This article has been accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination, and proofreading processes, which may lead to differences between this version and the version of record.

Please cite this article as https://doi.org/10.4097/kja.21010
Title: Left-ventricular diastolic dysfunction in COVID-19: Opening the Pandora’s Box!

Authors: (First name, middle name, & last name)                          E – mail address

1. Rohan Magoon, DM, MD, Assistant Professor                          rohanmagoon21@gmail.com

Department of Cardiac Anaesthesia, Atal Bihari Vajpayee Institute of Medical Sciences (ABVIMS) and Dr. Ram Manohar Lohia Hospital, Baba Kharak Singh Marg, New Delhi-110001, INDIA.

We do not have any conflict of interest, any commercial or financial interest in this material & agree to abide by the rules of your journal regarding publication of this article.

Running title: Left ventricular diastolic dysfunction in COVID-19

Keywords: Cardiopulmonary interactions; COVID-19; Diastolic dysfunction; Left ventricle; Perioperative implications.

Name and location of the institute where the work was carried out: -
Department of Cardiac Anaesthesia, Atal Bihari Vajpayee Institute of Medical Sciences (ABVIMS) and Dr. Ram Manohar Lohia Hospital, Baba Kharak Singh Marg, New Delhi-110001, INDIA.

Corresponding Author:

Dr.Rohan Magoon, DM, MD
Assistant Professor, Department of Cardiac Anaesthesia, Atal Bihari Vajpayee Institute of Medical Sciences (ABVIMS) and Dr. Ram Manohar Lohia Hospital, Baba Kharak Singh Marg, New Delhi - 110001, INDIA.

Email: rohanmagoon21@gmail.com
Tel: +91-9711128628
Left-ventricular diastolic dysfunction in COVID-19: Opening the Pandora’s Box!

To The Editor,

As I read through the articles featured in a recent issue of the Korean Journal of Anesthesiology [1,2] outlining the perioperative implications of COVID-19 infection, I feel motivated to highlight the importance of COVID-19 related left-ventricular diastolic dysfunction (LVDD) in affecting the management of this peculiarly predisposed subset, particularly when the cardiovascular consequences of COVID-19 continue to be ardently discussed [3].

In this context, a systematic echocardiographic evaluation of 100 COVID-19 patients by Szekely et al revealed a substantial 16% incidence of LVDD despite a preserved LV ejection-fraction in as high as 90% in their cohort with a mean age of 66 years [4]. Alongside the subclinical ventricular relaxation impairment (given the advanced age and co-morbidities like systemic hypertension), the conglomeration of factors specific to COVID-19 such as systemic inflammatory milieu, endothelial dysfunction, microvascular thrombosis, arrhythmias, disturbed ventricular cross-talk (owing to the concomitant right ventricular dysfunction resulting from pulmonary hypertension) and myocardial oxygen supply-demand perturbations, can contribute significantly to the LVDD with a subsequent accentuated potential to culminate as heart-failure with preserved ejection-fraction (HFpEF) [3,4].

At the same time, the use of high positive end-expiratory pressure (PEEP), quite commonly employed while ventilating hypoxemic COVID-19 patients can also result in an attenuated cardiac output in the face of an already impaired ventricular filling in HFpEF. Chin et al elaboration of a progressive deterioration in the LV lusitropy with the application of high PEEP in those with pre-existing LV relaxation abnormalities bears testimony to the aforementioned [5]. Moreover, the
underlying cardiopulmonary interactions present unique challenges in weaning the mechanically ventilated patients with co-existent LVDD [3,5].

An improved comprehension of the likelihood of an altered diastology in COVID-19 patients is doubtlessly pivotal in staging a more well-directed management approach wherein a targeted echocardiographic surveillance, cardiac biomarkers, combined heart-lung ultrasound and inodilators, can assist the overall management of this critically ill cohort.
References


3. Magoon R. COVID-19 and congenital heart disease: Cardiopulmonary interactions for the worse! *Paediatric Anaesthesia* 2020;30;1160-1161
