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Anesthetic Management in Covid Suspect Patient with Low Ejection Fraction

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Abstract: *The number of patients with heart failure presenting for surgery continues to rise, and anesthesiologists are increasingly being called upon to provide quality, safe care in the operating room for patients with low ejection fraction (EF). Perioperative goals in the management of these patients include maintaining forward flow, promoting inotropy without inducing or exacerbating ischemia, and returning patients to their preoperative level of function after surgery. In this paper we present a report of 58 Year old covid suspect patient who underwent surgery twice, once under general anesthesia and secondly,under a low dose spinal anesthesia.*

Keywords: *low ejection fraction (EF), Covid suspect, Low dose spinal.*

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I. Introduction

Current medicine has displayed a trend toward less interfering techniques but more invasive surgical approaches in older patients with more comorbidities with suspicion of covid 19.

Despite impressive advances in anesthesiologic and surgical techniques, morbidity and mortality in patients with poor ejection fraction remains high.Patients suffering from COVID-19 with low ejection fractiom may present with a spectrum of respiratory distress ranging from dyspnea and hypoxia to acute respiratory distress syndrome and may require respiratory support in different locations such as the emergency room, isolation ward, and intensive care units (ICUs). A significant portion of these patients require early mechanical ventilation involving urgent or emergency tracheal intubation. In addition, with the pandemic nature of the current outbreak, patients with mild or asymptomatic disease still may present for urgent or emergency, general, or specialized surgery. Recognizing the unique risks of intubation and mechanical ventilation in these high-risk groups and the great potential of infection risk to health care workers, several useful reports, algorithms, and society-endorsed recommendations have emerged in the recent literature regarding general airway and anesthesia management of these patients.

Here we present a report of 58 year old male patient who was managed twice with different approach of anesthetic induction each time under two different emergency surgeries.

II. Case

A58 year old male known case of hypertension, not on any medication with a history of PTCA done in 2013 , poor medication compliance with complaints of right leg pain while walking since a week, high grade fever and labored breathing in supine position since 4 days.

On admission(16/5/2020) patient had high grade fever of 103 F , routine investigations were done &Covid 19 swab sent. ECG was was suggestive ofRBBB. Cardiology opinion taken, a 2D ECHO screening done which showed dilated cardiac chambers, grade 1 mitral regurgitation, grade 1 trivial regurgitation, grade 3 diastolic dysfunction, global left ventricular hypokinesia, IVC congested and LVEF 20-25 % and adviced fluid restriction, tablet Aspirin (75 mg) + Atorvastatin (10 mg) od.

On right lower limb arterial vessel color doppler, occlusion of right common femoral &absent flow in superficial femoral arteryobserved.Patient was immediately started on Injection Heparin infusion. An emergency right lower limb femoral embolectomy with fasciotomy decision was made.

Inside the operation theater,we aimed for infection control throughout the duration of surgery including prevention of transmission of infection to the health care team and prevention of contamination of anesthesia machine and other anesthesia equipment by following careful transport of patient, hand hygiene, proper donning. Routine monitors were attached, and internal jugular vein and radial artery were cannulated, which were later connected to the EV1000 monitor through FloTrac transducer. Induction of anesthesia was done with fentanyl 2 mcg/kg, etomidate 0.2 mg/kg, and muscle relaxation was achieved by Atracurium. Using 8 *F* endotracheal tube, intubation was facilitated with C-Mac video laryngoscope with intubation box with closed suction device. Anesthesia was maintained by oxygen/air (50:50) with isoflurane (0.6–1.0 Mac). Analgesia was supplemented with boluses of IV fentanyl (50 mcg). Maintenance fluid crystalloid was used

at1ml/kg/hour. Throughout the surgery, total fluid transfused over 3 hours was 700 ml crystalloid, blood loss was 350 ml, and urine output was 300 ml.

At the conclusion of surgery,arterial blood gas revealed normal lactate levels (0.7 mmol/cc) patient extubated after meeting extubationcreitries deep extubation was done. Right after extubation, immediate facemask was applied to ensure a barrier. Postoperatively, the patient was monitored for mean arterial pressure (MAP), CVP, and urine output, and analgesia was managed with Fentanyl infusion till the next 48 h, rest of the course was uneventful.

After 48 hours, patient started complaining of palpitations, an ECG was suggestive of atrial flutter with 3:1 conduction , cardiology team started the patient onintravenous Amiodarone 150 mg bolus followed by aninfusion, Digoxin 0.25 mg od, Tablet Isolazene if systolic BP>100 mmhg.

