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SYMPTOMS AND FUNCTIONAL IMPAIRMENT ASSESSED 8 MONTHS AFTER MILD COVID-19 AMONG HEALTH CARE WORKERS SEBASTIAN HAVERALL, AXEL ROSELL, MIA PHILLIPSON, ET AL. JAMA. 2021;325(19):2015-2016.

The pandemic of COVID-19 has had a profound effect on all groups including the healthcare community. While the effects of serious COVID-19 illnesses are more obvious, the long-term consequences of less severe disease are still to be discovered.

The purpose of this study is to determine the symptoms and lasting effects of less severe COVID-19 infections among healthcare workers. The participants included in this study consist of health care professionals from Danderyd Hospital, Stockholm, and Sweden. The participants were enlisted in the study between April 15, 2020 to May 8, 2020, then followed for an 8-month period. Enrolled participants had blood sampling every 4 months and other information including demographics, co-morbidities, symptoms, and severity of symptoms, which were obtained through questionnaires. Those who were noted to be seropositive for SARS-CoV2 IgG with reported severe symptoms and those who were initially seronegative and became seropositive at follow up were excluded from the study. A smartphone app was utilized at the 8-month follow up performed to assess the presence, duration, and severity of 23 predefined symptoms. Any participant that noted 1 of the 23 symptoms for a period of at least 2 months were additionally required to self-evaluate their level of functional impairment secondary to the symptom(s) via the Sheehan Disability Scale. These participants were then compared to a control group of healthcare workers who were working over the same period of time and remained seronegative.

A total of 2149 health care professionals were enrolled in this study with a total of 1395 (323 seropositive and 1082 seronegative) participants reaching the 8-month end point without being excluded secondary to the aforementioned exclusion criteria or failing to complete the 8-month follow-up. Twenty-six percent of seropositive participants reported at least 1 moderate symptom lasting 2 months while only 9% of seronegative participants reported the same (RR, 2.9 [95% CI, 2.2-3.8]). Similarly, 15% of seropositive participants reported moderate-severe symptoms lasting for at least 8 months while only 3% of seronegative participants noted this (RR, 4.4 [95% CI, 2.9-6.7]). The most common moderate to severe symptoms reported by the seropositive group were anosmia, fatigue, ageusia, and dyspnea. Of the seropositive patients, 8% reported their symptoms disrupted their work life, 15% reported their symptoms disrupted their social life, and 12% reported their symptoms disrupted their home life. Comparatively of the seronegative patients, 4% reported their symptoms disrupted their work life, 6% reported their symptoms disrupted their social life, and 5% reported their symptoms disrupted their home life.

The authors concluded that a notable portion of participants reported a variety of long term symptoms that resulted in disruptions in work, social life, and home life.

Adam Steele Watkins, MD
Zachary B. Lewis, MD
University of Arkansas for Medical Sciences
Little Rock, AR

Comment: This multicenter study provides moderate level evidence that long-term consequences to COVID-19 occur even from mild forms of the disease. Also this study also suggests that those long-term consequences are having effects that cause interruptions in the participants’ home, work and social lives. While performed prior to widespread use of vaccinations against COVID-19 in healthcare workers, this study comes at a time when COVID-19 is having a resurgence through the Delta variant and specifically highlights that healthcare workers, who were the participants of this study, were already experiencing lasting negative influences. An interesting future study could examine whether or not vaccination status affected long-term symptoms in patients with mild disease. Nonetheless, we must remain vigilant in our use of PPE and other safety practices to prevent contraction of this virus.

RACIAL DISPARITIES IN COVID-19 ASSOCIATED PULMONARY EMBOLISM: A MULTICENTER COHORT STUDY. BRANDON METRA, ROSS SUMMER, SANDRA ELAINE BROOKS, ET AL. THROMB RES. 2021;205:84-91.

The COVID-19 pandemic has highlighted the presence of racial disparities across all aspects of our society. When compared to other pulmonary infections, COVID-19 infection has been suggested to show an increased risk of endothelial injury and thromboembolism. Prior to this publication, there have been limited analyses of COVID-19 associated pulmonary embolism (PE) considering the impact of race.

The goal of this study was to evaluate the potential for racial disparities in the risk of developing COVID-19 associated PE. Using the TriNetX Covid-19 Research Network, a large database
of electronic healthcare records (EHRs), a retrospective observational cohort study was performed. Selected patients contracted COVID-19 between January 20-September 30, 2020. ICD-10 Codes were used to identify patients with COVID-19 and PE. Patients meeting criteria were compared by race, specifically non-Hispanic black versus non-Hispanic white. Clinical outcomes included admission to the hospital, intensive care unit (ICU) admission, and need for mechanical ventilation and death. Clinical outcomes were considered if they occurred within 30 days of diagnosis. The study also evaluated risk factors including hypertension, diabetes, chronic obstructive pulmonary disease (COPD), obesity, nicotine use, neoplasm and decreased mobility. Homelessness was the only socioeconomic factor considered due to limitations in the deidentified data. Propensity matching was used to adjust for potential confounders. Relative risk ratios were used to evaluate clinical outcomes between black and white patients. Selected laboratory values were evaluated using two-tailed t-tests.

