OPEN CHOLECYSTECTOMY UNDER THORACIC ANESTHESIA IN A PATIENT WHO HAS CHRONIC OPSTRACTIVE PULMONARY DISEASE WITH HEART FAILURE AND DEVELOPED RESPIRATORY DISTRESS-A CASE REPORT

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Abstract

For decades, the management of symptomatic cholelithiasis in high surgical risk patients has remained contentious. Cholecystectomy has become firmly established as a procedure of choice in the management of symptomatic cholelithiasis. The procedure usually necessitates general anesthesia and endotracheal intubation to prevent aspiration and respiratory embarrassment secondary to the induction of pneumoperitoneum. Open cholecystectomy (OC) usually necessitates general anesthesia and endotracheal intubation to prevent aspiration and respiratory embarrassment. We report our preliminary experience with open cholecystectomy using thoracic anesthesia in patients with cardiac failure and with previous history of smoking. A 78-year-old mal (weight 81 kg, height 176 cm) with abdominal pain applied to the emergency department. After general surgery and infectious disease consultations, he was admitted to the intensive care unit because of high infection parameters and general condition disorder. He had a history of frequent pain at the right hypochondriac region with ultrasonography documented calculi in the gallbladder for two years and heart failure. With the patient at the right lateral decubitus position, EA was performed with a 18-G thoracic catheter inserted 4cm towards the cephalad-direction from T7/T8 successfully. After completion of the surgical procedure, the thoracic catheter was removed, and the patient was shifted to the post-anesthesia care unit (PACU) for further observation. The patient remained hemodynamically stable and comfortable during the 1 hour at PACU. In this case report, we wanted to demonstrate the management of an emergency case with epidemic anesthesia, with a general condition of poor heart failure and septic shock.

Keywords: Thoracic anesthesia, Open cholecystectomy, smoking.

