

Severe Left Ventricular Systolic Dysfunction after Laparoscopic Cholecystectomy

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Abstract: This article presents the case of 32 years female that had systolic dysfunction after laparoscopic cholecystectomy. Preoperatively patient was not having any symptoms and signs of cardiac abnormality. Intra operative period was uneventful. Postoperatively patient was in hypotension and was not maintaining SPO₂. 2D-Echo revealed severe left ventricular systolic dysfunction. Lesson learned from this case, anesthesiologist should be aware of effects of CO₂ pneumoperitonium on cardiopulmonary system in laparoscopic surgeries.

Keywords: laparoscopic cholecystectomy, left ventricular systolic dysfunction (LVSD).

INTRODUCTION

Laparoscopic cholecystectomy has advantage of less postoperative pain, better cosmetic results, fast recovery. However laparoscopic cholecystectomy is not risk free procedure as CO₂ pneumoperitonium, increased pressure in abdomen, positioning, can compromise cardiopulmonary function [1]. Decreased myocardial contractility leads to left ventricular systolic dysfunction. LVSD will be manifested in the form of decreased ejection fraction, decreased cardiac output, and increase pressure in pulmonary vessels. Conditions like myocardial infarction, cardiomyopathies, myocarditis can cause left ventricular systolic dysfunction. Our patient suffered severe left ventricular systolic dysfunction in the immediate postoperative period, the cause of which is not completely understood.

CASE REPORT

32 years female was posted for laparoscopic cholecystectomy for cholelithiasis. She was laborer by occupation and had pain in abdomen on and off since 3 years and increased in intensity since 2 months. There was no history of hypertension, dyspnoea, palpitation, cough, chest pain, and edema feet. No past history of hospitalization for cardiac problems. On examination patient was afebrile, pulse rate- 75/min, regular. There were no pallor, cyanosis, clubbing, and icterus. JVP was not raised. Blood Pressure was 130/80 mmHg. On CVS examination heart sounds were normal, no murmur, Respiratory and central nervous systems were within normal limit. Investigations- Hb-11.2 gm%, blood sugar, kidney function test, liver function test were normal. ECG, X-RAY chest were normal.

General anesthesia was planned. Multipara monitor attached to patient to record Non-Invasive blood pressure, ECG, SPO₂. Patient premedicated with intravenous injection of ranitidine 50mg, midazolam 1 mg, fentanyl 70 microgram, palonosetron .075mg.

Patient was pre-oxygenated for 5 minutes, induced with injection propofol 100 mg, injection succinylcholine 100mg, intubated with no. 7.5 cuffed endotracheal tube and maintained on oxygen, nitrous oxide, isoflurane and non-depolarizing muscle relaxant, injection vecuronium. Intra operatively patient was haemodynamically stable and received three points of crystalloids. Patient was extubated after surgery, was conscious, oriented, stable haemo dynamically, maintaining SPO₂ to 98% and shifted to post surgical care unit.

In post surgical care unit, after 20 minutes patient became drowsy, SPO₂ dropped to 85%, BP was 80/60mmHg and developed bilateral basal crepitations. Decision was taken to intubate and to put on ventilator. Infusion of injection noradrenaline 5 microgram/min was started, Injection furosemide 20 mg given. There was no response to injection noradrenaline so injection dobutamine 50 microgram/min. was started. Patient responded to dobutamine and furosemide and was maintaining saturation and blood pressure. Extubated on second day, 2D-Echo revealed severe left ventricular systolic dysfunction, ejection fraction 38%, pulmonary artery pressure 40mmHg. Slowly dobutamine and furosemide was tapered off and finally stopped. Patient was shifted to surgery ward and asked to seek cardiologist opinion.

DISCUSSION

Laparoscopic cholecystectomy has replaced open cholecystectomy as the gold standard for cholelithiasis. Laparoscopic approach has advantage of less postoperative pain, short hospital stay. But risks associated with CO₂ pneumoperitonium and positioning also increased. Cardiovascular changes like decreased left ventricular systolic function, decreased cardiac output, and increased systemic and pulmonary vascular resistance are observed during laparoscopic surgeries [2].

In our case patient underwent laparoscopic cholecystectomy for cholelithiasis. Pre anaesthetic evaluation was done before surgery. She was laborer by occupation and exercise tolerance was good. ECG and X-RAY chest were normal. As patient's age was 32 years and exercise tolerance was good so we did not advise 2D-Echo before surgery. During surgery patient was haemo dynamically stable and maintaining SPO₂ up to 99%. After 20 minutes of extubation in post surgical care unit, patient landed in hypotension, SPO₂ below 90% so incubated and put on ventilator. Vasopressor in the form of noradrenaline started. We ruled out the hypovolemia as the cause of hypotension. Arterial blood analysis report was normal. There was neither response to nor adrenaline.

We thought of myocardial depression that led to hypotension and increased pressure in pulmonary vasculature caused bilateral basal crepitations. So started injection dobutamine and furosemide to which patient dramatically responded. Report of 2D-Echo was suggestive of severe left ventricular systolic dysfunction, decreased ejection fraction, increased pulmonary artery pressure. There are case reports of myocardial infarction causing left ventricular systolic dysfunction after laparoscopic cholecystectomy [3]. There were no ECG changes, CPK-MB was normal, so ruled out myocardial infarction. Pulmonary embolisation can cause hypotension [4]. There were no ECG changes suggestive of pulmonary embolisation and D-Dimer was normal. Sometimes myocarditis is associated with left ventricular systolic dysfunction, but our patient was a febrile, no arrhythmias on ECG [5]. No drug which can cause left ventricular systolic dysfunction was used. There is a case report of sudden hypoxemia and hypotension after laparoscopic cholecystectomy caused by anterior motion of mitral valve [6]. In our case no new onset of murmur was found and 2D-Echo did not reveal such findings.

Stress induced cardiomyopathy can cause left ventricular systolic dysfunction. Presentation of this condition is like myocardial infarction. Kelly G Ural *et al.*; reported such case [7]. Literatures are available addressing case of acute congestive heart failure after laparoscopic cholecystectomy [8] and cardiac arrest during laparoscopic cholecystectomy under general anesthesia [9].

CONCLUSION

Anesthesiologists should be aware of considerable effects of CO₂ pneumoperitonium and positioning on cardiovascular system and should monitor patient for cardiovascular instability in postoperative period.

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