On 26/05/2020, a decision of debridement was taken as the necrotic tissues were noticed at surgical site and low dose spinal anesthesia for induction was planned.

After taking patient inside the operation theater, vitals noted. In right lateral position using 25G quincke's needle, subarachnoid space identified at L3-L4 intervertebral spaceand 1.8 ml of 0.25% bupivacain heavy and 25 microgram of fentanyl injected and T12 level dermatome achieved. Patient maintained a saturation of 95-98% and vitally stable throughout the procedure and was shifted to SICU postoperatively.

III. Discussion

Ischemic heart disease (IHD) is a leading cause of morbidity and mortality in the world and of perioperative complications in cardiac patients. Patients with IHD with COVID 19 require identification of risk factors, preoperative evaluation and optimization, medical therapyesp when on RAAS inhibitors (1)(9), monitoring, and appropriate anesthetic technique and drugs. Risk factors influencing perioperative cardiac morbidity are recent myocardial infarction (MI), congestive cardiac failure, peripheral vascular disease, angina pectoris, diabetes mellitus (DM), hypertension, hypercholesterolemia, dysrhythmias, age, renal dysfunction, obesity, sedentary life style, and smoking. Preoperative heart failure is an important risk factor for post operative complications. Any arrhythmia can lead to sudden cardiac arrest and sudden death hence, it needs prompt treatment. Regional anaesthesia used alone or in combination with general anaesthesia has advantage of reducing after load which can improve cardiac output. However, hypotension must be prevented to avoid myocardial hypo perfusion. Peri-operative goals in these patients include maintaining forward flow, promoting adequate heart rate without inducing (or exacerbating) ischemia, avoidance of arrhythmias and maintenance of stable condition in thepostoperative period. The main perioperative objective in cardiac patients is to prevent myocardial ischemia by optimizing oxygen delivery and oxygen consumption, and treating accordingly if such an imbalance should occur. This is much more important than the type of anaesthesia or the anaesthetic agent choice. For example, tachycardia is deleterious both by increasing the myocardial oxygen demand and by lowering oxygen transport and thus heart rate should be maintained within 20% limits of normal values. Similarly, it has been shown that decreases by>20% in mean arterial pressure or mean arterial pressure (MAP) values 30 minutes pose a greater risk for postoperative complications that include myocardial infarction, stroke and death.(2)(3). The benefits of neuroaxialanaesthetic techniques (spinal or epidural) are also debatable, as it can also induce sympathetic blockade.(4) A recent systematic review showed that compared with general anaesthesia, neuroaxialanaesthesia may reduce the 0-to-30-day mortality for patients undergoing a surgery with an intermediate-to-high cardiac risk.(5)Neuroaxialanaesthesia alone (but not when associated with general anaesthesia) can therefore be considered as the anaesthetic technique of choice following careful assessment of the risk/benefit ratio for each patient.(6) Similarly, neuroaxial analgesia is also associated with better post-operative outcome and should therefore be considered as the technique of first choice (following careful assessment of individual risk/benefit profile).(7)Care should be given to frequent association in cardiac patients of drugs that impede coagulation; complications can be tragic, so risk-benefit ratio should be calculated. (8) Patients with cardiac disease present for anaesthesia every day. Since their perioperative courses are associated with greater morbidity and mortality, it is

important to provide a haemodynamically stable anaesthetic. This requires knowledge of the pathophysiology of the disease, and of the drugs and procedures and their effects on the patient. Cardiac risk in non-cardiac surgeries is best tackled by a perioperative team approach. Close collaboration and shared decision-making among the patient, primary caregiver, cardiologist, surgeon, and anesthesiologist is key to ensuring proper implementation of current evidence-based guidelines. However, current evidence regarding much of what we do deeply lacks the rigor of multiple, prospective randomized controlled trials.

IV. Conclusion

Patient with very lowejection fraction undergoing an emergency surgery especially in this covid pandemic era, poses various anesthestic challenges to the anesthesiologist. the key to successful anesthestic management of such high risk patients includes use of personal protective equipment, extreme precautionduring

aerosol generating procedure andmaintaining MAP of >65 mmhg, heartrate 60-90 bpm, avoidance of arrhythmias and maintaining saturation of >92%.

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CONFLICT OF INTEREST:
None.

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