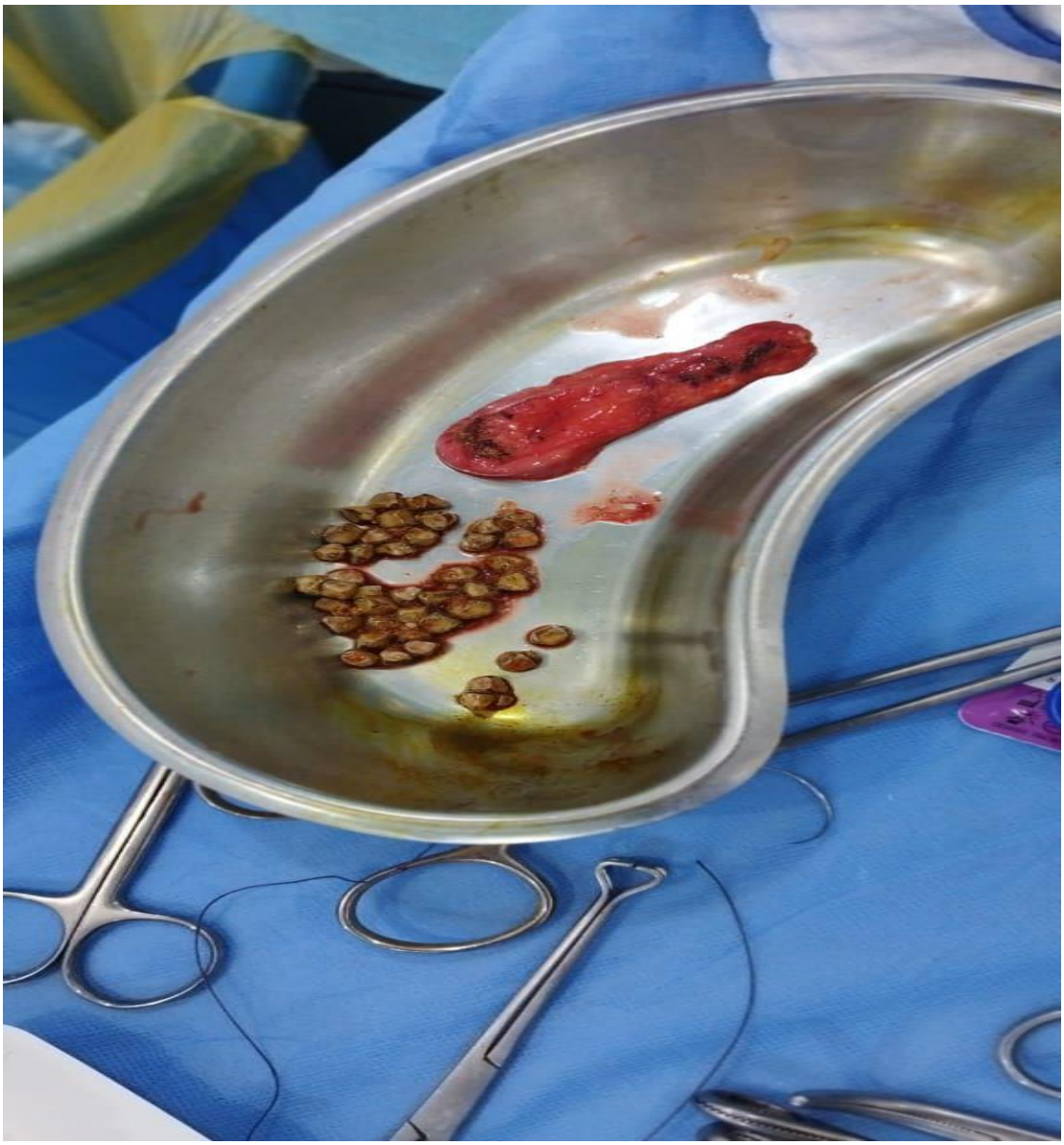
INTRODUCTION

For decades, the management of symptomatic cholelithiasis in high surgical risk patients has remained contentious. Cholecystectomy has become firmly established as a procedure of choice in the management of symptomatic cholelithiasis. The procedure usually necessitates general anesthesia and endotracheal intubation to prevent aspiration and respiratory embarrassment secondary to the induction of pneumoperitoneum (1). There have been several case reports of successful laparoscopic cholecystectomy performed under spinal anesthesia (2). However, little has been reported about the possibility of performing the procedure under regional anesthesia in patients with significant pulmonary disease (3). It is generally agreed that the condition is best managed conservatively and that surgical intervention should be reserved for patients who fail to respond or develop complications. Open cholecystectomy (OC) usually necessitates general anesthesia and endotracheal intubation to prevent aspiration and respiratory embarrassment (4). The goal of anesthesia management in these patients should include avoidance of an aesthetics that depress mucociliary transport, provision of postoperative pain relief adequate to prevent deterioration of respiratory mechanics, and ambulation as early as possible. Thoracic anesthesia fulfills all of the above criteria and aids in the quick and uneventful postoperative recovery of these patients (5). With the advent of OC and anesthetic techniques such as thoracic blockage, we have another option that may be safe for many of these patients. We report our preliminary experience with open cholecystectomy using thoracic anesthesia in patients with cardiac failure and COPD.

