrease in systemic vascular resistance; hypoxemia and hypercarbia that may evoke right ventricular failure should be prevented.

Aim of the study is to highlight the safety of [4] continuous low dose segmental epidural anesthesia in patients with severe mitral stenosis associated with atrial fibrillation and renal failure.

CASE REPORT: A 65 year old female patient weighing 62 kgs was admitted in our hospital with history of fall and pain in the right hip and inability to walk since 2 weeks. On examination and x-ray of right hip joint, patient is diagnosed to having subtrochanter fracture of right hip joint, and posted for DHS fixation of right trochanter.

Patient referred to pre anesthetic clinic for fitness for surgery. History of cardiac disease, Hypertension, exertional dyspnea grade III, pedal edema were present. History of previous ischemic attack with left ventricular failure and hospital admission were present. Treatment history of Digoxin 0.125mg O.D, Amiodarone 3.125mg ½ B.D, Furosemide 40mg O.D, Enalapril 2.5mg O.D, Acitrom 2mg O.D were present.

The patient was evaluated in pre anesthetic clinic for fitness for surgery with investigations like complete blood picture, renal profile, prothrombin time, INR, chest X-ray, ECG, 2D Echo and Ultra sound abdomen.

On investigations we found that patient is suffering with severe mitral stenosis, atrial fibrillation, pulmonary artery hypertension and renal failure.

Systemic examination revealed ejection systolic murmur in the mitral and pulmonary area and normal breath sounds.

E.C.G shows absent P waves, variable PR intervals and atrial fibrillation.

Chest X-ray shows cardiomegaly.

Echocardiography shows mitral valve area less than 1cm, [2] mean pressure gradient 12mmHG, dilated left atrium, moderate TR and moderate pulmonary artery hypertension.

Ultrasound abdomen revealed bilateral Grade I renal parenchymal disease.

Prothrombin time 23 seconds and INR 2.2.

Patient is advised to stop Acitrom and [5] Enaxoparin 40 mg subcutaneously twice a day administered. Prothrombin time and INR repeated after 5 days which shows 13 seconds and 1.3 respectively. Rest of the treatment is continued.

After obtaining high risk consent from patient and attendants in view of [6, 7] old age, severe Mitral stenosis, Atrial Fibrillation, Pulmonary artery hypertension and renal failure, We opted for subtrochanteric DHS fixation under continuous low dose [8, 9] segmental Epidural anesthesia.

Infective endocarditis [10] prophylaxis given 1 hour before surgery (Ampicillin 2 gm IV) and 6 hours after surgery (Ampicillin 1 gr IV). Gentamycin avoided because of renal failure.

Patient shifted to the OT and premedication of Ondansetron 4 mg, Midazolam 1mg IV given before epidural anesthesia. In operating room NIBP 148/84 mmHg, heart rate – 86/mt, irregular, Respiratory rate 14/mt and Spo2 – 98%.

DOI: 10.14260/jemds/2014/2682

100% Oxygen inhalation by face mask given. Multichannel monitoring of SpO2, Pulse rate, NIBP, 6 lead ECG, Temperature started. Input and output chart maintained.

18 gauge IV Cannula secured on left dorsum of hand.

PROCEDURE: Patient in sitting posture, under aseptic precautions epidural anesthesia achieved by injecting 4ml of 2% xylocaine [11] in L4-L5 epidural space with loss of air resistance technique and hanging drop test. 4ml of 2% xylocaine given twice with a gap of 4 minutes. Effect adequate after 10 minutes of last dose of 2% xylocaine. Anesthesia is adequate and patient is comfortable. Inj. Butorphanol 1mg i.v. given. 500 ml of ringer lactate and 500ml of D.N.S are administered. 6 ml of 2%xylocaine given after 45 minutes of 1st dose of Xylocaine administration.

Surgery lasted for about 55 minutes. Hemodynamics are well maintained intraoperatively and post operatively. Patient is conscious and coherent Spo_2 99%, PR 62/mt and N.I.B.P 146/82. After satisfactory general condition patient shifted to postoperative intensive care unit. In postoperative intensive care unit patient was continuously monitored, inj. Buprenorphine 60µg given epidurally twice a day. 6ml of 0.125%bupivacaine was given every 4 hours for postoperative analgesia in first 24 hours after surgery.

