



Commentary

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Post-COVID Geriatric Patients - Anaesthetic Considerations

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'97-year-old man recovers from COVID-19, stirs hope among people'

'A 103-year-old man recovers from COVID-19'

Such headings often greet us in newspapers and news channels during coronavirus disease (COVID) times. This only means that there are quite a few geriatric patients who have survived COVID-19; However, there are studies which have found that there is a clear and consistent pattern of an age-based exponential increase in fatality rates, regardless of the geographical region and that case fatality rates (CFR) and susceptibility to symptomatic COVID-19 are higher in the elderly. In an analysis in China, in patients aged more than 80 years, the case fatality ratio was 14.8% and in patients aged 70-79 years, it was 8% [1]. In a recent meta-analysis on 611, 583 subjects, it was found that the largest increase in mortality risk was observed in patients aged 60-69 years compared with 50-59 years [2]. Nonetheless, more number of severe to critically ill COVID-19 cases and a rapid progression in the disease with a post-admission median survival time of 5 days has been noted in the elderly age group [3]. Nonetheless, during the COVID-19 pandemic, several hospitals all over the world, adopted telephone triage and remote counselling. This helped in treating many geriatric frail patients at home and thus helped in reducing their chances of getting infection by reducing their need to enter infected hospital premises [4].

Many of the COVID-19 geriatric patients, who have survived the acute phase of the illness, are currently rehabilitating and recovering. The novel coronavirus can injure almost every system of the body and these injuries can remain as an aftermath of the infection. It is quite likely that a COVID-19 recovered geriatric patient may require surgery for a condition that he may develop and such a patient certainly poses a challenge to the perioperative physician treating him. This is because the geriatric patient already has a pre-existing low physiological reserve and COVID-19, by injuring almost every system further brings down this reserve.

Impairments in pulmonary function occur commonly in COVID-19 patients. These may not improve early and have to be kept in mind during the perioperative management of these patients. This warrants asking during the pre-anaesthetic examination (PAE) for a history of dyspnoea and oth-

er breathing difficulties, doing bedside pulmonary function tests, measuring the patient's oxygen saturation on room air and ordering a chest radiograph if necessary [5].

Elderly patients often have swallowing problems with a sensation of choking as a part of aging. COVID 19 can add more problems to this; Dysphagia due to prolonged intubation when admitted in the intensive care unit (ICU), gastrointestinal co-morbidities and intensive care unit associated weakness (ICUAW) can occur in geriatric cases having recovered from COVID-19. Dysphagia can lead to pulmonary aspiration and consequent chest infection. So, this should be kept in mind and a question on dysphagia should be included in the PAE. If dysphagia is present, appropriate anti-aspiration measures can be adopted perioperatively and anaesthesia techniques planned accordingly [6].

COVID-19 in addition to acute complications, is also said to have long term cardiovascular sequelae because of the cardiac injury caused by the novel coronavirus. An observational cohort study found that recently recovered COVID-19 patients had lower left ventricular ejection fraction, higher left ventricular volumes, higher left ventricular mass, elevated native Troponin (T1 and T2) with signs of heart dysfunction on cardiac magnetic resonance imaging [7]. The high prevalence of cardiac injury can lead to residual post-myocarditis abnormalities. It is said that in patients who have an apparently recovered cardiovascular system after COVID-19, the risk of coronary artery disease, atrial fibrillation and ventricular arrhythmias exists. Monitored ventricular fibrillation has been reported to have occurred in a patient two months after myocarditis in the acute phase of COVID-19. New onset cardiomyopathy has also been reported to have set in during the convalescent phase of COVID-19. Hence, it is imperative that

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during the PAE, the anaesthesiologist should look for signs of impairment in cardiac function. Post-COVID fatigue and impairment in pulmonary function can lead to masking of the symptoms of post-COVID-19 heart failure and this has to be kept in mind during the PAE. It is possible that the COVID-19 recovered elderly patient can have subclinical cardiovascular abnormalities too. Standard electrocardiogram and echocardiography are recommended to be done in such patients up to 6 months post-COVID-19 recovery; nevertheless, these may not be able to detect the subclinical abnormalities that may exist [8].

