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Letter to Editor

Anaesthetic and perioperative management of elderly female with post covid bacterial pneumonia and ARDS undergoing emergency laparotomy for obstructed umbilical hernia

Pateel GNP[1,*], Pushpa R Lengade[1], Rupam Sinha[1], Poornima Prakash[2]

[1]*Dept. of Anesthesiology, Rangadore Memorial Hospital, Bangalore, Karnataka, India*
[2]*Dept. of Anaesthesiology, Oxford Medical College and Research Institute, Bangalore, Karnataka, India*

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Dear editor,

POST-COVID patients presenting for emergency surgery requires evaluation of surgical illness and COVID-19 (novel corona virus 2019) sequelae like oxygen dependency, acute respiratory distress syndrome(ARDS), cytokine storm, bacterial infection, renal and liver dysfunction. They need better analgesia in perioperative period to prevent further decline in respiratory function. Atrial flutter in perioperative period may lead to haemodynamic instability and thromboembolic events. Emergency laparotomy and post-operative management in these patients is an anaesthetic challenge.

An 81year old female with BMI 33kg/m^2, hypertension and atrial flutter was scheduled for emergency laparotomy for obstructed umbilical hernia. Patient was on telmisartan-40mg, Amiodarone-100mg, Diltiazem-10 mg and Furosemide-40mg orally. Patient had been recently treated for COVID-19 pneumonia and discharged on home oxygen one week ago and was on 17th day of COVID-19 illness. Patient was conscious, heart rate(HR)-82/minute, blood pressure(BP)-110/40mmHg, saturation(SpO_2) 85-88% on room air and 95% with 5L/minute oxygen, respiratory rate(RR) of 28-30/minute. Abdominal mass of 8x6x6cm^2 was palpable in umbilical region. Bilateral extensive crepitations heard on auscultation of chest. Sequential organ failure assessment score(SOFA)-4/24. Reverse transcription-polymerase chain reaction (RTPCR) for COVID-19 was negative. Chest radiograph showed bilateral extensive infiltrates. Computed tomography(CT) thorax showed -08/25(CT-severity score). Electrocardiogram (ECG) showed right bundle branch block. Echocardiography (ECHO) showed concentric left ventricular hypertrophy, diastolic dysfunction and ejection fraction-55%. Lactate-2.1mmols/L, procalcitonin-4.6ng/dl, C-reactive protein(CRP)-46mg/L and other laboratory investigations were within normal limits.

High risk consent was obtained. One liter of Intravenous fluid(IV fluids) bolus given; BP improved to 130/72mmHg. Patient was haemodynamically stable and coagulation parameters were normal hence combined spinal epidural anaesthesia (CSEA) was planned. CSEA may have been chosen in view of recent COVID infection and thus poor respiratory function. However, in laparotomy where extensive bowel handling, possibility of sepsis and need for prolonged ICU admission are chief concerns it is better to conduct the case in general anaesthesia, especially since the patient had a history of cardiac arrhythmia. Epidural can be placed to use for post operative pain management. Epidural catheter was secured at L1-L2space. Spinal anaesthesia was administered at L3-L4space with Bupivacaine heavy

* *Corresponding author*.
E-mail address: gnppateel@gmail.com (P. GNP).

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Fig. 1: Chest radiograph showing bilateral severe pneumonia with acute respiratory distress syndrome

0.5% 3ml+ buprenorphine 60mcg. Analgesia and level was adequate. Patient had transient hypotension which was treated with IV fluids and phenylephrine boluses. Epidural infusion started with ropivacaine 0.2% and fentanyl 2mcg/cc at 5ml/hour. Midline incision of around 12cm was made. Large sac with rotated congested bowel noted. Bowel loops reduced, sac excised and abdomen closed. Intraoperative IV-fluids 4000ml, urine output 800ml. Blood loss was approximately 600ml. Ryles tube collection 150ml. Total duration of surgery being 2hours. Intraoperative vitals were stable. Post-operatively shifted to intensive care unit(ICU) with oxygen(5liters/min), patient was conscious, haemodynamically stable. HR-98/min, BP-130/76mm Hg, saturation-95%, RR-28/min. Kept nil orally with IV-fluids continued 125ml/hour and antibiotic continued. Analgesia continued with epidural infusion, intravenous paracetamol and tramadol. Lactates-1.68ng/ml.

First post-operative day(POD_1) patient required more oxygen(10liters/min), had hypotension with BP 80/40mmHg, lactate-2.40mmol/l. Arterial and central line was secured, nor-adrenaline started. Two liters bolus IV-fluids given and 150ml/hour. SOFA Score progressed to 7/24. POD_2, HR-188/min with atrial flutter on ECG, converted sinus with amiodarone bolus and infusion. Serum-potassium was corrected; nor-adrenaline was slowly tapered. Incentive spirometry and breathing exercises started. Clear liquids started orally. Enhanced recovery after surgery(ERAS) protocol followed. POD_3, patient was haemodynamically stable, oxygen tapered to 5L/min, lactate-1.4mmol/L. Bowel movements present. Liquids and pre digested feeds started orally. Patient was ambulated.

COVID-19 has multi-systemic involvement with pneumonia, myocarditis, gut ischemia, shock and imbalance in coagulation, liver and kidney dysfunction.[1] Our patient had moderate ARDS with bilateral peripheral and basal infiltrates. Emergency laparotomy is a time sensitive surgery where septic focus requires emergent surgery, Delays in favor of optimization are deleterious.[2] Our patient was shifted operation theatre with minimal necessary optimization. While planning regional techniques/central neuraxial blocks, due considerations should be given to anticoagulation therapy and coagulopathy in COVID-19 patients.[3] Surprisingly our patient coagulation profile was normal. Regional anaesthesia, Opioid sparing analgesia and ERAS protocol enhances recovery.[4] Adequate analgesia ensures optimal ventilation, pulmonary mechanics and reduces post-operative pulmonary complications(PPCS).[5] CSEA has fewer deleterious effects on respiration and dynamics when compared with general anaesthesia and reduce PPC_S in COVID-19 patients with already compromised lungs. The main problem of CSEA is accelerated hypotension, ventilatory changes and diaphragmatic irritation leading to pain and discomfort. Factors which delay recovery after laparotomy are pain, lack of gastrointestinal function and immobility. Therefore management should include pain control, to promote gastrointestinal function and mobility as soon as possible.[6]

Conflict of Interest

The authors declare no conflict of interest.

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Author biography

Pateel GNP, Junior Consultant https://orcid.org/0000-0002-2071-4284

Pushpa R Lengade, Senior Consultant Anesthesiologist

Rupam Sinha, Senior Consultant

Poornima Prakash, Assistant Professor

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