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CASE REPORT

TRANSURETHRAL RESECTION OF PROSTRATE IN DILATED CARDIOMYOPATHY PATIENT WITH LOW EJECTION FRACTION

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ABSTRACT: Dilated cardiomyopathy (DCM) patient undergoing non-cardiac surgery poses a challenge for the anesthesiologist to manage it efficiently. DCM is usually accompanied by progressive congestive cardiac failure (CCF) and life threatening arrhythmias. The anesthesiologist must have the idea of its haemodynamics, diagnostic evaluations, treatment modalities and more so regarding various drug interactions during anesthesia. We managed this case with combined low dose spinal epidural anesthesia with dexmeditomedine as additive.

KEYWORDS: Dilated cardiomyopathy, Transurethral resection of prostate, Bupivacaine, Spinal anesthesia.

INTRODUCTION: DCM is characterized by progressive cardiac dilation and results in impaired ventricular function. It has a prevalence of 36 per 100000 population.[1] The known etiological factors are myocardial ischemia, valve dysfunction and post-viral infection. DCM can be a part of certain diseases like sickle cell disease, muscular dystrophy, excess alcohol consumption, hypothyroidism and some chemotherapeutic agents.

The management of a patient with DCM undergoing non cardiac surgery is always a challenge to the anesthesiologists as DCM is most commonly accompanied by CHF (congestive heart failure) and malignant arrhythmias (the most common cause of death in DCM).[1] Here we are reporting a case of dilated cardiomyopathy with low ejection fraction posted for transurethral resection of prostate.

CASE REPORT: A 68-years old man with benign prostatic hypertrophy was posted for TURP. The patient was a known case of dilated cardiomyopathy & his previous medical records substantiated the underlying disease. He had history of recurrent episodes of CCF & was hospitalized frequently in the cardiology ward. He gave history of alcohol abuse since 30yrs. On general physical examination, heart rate - 74 beats per min and regular, blood pressures (BP) - 116/74 mmHg, respiratory rate - 16/min with normal vesicular breath sounds, S1 & S2 heard & there were no added sounds(murmurs).

There were no signs of heart failure like raised JVP, ankle edema or hepatomegaly. His investigations were as follows - Hemoglobin -11.6gm/dl, blood urea- 28mg/dl, Serum creatinine- 1.95mg/dl, random plasma glucose- 127mg/dl**,** sodium- 142meq/l, potassium- 3.6meq/l, magnesium chloride- 100mg/dl.

Chest radiograph revealed cardiomegaly, no signs of pulmonary congestion was present. Preoperative 12 lead EKG showed LBBB, poor progression of R wave in leads V1-V5. Echocardiography reports demonstrated global hypokinesia of left ventricle, poor systolic function, ejection fraction of 26%, mild mitral regurgitation, mild tricuspid regurgitation, trivial aortic

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regurgitation and left ventricular end diastolic dilatation. His symptoms were adequately managed with once daily doses of Tab lisinopril (zestril) 2-5mg, Lasix 40 mg, digoxin 0.125mg. A high-risk consent was obtained. We decided to go with Regional (low dose combined spinal -epidural) anesthesia technique and the reason for its selection were explained to the patient and his fullest co-operation requested.

In the operation theater, intravenous access was established with 18G cannula and lactated ringer solution administered at the rate of 1.5ml/kg/hr. Non-invasive blood pressure (NIBP) monitoring for every 5 mins in automatic mode, arterial oxygen saturation (SpO2) and lead II of the EKG were monitored throughout the surgery. Emergency drugs like inotropes, xylocard, & amiodarone were kept ready. Under strict aseptic precautions, CVP line was placed through the internal jugular vein.

After taking antiseptic precautions, epidural needle was introduced at L1-L2 level with the needle hub directed downwards and the catheter was inserted. The tip of the catheter was at the level of L3-L4. Then spinal anesthesia was given in L4-L5 space. Patient received 2.5ml of 0.25% Bupivacaine (1.25 ml of 0.5% bupivicaine + diluted with 1.25 ml of 5% dextrose, to maintain the baricity). In Addition, 10 microgram of dexmeditomidine was added. The spinal sensory level attained was up to T10. According to Modified Bromage scale, motor grade was II. Oxygen was given via poly mask at the rate of 4 liters/min.

After 10 minutes of spinal anesthesia, the systolic blood pressure dropped down to 90 mmHg. Injection mephentermine 6 mg iv (intravenous) was given. BP increased to 102/65 mmHg. There were frequent episodes of ventricular ectopics for which patient was administered injection xylocard 60mg iv bolus and there `after put on xylocard infusion. Central venous pressure was maintained between 8-9 cmH2O. After infusing 500 ml of ringer lactate, 500 ml of hetastarch was given to prevent fluid overload. Surgery lasted for 1.5hour. At the end of surgery, patient was conscious, pain free and comfortable.