CASE

A 78-year-old man (weight 81 kg, height 176 cm) with abdominal pain applied to the emergency department. After general surgeon and respiratory disease consultation, he was admitted to the intensive care unit because of his general condition disorder (HF, COPD). He had a history of frequent pain at the right hypochondriac region with ultrasonography-documented calculi in the gallbladder for two years and heart failure. Medical treatment for the diseases accompanying the patient was planned. He was taken to emergency surgery for resource control. His routine investigations were within a normal range. Both his chest Xray and electrocardiogram were mild changes. Three days after admission, the patient developed sever pain. A new chest X-ray revealed cardiomegaly, and an ECG of Q-T interval was observed. After the consultations, it was determined that source of pain was newly acute attack of cholecystitis. It was decided to perform an emergency gall bladder operation to regress the sever pain that effected his cardiac output. The patient was not cooperated orientated when he came to the operation room. He was a stupor. On patients' arrival at the operation room, an intravenous (IV) cannula and central catheter were already present. We inserted radial artery cannulation and arterial monitoring for the HF-induced hypotensive condition. And then, electrocardiogram, noninvasive blood pressure, and pulse oximetry (SpO2) were monitored and recorded. The initial blood pressure (BP) was mmHg 114/77 (with noradrenaline (1mcg/kg/min.)), and the heart rate (HR) was 103 beats/ min, oxygen at 6L/min through a facemask was commenced. Preoxygenation was performed to bring the patient to the optimum preoperative conditions (Figure 1). SpO2 was 88, although the patient was given oxygen from 6 lt/ min. We planned to perform thoracic anesthesia for the patient due to heart failure and respiratory distress. Saline (15- 20 ml/kg) was infused before giving thoracic anesthesia. With the patient at the right lateral decubitus position, TA was performed with a 18-G thoracic catheter inserted 4cm towards the cephalad-direction from T7/T8 successfully.

Then the patient was placed in the supine position. A test dose of 3 ml of 2% lidocaine was injected through the thoracic catheter. There was no evidence of intravascular or intrathecal injection for up to 5 minutes. And then, an additional 10 cc (5 ml isobaric bupivacaine, 5 ml prilocaine, 0.5 ml fentanyl) was injected. Fifteen minutes later, sensory (pinprick) blockade was established from T4 to L1, which was accepted to allow surgery. At this point, the BP was 85/45mmHg, and the HR was 88 beats /min. During this period, the patient received a saline solution. The patient was mildly sedated and breathed spontaneously without difficulty. Then open cholecystectomy was started. An 8 cm Kocher incision was made right subcostal. When the patient feels pain after insertion of the liver, another 2.5ml 0.5% prilocaine was injected through the thoracic catheter. Intravenous midazolam 2 mg and Ketalar 25 mg were given. When the patient felt pain at the 30th minute of the surgical procedure, 10 mg Ketalar was administered again. The patients' BP and HR decreased abruptly to 75/51mmHg and 56 beats /min, respectively. The BP and HR increased to 108/60 mmHg after 6mg ephedrine IV. The gallbladder was removed uneventfully, and the total surgical time was 57 minutes (Figure 2).



After completion of the surgical procedure, the thoracic catheter was removed, and the patient was shifted to the post-anesthesia care unit (PACU) for further observation. The patient remained hemodynamically stable and comfortable during the 1 hour at PACU. The patient was followed up for three days in a general surgery intensive care unit. Paracetamol and tramadol were used as postop analgesics.

DISCUSSION

GA is usually employed for open cholecystectomy as it provides adequate surgical relaxation for the surgery and usually more acceptable to the surgical colleagues by convention. However, it can lead to a number of complications especially if the patientis suffering from complications especially co-morbid condition. In our study, we tried to perform the management of thoracic anesthesia in open cholesystectomy surgery patient. Regional anaesthesia in abdominal surgeries, especially upper abdominal surgeries, is usually not preferred by most of the surgical colleagues because first they are not accustomed to operate under this type of anaesthesia and second because of the delay associated with institution of this technique, hence an aspiring anaesthetist fails to establish these techniques into his/her practice as routine (6). Many retrospective, prospective, and meta-analysis studies have demonstrated an improvement in surgical outcome of TA through beneficial effects on peri- operative pulmonary function, blunting the surgical stress response and improved analgesia. In particular, significant reduction in perioperative cardiac

morbidity (~30%), pulmonary infections (~40%), pulmonary embolism (~50%), ileus (~2 days), acute renal failure (~30%), and blood loss (~30%) as well as beneficial effects on immune system, cognition and prevention of peri and postoperative stress have been widely highlighted in the review of the literature carried out by us (7). Despite all these above-mentioned advantages.