Among the 346,953 patients that were diagnosed with COVID-19, pulmonary embolism was diagnosed 1.2% (n=3879). Patients with COVID-19 and PE had a higher mortality rate than in patients with either COVID-19 or PE alone. When looking at the unmatched cohort, 2.16% of the black patients with COVID-19 were found to have developed a PE compared with 1.30% in white patients. Racial differences were observed with higher prevalence of hypertension, obesity, homelessness and diabetes among black patients. Black patients were also more likely to be female and were typically younger than their white counterparts.

Using propensity matching two cohorts of 50,162 black and white patients were identified, which were more comparable with regard to clinical and demographic variables.

Within the matched cohorts, black patients with COVID-19 showed a higher 30-day mortality rate with a risk ratio (RR) of 1.89 (95% CI 1.727-2.067, p<0.0001), need for hospitalization with a RR of 1.87 (95% CI 1.794-1.957, p<0.0001), need for ICU admission with a RR of 2.003 (95% CI 1.857-2.161, p<0.0001), mechanical ventilation with a RR of 1.89 (95% CI 1.735-2.056 p<0.0001), and higher risk of development of PE with a RR of 1.537 (95% CI 1.380-1.711 p<0.0001). Of the patients identified with COVID-19 and PE, two balanced cohorts of 1026 were identified. Black patients with COVID-19 and PE showed higher 30-day mortality rate with a RR of 1.397 (95% CI 1.059-1.844 p<0.0174) but other clinical outcomes were not statistically significant. In the laboratory outcomes higher inflammatory markers (ESR, CRP and Ferritin) were seen in the black cohort which is indicative of more severe disease at time of presentation. Limitations included reliance on accurate medical coding of diagnoses and the potential for double representation of a small number of patients who may have been seen at multiple healthcare centers and the inability to evaluate patients who were unable to seek care or were asymptomatic.

Elizabeth Scripsick, MD
Zachary B. Lewis, MD
University of Arkansas for Medical Sciences
Little Rock, AR

Comment: This retrospective study provides moderate quality evidence to suggest that black patients are at increased risk in the setting of a COVID-19 infection, specifically increased 30-day mortality, hospital or ICU admission, mechanical ventilation, and PE when compared to an otherwise matched white cohort. Additionally, the concomitant presence of both COVID-19 infection and PE shows an increased 30-day mortality when compared to either condition alone. Seeing these disparities through data will help us better recognize our at-risk populations, fight to eliminate unconscious biases, and ensure that every patient receives the same high quality medical care.

□ MILRINONE AS COMPARED WITH DOBUTAMINE IN THE TREATMENT OF CARDIOGENIC SHOCK
MATHEW R, DI SANTO P, JUNG RG, ET AL. N ENGL J MED 2021; 385:516-52. DOI: 10.1056/NEJMoa2026845

Low cardiac output and the resultant low perfusion seen with cardiogenic shock can be difficult to treat. There are accepted vasopressors to use for circulatory support, such as norepinephrine, however there is a paucity of data regarding the most appropriate inotropes to use in these scenarios. The purpose of this study was to compare the use of milrinone to dobutamine in the treatment of cardiogenic shock.

A randomized, double-blind trial, the Dobutamine Compared with Milrinone (DOREM) trial recruited patients from a quaternary care cardiac institute in Canada between September 2017 and May 2020 who were 18 years or older, admitted to the cardiac intensive care unit (ICU), and met criteria for cardiogenic shock stage B, C, D, or E based on the Society for Cardiovascular Angiography and Interventions definitions. After stratifying for affected ventricle, subjects were assigned to receive milrinone or dobutamine using standardized dosing scales. Patients could be unblinded and treated with an open-label inotrope if the randomized treatment was deemed unsafe by the treating physician. In-hospital death from any cause, resuscitated cardiac arrest, receipt of cardiac transplant or mechanical circulatory support, nonfatal myocardial infarction, transient ischemic attack or stroke, or need for renal replacement therapy comprised the composite primary outcome. Secondary outcomes consisted of the individual outcomes that comprised the composite outcome as well as ICU length of stay. Using intention-to-treat, unadjusted chi-squared and proportional hazards analyses were performed for the primary composite outcome and each individual outcome within the composite outcome. Various subgroup analyses were also performed.

There were 96 subjects enrolled in each treatment group for a total of 192 patients. Baseline characteristics were similar and overall most patients met criteria for class C or D (“classic” or “deteriorating”) cardiogenic shock. Ninety-nine subjects had one of the primary outcome events: 47 (49%) in the milrinone group and 52 (54%) in the dobutamine group (RR 0.90, 95% CI 0.69-1.19; P=0.47). There were no differences seen in any of the subgroup analyses, no time-to-event difference seen for any of the primary outcome events, and no differences in any of the rates of each type of event within the composite primary outcome. Additionally, no differences were seen in the total length of stay, ICU length of stay, duration of inotropic treatment, or need for or duration of mechanical ventilation.