CHRONIC HEPATITIS B INCREASES MORTALITY RISK IN COVID-19 WHILE VACCINATION IS PROTECTIVE

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BACKGROUND

Chronic hepatitis B virus (HBV) infection is considered a risk factor for severe SARS-CoV-2 infection (COVID-19); however, there is conflicting evidence regarding its impact on COVID-19 outcomes in dually infected individuals. Furthermore, the effect of COVID-19 vaccination on outcomes in individuals with chronic HBV is not known.

METHODS

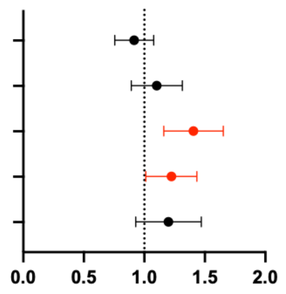
We used the TriNetX database to compare adult patients with confirmed SARS-CoV-2 infection and chronic HBV (COVID-HBV) and without chronic HBV (COVID-wo-HBV) across 77 healthcare systems in the US (January 2020-August 2023). We assessed the risk of inpatient hospitalization, intensive care unit admission, mechanical ventilation, early (30-day) and late (90-day) mortality. We assessed the impact of COVID-19 vaccination on outcomes. We addressed confounders using 1:1 propensity score matching by demographics, key comorbidities, and COVID-19 vaccination (≥1 doses). We calculated odds ratios (OR) and 95% confidence intervals (CI), with statistical significance set at $p < 0.05$.

TriNetX

- **170 organizations**
- **400 million+ unique patients**
- **30 countries**

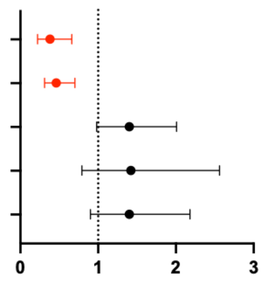
Impact of HBV on COVID-19 Outcomes

Outcome	HBV+	HBV-	OR (95% CI)
Mortality (30-day)	166 (2.4%)	141 (2.0%)	1.18 (0.94-1.48)
Mortality (90-day)	287 (3.8%)	238 (3.2%)	**1.21 (1.02-1.44)****
Intensive care unit	306 (5.0%)	226 (3.6%)	**1.39 (1.17-1.66)*****
Mechanical ventilation	219 (3.3%)	204 (3.0%)	1.09 (0.90-1.32)
Inpatient (non-ICU)	263 (9.7%)	296 (10.5%)	0.91 (0.76-1.08)



Effect of COVID-19 Vaccination

Outcome	HBV + Vaccinated	HBV + Unvaccinated	OR (95% CI)
Mortality (30-day)	18 (1.3%)	46 (3.3%)	**0.38 (0.22-0.66)*****
Mortality (90-day)	34 (2.4%)	71 (5.0%)	**0.46 (0.31-0.70)*****
Intensive care unit	74 (6.5%)	57 (4.7%)	1.40 (0.98-2.01)
Mechanical ventilation	27 (2.0%)	19 (1.4%)	1.42 (0.79-2.56)
Inpatient (non-ICU)	46 (10.8%)	41 (7.9%)	1.40 (0.90-2.18)



RESULTS

Of 3,360,173 individuals with confirmed SARS-CoV-2, about 0.2% (7,163) were COVID-HBV, of which 13.9% (996) were vaccinated. People with COVID-HBV had higher odds of 90-day mortality (OR 1.21, 95% CI 1.02-1.44; $p = 0.032$) and ICU admission (OR 1.39, 95% CI 1.17-1.66; $p < 0.001$) compared with COVID-wo-HBV; however, there was no significant difference between groups in 30-day mortality, hospitalization, and mechanical ventilation rates. In subgroup analysis of COVID-HBV, those who received COVID-19 vaccination had lower odds of death at 30 days (OR 0.38, 95% CI 0.22-0.66; $p < 0.001$) and 90 days (OR 0.46, 95% CI 0.31-0.70; $p < 0.001$). Vaccination was not associated with decreased odds of hospitalization, ICU admission, and mechanical ventilation rates.

CONCLUSIONS

Chronic HBV infection conferred higher odds of death and adverse outcomes in COVID-19. Notably, COVID-19 vaccination was associated with a significant reduction in the odds of death and the need for ICU admission, suggesting that vaccination could be an effective strategy for mitigating the impact of COVID-19 in individuals with chronic HBV.

Acknowledgements: This work was funded by the University Hospitals Cleveland Medical Center and the Clinical and Translational Science Collaborative of Cleveland (UL1TR002548) from the National Center for Advancing Translational Sciences (NCATS) component of the NIH and NIH Roadmap for Medical Research.

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