Epidural catheter was removed 24 hours after surgery and patient t was given inj. tramadol 75mg i.v. every 8 hours. Inj. Enoxaparin 40 mg administered subcutaneously twice a day in the first 24 hours and reduced to once a daily dose after 24 hours of surgery, continued for 4 days and acetrom started after 48 hours of surgery.

Digoxin 0.125mg O.D. Cardace 3.125mg1/2 B.D, Enalparil 2.5mg O.D inj.lasix 20mg i.v. O.D started 24 hours after surgery. Patient was kept in postoperative intensive care unit for 5 days and her stay was uneventful and shifted to ward on 6th postoperative day and rest of her hospital stay was uneventful and discharged on 11th postoperative day.

DISCUSSION: The prime concern in managing our case was to avoid systemic thromboembolism, maintain renal perfusion[12] and maintain hemodynamic stability during surgery. The case study shows the[13] safety of continuous low dose segmental epidural anesthesia in patients with severe mitral stenosis, atrial fibrillation[14] pulmonary artery hypertension and renal failure, who have higher morbidity and mortality under general anesthesia. Continuous epidural anesthesia provided the patient pain free period for 24 hours.

In patients with mitral stenosis, atrial fibrillation, pulmonary artery hypertension and renal failure who were given general anesthesia required more prolonged I.C.U. stay when compared to low dose continuous segmental epidural anesthesia.

We used incremental low volumes of Xylocaine as incremental low volumes has higher cardiovascular stability when compared to single higher volume administration, lower systemic toxicity in case of subarachnoid spread. Incremental low volume administration of Xylocaine has lesser incidence of sudden onset of hypotension & bradycardia which is detrimental in patients with mitral stenosis and atrial fibrillation.

Epidural catheter is kept only for 24 hours as compared to conventional 48 hours due to usage of Enxoparin. Enxoparin[15] dose is also reduced to 40 mg O.D. compared to 40mg B.D. due to presence of renal failure.

CONCLUSION: Continuous low dose segmental epidural anesthesia is a safe anesthesia technique for high risk valvular cardiac patients undergoing lower limb surgeries, lower abdominal surgeries and caesarean section.

REFERENCES:

1. Nancy A Nussmeier, Michael C Hauser, Muhammed F Sarwar, Alina M Grigore, Bruce E Searies. Anaesthesia for cardiac surgical procedures. Ronald D. Miller 7th edition Miller's Anaesthesia Churchill Livingstone Elsevier, 2010; 1927 – 1929.
2. Adriana Herrera. Valvular heart disease; Roberta L. Hines, Katherine E. Marschall, 5th edition: Stoelting's Anaesthesia & Co- Existing Diseases Reed Elsevier India private limited: 2012. 32 – 34.
3. Peter H. Pan, Robert D'Angelo. Anesthetic and Analgesic Management of Mitral Stenosis during pregnancy. Regional Anesthesia and Pain Medicine, vol 29, No6 (November-December)2004:pp 610-615.
4. Christopher M. Bernards. Epidural and spinal anaesthesia; Paul G. Barash: 6th edition: Clinical Anaesthesia; Lippincott Williams & Wilkins; 2010. 935 – 944.
5. Crowther M, Lim W. Low molecular weight heparin and bleeding in patients with renal failure. Curr Opin Pulm Med.2007 Sep; 13(5):409-13.
6. Goldman L, Caldera DL, Southwick FS, Nussbaum SR, Murray B, O'Malley TA et al. Cardiac risk factors and complications in non-cardiac surgery. Medicine (Baltimore).1978 Jul; 57(4):357-70.
7. Larsen SF, Olesen KH, Jacobsen E, Nielsen H, Nielsen AL, Pietersen A et al. Prediction of cardiac risk in non-cardiac surgery. Eur Heart J.1987 Feb;8(2):179-85
8. Marchertiene I. Regional Anaesthesia and Cardiac Disease. Medicina (Kaunas).2003;39(8):721-9.
9. Daniel D. Moos. Epidural Anesthesia: Factors Affecting Height and Local Anesthetic Used www.ifna-int.org/ifna/e107_files/downloads/lectures/11Factors.ppt
10. Bloomfield P, Bradbury A, Grubb NR, Newby DE. Cardiovascular disease; Davidson's principles and practice of medicine 20th edition Churchill livingstone Elsevier, 633.
11. M. Arakawa, Y. Aoyama, Y. The Block of the sacral segments in lumbar epidural anaesthesia. Oxford Journals, Medicine, BJA, Volume 90, Issue 2 Pp. 173-178
12. Shtutin SA. Some aspects of epidural anesthesia in patients with renal failure. Lik Sprava.2001 Jul-Aug ;(4):112-5.
13. Elizabeth I Krenz, Stuart R Hart, Melissa Russo. Epidural Anesthesia for Cesarean Delivery in a Patient With pulmonary artery Hypertension and a Right to Left shunt. Ochsner J. 2011 Spring; 11(1): 78–80.
14. Jochen Gille, Hans-Jürgen Seyfarth, Stefan Gerlach, Michael Malcharek, Elke Czeslick, Armin Sablotzki. Perioperative Anesthesiological Management of Patients with pulmonary artery hypertension. Anesthesiology Research and Practice Volume 2012 (2012), Article ID 356982, 16 pages.
15. Lachish T, Rudensky B, Slotki I. Enoxaparin dosage adjustment in patients with severe renal failure: antifactorxa concentrations and safety. Zevin S Pharmacotherapy. 2007 Oct; 27(10):1347-52.

