Mortality and Intubation Risk Factors in Patients With Interstitial Lung Disease Infected With COVID-19 in the United States in 2020

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Background: It has been assumed that patients with pre-existing respiratory diseases including interstitial lung disease (ILD) are in risk of more severe complications and death when infected with coronavirus disease 2019 (COVID-19). However, data on the impact of COVID-19 on patients with ILD is still limited. The aim of our study is to investigate the outcome of ILD patients admitted to hospital with COVID-19 infection in 2020. Methods: We used data from one of the largest hospital-based databases available in the United States (US), the Healthcare Cost and Utilization Project's (HCUP) State Inpatient Database, which is a 20% stratified sample of all US admissions. We included patients ≥18 years of age with admission diagnoses of ILD and COVID-19 based on ICD10 codes in 2020. Binary logistic regressions were conducted to determine predictors of mortality and intubation controlling for demographic variables, primary payer, length of stay, hospital region, hospital type and hospital bed size. Results: Overall, 385,169 hospitalizations for COVID-19 among ILD patients were identified in 2020. Mean age of the patients was 64.3 ± 17.3, majority being male (51.5%) and white (52.3%). Among these patients 16.3% (62,688) were intubated and 12.4% died (47,898). Mean length of hospital stay was 7.8± 9.2 days with the mean hospital cost of $91,209 ± $174,836. Covariates that were associated with significantly higher ($p < 0.001$) in-hospital mortality were: age (OR = 1.05), female gender (OR = 1.37), median household $46,000 - $58,999 (OR=1.33), hospital located in Middle Atlantic (OR=1.19) and hospital length of stay (OR=1.04). Covariates that were associated with significantly higher intubation risk were: female gender (OR=1.37), large hospital bed size (OR=1.04), Medicare insurance (OR=1.10) and length of hospital stay (OR=1.10). Conclusions: Mortality rate of patients with ILD who were infected with COVID-19 was similar to the estimated mortality rate in 2020. Being older, female, longer hospital length of stay and residing in Mid-Atlantic region increased the odds of mortality, while being female, on Medicare, admitted to hospitals with larger bed size, and longer hospital length of stay increased odds of intubation. However, this data is only from the first year of pandemic before the distribution of vaccines and further studies needed to assess the outcome of COVID-19 in patients with ILD throughout the pandemic.

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