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Anaesthetic management of a case of dilated cardiomyopathy posted for exploratory abdominal surgery

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Abstract

Patients with known case of dilated cardiomyopathy (DCMP) undergoing major open abdominal surgery under general anaesthesia poses a challenge for anesthesiologist. It is because in such surgeries there is risk of precipitating congestive heart failure. Also major haemodynamic instability due to major fluid shift. Here we report a successful case management of patient with dilated cardiomyopathy posted for exploratory abdominal surgery under general anaesthesia.

Keywords: Dilated cardiomyopathy, open abdominal surgery, general anaesthesia

Introduction

In case of dilated cardiomyopathy (DCMP), there is mainly dilatation of left ventricle or both the ventricle with systolic dysfunction and normal AV wall thickness.

DCMP is defined by presence of fractional myocardial shortening less than 25% and /or left ventricular ejection fraction (LVEF) less than 45% and LV end diastolic diameter greater than 117%. DCMP is 3rd most common cause of heart failure & most common indication for heart transplantation.

The anaesthetic management of a patient with dilated cardiomyopathy (DCMP) posted for abdominal surgery poses a challenge for anesthesiologist due to a risk of precipitating congestive heart failure, arrhythmia which may lead to sudden cardiac death.

Major fluid shift during open abdominal surgery predisposes to volume depletion so perfect balance between preload and after load has to be maintained for adequate cardiac functioning.

Here we report a successful case management of patient with dilated cardiomyopathy posted for exploratory laparotomy

Case Report

A 59 year old female came with c/o pain in abdomen since 10-15 days which was dull aching, continuous and generalized in nature, relieved on medication. She was also having h/o 2-3 episodes of vomiting.

After investigating she was diagnosed with sealed off perforated appendix & was posted for exploratory laparotomy SOS hemicolectomy.

She was k/c/o diabetes and hypertension since 8-9 yrs on medication She was diagnosed with dilated cardiomyopathy 6 years back when she came with c/o chest pain and breathlessness and, 2d echo showed LVEF of 20-25% with global LV hypokinesia. She was on medications with oral frusemide, oral hypoglycemic agents, carvedilol, atorvastatin and clopidogrel (stopped 5 days before surgery).

On examination, her heart rate was 68/min with blood pressure of 122/68 mmHg and spo2 of 99% on room air, no signs of cardiac failure seen. ECG showed normal sinus rhythm with T wave inversion in lead II and aVF. In chest xray there was cardiomegaly. Detailed 2D ECHO done which showed global LV hypokinesia with LVEF 35% with DCMP, mild MR, no PAH. Other routine investigations were normal with heamoglobin of 8.8% and blood sugar level was 115 mg/dl.

With all the advices of continuing cardiac drugs, control of sugars and availability of blood products pt taken inside ot after taking high risk consent and confirming adequate starvation.

After attaching all the standard monitors iv fluid started through peripheral line. Before proceeding to general anaesthesia, epidural catheter, right sided IJV, right radial arterial line secured under local anaesthesia. Thenafter patient induced with inj etomidate and inj rocuronium. Anaesthesia maintained on o₂ + N₂O + isoflurane + intermittent vecuronium on closed circuit with controlled mechanical ventilation.

Pt tolerated procedure well with episodes of hypotension which were managed by giving fluid and blood according to CVP (4-6 cm of H₂O). Need of inotropes were required which were tapered according the blood pressure of the patient. Intra operative low concentration epidural top up given to decrease the need of IV and inhalational agents and also for post operative analgesia. Surgery lasted for about 4 hrs.

After surgery patient well reversed and well extubated. Shifted to post op ICU for one day observation and then to ward.

Discussion

In patients with dilated cardiomyopathy (DCMP), there is impaired ventricular systolic pumping of the blood which further lead to progressive cardiac enlargement by the process of remodeling. This will lead to state of congestive heart failure. Such patients presents with c/o chest pain, feeling tired, leg swelling, shortness of breath.

In perioperative period, patients with DCMP may leads to precipitation of congestive heart failure, arrhythmias, sudden cardiac arrest.

Our patient was having LVEF of 35% on echocardiography with global LV hypokinesia. These were the poor prognostic factors in our patient.

Anaesthetic management goals in such patients mainly consist of maintaining normovolemia, avoidance of drug induced myocardial depression and prevention of increase in afterload. In our patient invasive blood pressure monitoring was carried out for early detection and treatment of hypotension. CVP monitoring was helpful for proper fluid therapy. We maintained CVP 4-6 cm of H₂O through out the procedure. Intra operatively transfusion of blood along with inotropic support were used to maintain the blood pressure of the patient.

Before induction, epidural catheter, right sided IJV, right radial arterial line secured under local anaesthesia. For induction among the IV agents, etomidate was preferred as it causes least cardiovascular depression. Propofol also can be used as it decreases sympathetic tone and reduces systemic vascular resistance. Ketamine increases afterload by its sympathetic stimulation. Opioids cause little or no cardiovascular depression and decrease the dose of general anaesthetic agents. In our case we also used epidural top up to decrease the requirement of other IV agents. In inhalational agent, all the agents are myocardial depressants, so high concentration is best to be avoided.

In post operative analgesia we gave epidural top up according to VAS score of the patient.

Conclusion

An old female with 59yrs of age with k/c/o DCM with HTN and DM posted for exploratory laparotomy managed successfully under GA + epidural + arterial line without much complications.

Anaesthetic management of patient with DCMP poses a

challenge for the anaesthetist, but meticulous planning, appropriate monitoring, judicious use of pharmacological agents and good anaesthetic technique according to patients general condition and surgical requirement can lead to a favorable outcome.

Conflict of Interest

Not available

Financial Support

Not available

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