Postoperative BP was 110/72 mmHg and pulse rate was 96 beats/min without any missed beats. After 2 hours, 10ml of 0.375% ropivacaine and 50microgram of fentanyl was given as epidural bolus, followed by a continuous epidural infusion through an infusion pump was started with 0.2% ropivacaine + 2 microgram/ml of Fentanyl at the rate of 7ml/hr and there-after continued up to 48 hours post-operatively. The remaining post- operative course was uneventful.

DISCUSSION: Anesthetic management of patients with cardiomyopathy with reduced systolic function is challenging and may be associated with high mortality.[2] Two key factors which holds the key to the management of patients with cardiomyopathies are:

1. To improve systolic function.
2. To prevent sudden death due to ventricular arrhythmias.

In pursuit of improving systolic function, patient should initially be managed medically with administration of diuretics, beta-blockers, angiotensin converting enzyme inhibitors or angiotensin receptor blockers. Patients usually develop ventricular arrhythmias in the pre-operative period, anti-arrhythmic medications should be continued. Decrease in potassium or magnesium levels leads to arrhythmias. Hence, these electrolytes should be measured pre-operatively and corrected as necessary. Oxygen carrying capacity should be adequate which is determined by cardiac output and

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hemoglobin. Therefore, Hemoglobin should be maintained at a higher level and 13-14gms/dl has been recommended. To improve upon the cardiac output, inotropes are required.[3]

Goals of anesthetic management are: 1) Avoid myocardial depression, 2) Maintain normovolaemia, 3) Avoid ventricular after load 5) Avoid sudden hypotension with regional anesthesia.[4] Xylocaine, Amidarone or defibrillation should be kept ready to counteract arrhythmias.[5] Underlying medical condition of the patient holds the key for the acceptable limit of decrease in blood pressure and heart rate.[6] Cardiac filling pressure is determined by placing pulmonary artery catheterization to have a fair idea about fluid therapy and pharmacological management.[6] Continuous monitoring of preload by Transesophageal Echocardiography (TEE) and of myocardial performance by cardiac output measurement (CCO) is also useful.[7] As this was not available in our hospital, so we relied upon central venous pressure.

We used combined low dose spinal and epidural anesthesia unlike general anesthesia which carries a high risk, as these patients may develop CHF or arrhythmias during intra operative period.[1] According to guidelines on per-operative cardiovascular evaluation and care for non-cardiac surgery (2007), infra-inguinal procedures can be performed under spinal or epidural anesthesia with minimal hemodynamic changes, if neuraxial blockade is limited to those dermatomes. Studies have shown that incidence of hypotension in caesarean section[8-10] and transurethral resection of prostrate [11] was decreased with combined spinal‑epidural anesthesia, using low doses of local anesthetics.

Spinal anesthesia has added advantages. It reduces bleeding, post-operative respiratory problems, deep vein thrombosis, CNS complications, facilitate early ambulation, and minimizes requirement of postoperative analgesia. In addition, spinal anesthesia does not require instrumentation of the airway and patients maintain their airway and pulmonary function.

Maintenance of consciousness during surgery permits prompt recognition of acute damages in cerebral function or the onset of angina pectoris. In our case, we used 0.25% hyperbaric bupivacaine 1.5ml+1.5 ml 5% dextrose +10 mcg dexmeditomedine. Low-dose local anesthetic is commonly administered to limit the level of block in order to minimize the haemodynamic changes.[12]

However, sometimes it may not provide an adequate level of sensory block that is required. Thus, intra-thecal additive is frequently administered with local anesthetic to improve analgesic effect. Previous clinical studies showed that intravenous dexmedetomidine administration prolonged the sensory and motor blocks of bupivacaine spinal analgesia.[13,14]

Intrathecal dexmedetomidine, low dose bupivacaine spinal anesthesia can provide the effective spinal anesthesia and post-operative analgesia with minimal side-effect compared with the local anesthetic group.[13,15]

Fluid management in DCM is critical. Intra-operative 500 ml of HES (hydroxyl ethyl starch) and 500 ml of ringer lactate was given. Over hydration may not be desirable as it may lead to congestive heart failure. Fall in blood pressure was corrected with injection of mephentermine, a vasopressor to mitigate against the vasodilating effect of the anesthetics could be a rational approach rather infusing intravenous fluids.

CONCLUSION: The most important factors for management of these high risk patients include a thorough preoperative assessment, optimizing the cardiac status, proper anesthetic planning, intra-operative as well as postoperative monitoring with prompt diagnosis and management of complications. Combined low dose spinal epidural anesthesia may be beneficial for BPH patient with DCM undergoing TURP.

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