Post-COVID-19 hypercoagulation is an important issue to reckon with for several months in the post-COVID-19 geriatric patient posted for surgery. The patient will be on prophylactic aspirin and anticoagulants and hence a thorough laboratory screening of coagulation and bleeding status is warranted before taking the patient up for surgery. Strokes, myocardial infarction and deep vein thrombosis due to this hypercoagulability can complicate the peri-operative period.

The elderly are known to have cognition problems. The prevalence of delirium is around 14% in those more than 85-years-old [9]. Post-COVID-19 psychological complications can add fuel to this fire. These include cognitive impairments in the areas of memory, attention, and executive function, anxiety, depression, post-traumatic stress disorder and fatigue. These can exist upto a period of 1 year after critical care management. The PAE should focus on looking for these psychological abnormalities. The history of intake of anti-anxiety drugs and antidepressants also has to be elicited from the patient.

Ageing produces a change in taste for food. It is well known that the novel coronavirus too produces a loss of smell and taste. This can get compounded with the fact that the geriatric patient admitted in a critically ill state away from the family members will certainly suffer from poor nutritional intake leading to nutritional derangements which can take several months to get corrected after recovery from COVID-19. Nutritional status assessment of the post-COVID-19 geriatric patient thus holds great importance. Poor preoperative nutritional status including loss of muscle mass, low haemoglobin and serum albumin levels indicate poor postoperative outcomes and indicate a careful choice of anaesthetic drugs with preparation for prolonged post-operative stay in hospital, increased operative morbidity and mortality.

Intensive care unit acquired weakness ICUAW includes a combination of disuse atrophy, critical illness polyneuropathy and critical illness myopathy. This can lead to limb and respiratory muscle weakness and sensory loss which can exist up to years. The presence of such neuromuscular abnormalities in the ageing post-COVID-19 patient heralds a careful choosing and modification of anaesthesia drugs and techniques. One should look for impairment in activities of daily living (ADL), instrumental ADLs, and 6 minute walk distance during the PAE of the critically ill geriatric COVID-19 survivor.

Non-availability of veins due to post critical care thrombosed veins is likely and the presence of painful joints and muscles have to be kept in mind during perioperative patient positioning.

A meticulous PAE backed by appropriate anaesthetic management depending on the existence of post-COVID-19 physiological derangements can go a long way in improving the post-surgical outcomes in a COVID-19 recovered geriatric patient. A multidimensional model, the Comprehensive Geriatric Assessment (CGA), can be used for the preoperative risk assessment of the geriatric post-COVID patient. It is very likely that assessment done with the help of this model can detect the existence of problems like co-morbidities, post-COVID state medications, poor nutritional status, cognition and mood disorders, fear, decrease in ADL and poor support from family and friends. Tools for preoperative risk stratification and frailty screening like the Frailty Index can be used in these settings [10]. However, the use of these tools has not been validated in such conditions [11,12]. So, the question arises: Will it be necessary to prepare and validate a new post-COVID geriatric assessment tool? In case the PAE predicts poor post-operative outcomes, prehabilitation including physical exercise, nutritional support, management of co-morbidities and psychosocial factors can take precedence in the perioperative management of the patient to decrease postoperative morbidity and mortality.

To summarise, the spectrum of systemic complications after recovery from COVID is not yet clear. There is currently a dearth of literature on whether treatment given during the acute phase of COVID-19 can have long term implications. Data on the perioperative management of the post-COVID geriatric patient is fast emerging; but as of now, we need to do a meticulous PAE, prehabilitation and plan our anaesthetic management accordingly in these post-COVID geriatric patients.

Conflicting Interest

None.

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