COPD is a pulmonary disease which may develop to respiratory destress syndrome (RDS). Cardiac dysfunction is one of the inevitable consequences of COPD affecting mortality. The mechanism of this cardiac dysfunction is due to decreased oxygen supply from the lung. Also, cardiac adrenergic effects are compromised in COPD patients and may result in unexpected over-effects of adrenaline (8). In this context, when we look at cases with cardiac complications, postoperative acute myocardial infarction (AMI) is the most common cause of postoperative morbidity, and mortality. Due to the effect of general anesthesia, it may not be very easy to recognize. Early diagnosis and treatment may reduce the morbidity and mortality of this fatal complication. In this study, a 56-year-old woman with a planned nephrectomy is presented. Acute inferoposterior myocardial infarction occurred after induction of general anesthesia, and coronary angiography showed that the proximal portion of the circumflex coronary artery (Cx) was occluded by thrombus, and the left anterior descending coronary artery and right coronary artery were plaques. Percutaneous transluminal coronary angioplasty and stent resulted in successful dilation of Cx and was discharged on the fifth day of the intervention without any complications. General anesthesia is a disadvantage in deepening the already existing coronary syndrome and increasing the workload and oxygen demand of the heart (9). We did not want to aggravate cardiac depression with COPD under general anesthesia in our case who received positive inotropic infusion. Severe RDS is a condition caused by advanced COPD where patients have high mortality. Advances in treatment methods such as lung-protective ventilation, prone positioning, use of neuromuscular blockage and extracorporeal membrane oxygenation have helped to achieve better results in ARDS treatment in recent years. Timely treatment of underlying COPD and early diagnosis of patients at risk of ARDS can help reduce mortality. In this sense, it is important to show the future promising treatments of ARDS caused by COPD (10). General anesthesia reduces the respiratory muscle tone, causing a 0.4-0.5 liter reduction in FRC. Decreased lung volume is accompanied by decreased compliance of the lung and increased resistance. Anesthesia also causes decreased compliance of lung tissue and possibly airway closure in dependent areas. In parallel with these changes in lung mechanics, anesthesia causes increased shunt and ventilation-perfusion mismatch. While increased shunt causes the formation of atelectasis, increased incompatibility may result in airway closure, increased regional airway resistance. Shunt and ventilation-perfusion mismatch may explain 75% of impaired oxygenation of the blood during anesthesia. A major cause of atelectasis and shunt is the pre-oxygenation procedure with the use of very high oxygen fractions during anesthesia induction or anesthesia. Therefore, excessive use of oxygen during anesthesia can increase the safety margin during induction, but may then contribute to impaired oxygenation during anesthesia and in the postoperative period, causing atelectasis formation (11). In our patient with respiratory distress caused by both COPD and heart failure, we found it appropriate to perform anesthesia with thoracic anesthesia because of the risk that general anesthesia may further increase this condition. In this case, if we evaluate our limitations in anessthesia management. During the operation, CPAP could be performed to improve respiratory parameters and oxygen delivery to the heart. However, the patient's inadequate consciousness would not provide us with the communication we need in noninvasive ventilation. In addition, the follow-up of our Thoracic anesthesia catheter could continue in intensive care, so we thought that the patient's heart failure and inotropic need would not give us a chance to make a thoracic drug, so we pulled the thoracic catheter after the operation.

CONCLUSIONS

In this case report, we wanted to demonstrate the management of an emergency case with Thoracic anesthesia, with a general condition of poor heart failure and COPD. However, in this patient with heart failure and advanced COPD (patient with 30 years past history of smoking) it is better to do regional (TE) than GA although his parameter is mildly decreased and treated with small doses of Vasopressin.

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