DOI: 10.14260/jemds/2014/2682

CASE REPORT

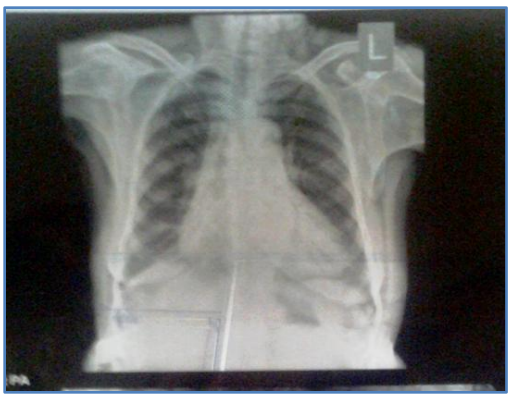
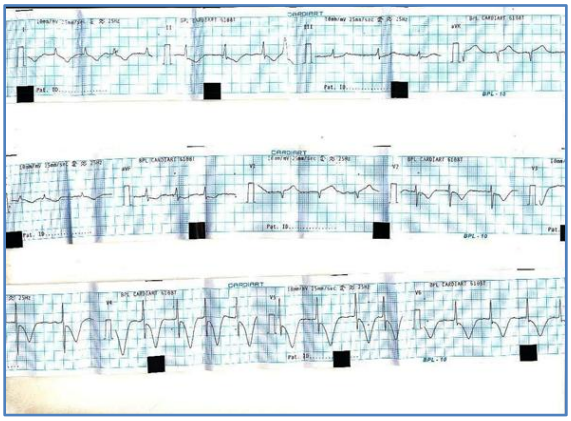


Figure 1: Patient chest X Ray PA view showing dilated Left Atrium and Left Ventricle



Patient ECG Showing Absent P Waves and T Wave Inversion

AUTHORS:

1. A. Naveen Kumar
2. B. Vijayabhaskar

PARTICULARS OF CONTRIBUTORS:

1. Professor, Department of Anaesthesia, Government Medical College, Ananthapuram, A. P.
2. Assistant Professor, Department of Anaesthesia, Government Medical College, Ananthapuram, A. P.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. A Naveen Kumar,
#15/51, Flat No. 301,
Jayam Paradise,
Kamalanagar,
Ananthapuram-515001, A. P.
Email: ramyaraj27@gmail.com

Date of Submission: 25/04/2014.
Date of Peer Review: 26/04/2014.
Date of Acceptance: 05/05/2014.
Date of Publishing: 26/05/2014.