

A recently published review article by Perez et al, had discussed the association between hypertension, obesity, and the current COVID-19 pandemic. The article was published in the Current Hypertension Reports in June 2021 and the full article is free to read and to download at the journal website.

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Hypertension, Obesity, and COVID-19: a Collision of Pandemics

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Abstract

To highlight the epidemiology and pathophysiology of hypertension and obesity in COVID-19 infection RECENT FINDINGS: Hypertension and obesity have emerged as significant risk factors for contracting the COVID-19 virus and the subsequent severity of illness. ACE2 receptor expression and dysregulation of the RAAS pathway play important roles in the pathophysiology of these associations, as do the pro-inflammatory state and cytokine dysregulation seen in obesity. Some of these patterns have also been seen historically in other viral illnesses. Understanding the mechanisms behind the associations between COVID-19, hypertension, and obesity is important in developing effective targeted therapies and monitoring vaccine response and efficacy. More research is needed to apply our growing knowledge of the pathophysiology of COVID-19, hypertension, and obesity to prevention and treatment. Interventions focusing on lifestyle modification in managing hypertension and obesity can potentially have a positive impact on containing this pandemic and future viral illness outbreaks.

Keywords: ACE2 receptor; COVID-19; Hypertension; Obesity; RAAS.

Basu et al had demonstrated that hypertension is considered a major predictor of poor outcomes, in a retrospective study that involved 907 patients. The study was published in the British Medical Journal Open and is free to read and to download at the journal website.

BMJ Open. 2021 Jun 25;11(6):e047561. doi: 10.1136/bmjopen-2020-047561.

Hypertension is the major predictor of poor outcomes among inpatients with COVID-19 infection in the UK: a retrospective cohort study

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Abstract

Objective: To assess the impact of diabetes, hypertension and cardiovascular diseases on inpatient mortality from COVID-19, and its relationship to ethnicity and social deprivation.

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Design: Retrospective, single-centre observational study SETTING: Birmingham, UK.

Participants: 907 hospitalised patients with laboratory-confirmed COVID-19 from a multi-ethnic community, admitted between 1 March 2020 and 31 May 2020.

Main outcome measures: The primary analysis was an evaluation of cardiovascular conditions and diabetes in relation to ethnicity and social deprivation, with the end-point of inpatient death or death within 30 days of discharge. A multivariable logistic regression model was used to calculate HRs while adjusting for confounders.

Results: 361/907 (39.8%) died in hospital or within 30 days of discharge. The presence of diabetes and hypertension together appears to confer the greatest mortality risk (OR 2.75; 95% CI 1.80 to 4.21; $p < 0.001$) compared with either condition alone. Age >65 years (OR 3.32; 95% CI 2.15 to 5.11), male sex (OR 2.04; 95% CI 1.47 to 2.82), hypertension (OR 1.69; 95% CI 1.10 to 2.61) and cerebrovascular disease (OR 1.87; 95% CI 1.31 to 2.68) were independently associated with increased risk of death. The mortality risk did not differ between the quintiles of deprivation. High-sensitivity

troponin I was the best predictor of mortality among biomarkers (OR 4.43; 95% CI 3.10 to 7.10). Angiotensin-receptor blockers (OR 0.57; 95% CI 0.33 to 0.96) and ACE inhibitors (OR 0.65; 95% CI 0.43 to 0.97) were not associated with adverse outcome. The Charlson Index of Comorbidity scores were significantly higher in non-survivors.

Conclusions: The combined prevalence of hypertension and diabetes appears to confer the greatest risk, where diabetes may have a modulating effect. Hypertension and cerebrovascular disease had a significant impact on inpatient mortality. Social deprivation and ethnicity did not have any effect once the patient was in hospital.

Keywords: COVID-19; epidemiology; general diabetes; hypertension.

In a recent Chinese study, Peng et al demonstrated that neither RAAS blockade nor beta blockade (for treatment of hypertension) had shown negative results, while patients on calcium channel blockade showed a mortality benefit. The article is published ahead of print in the Chinese Medical Journal (English version) and the full article is available only to subscribers.

Chin Med J (Engl). 2021 Jun 16. doi: 10.1097/CM9.0000000000001479. Online ahead of print.

Calcium channel blockers improve prognosis of patients with coronavirus disease 2019 and hypertension

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Abstract

Background: Hypertension is considered an important risk factor for the coronavirus disease 2019 (COVID-19). The commonly anti-hypertensive drugs are the renin-angiotensin-aldosterone system (RAAS) inhibitors, calcium channel blockers (CCBs), and beta-blockers. The association between commonly used anti-hypertensive medications and the clinical outcome of COVID-19 patients with hypertension has not been well studied.

Methods: We conducted a retrospective cohort study that included all patients admitted with COVID-19 to Huo Shen Shan Hospital and Guanggu District of the Maternal and Child Health Hospital of Hubei Province, Wuhan, China. Clinical and laboratory characteristics were extracted from electronic medical records. Hypertension and anti-hypertensive treatment were confirmed by medical history and clinical records. The primary clinical endpoint was all-cause mortality. Secondary endpoints included the rates of patients in common wards transferred to the intensive care unit and hospital stay duration. Logistic regression was used to explore the risk factors associated with mortality and prognosis. Propensity score matching was used to balance the confounders between different anti-hypertensive treatments. Kaplan-

Meier curves were used to compare the cumulative recovery rate. Log-rank tests were performed to test for differences in Kaplan-Meier curves between different groups.

Results: Among 4569 hospitalized patients with COVID-19, 31.7% (1449/4569) had a history of hypertension. There were significant differences in mortality rates between hypertensive patients with CCBs (7/359) and those without (21/359) (1.95% vs. 5.85%, risk ratio [RR]: 0.32, 95% confidence interval [CI]: 0.13-0.76, $\chi^2 = 7.61$, $P = 0.0058$). After matching for confounders, the mortality rates were similar between the RAAS inhibitor (4/236) and non-RAAS inhibitor (9/236) cohorts (1.69% vs. 3.81%, RR: 0.43, 95% CI: 0.13-1.43, $\chi^2 = 1.98$, $P = 0.1596$). Hypertensive patients with beta-blockers (13/340) showed no statistical difference in mortality compared with those without (11/340) (3.82% vs. 3.24%, RR: 1.19, 95% CI: 0.53-2.69, $\chi^2 = 0.17$, $P = 0.6777$).

Conclusions: In our study, we did not find any positive or negative effects of RAAS inhibitors or beta-blockers in COVID-19 patients with hypertension, while CCBs could improve prognosis.