

A Recovery-based Assessment of Disease Severity and Comorbidities Utilizing Hematological, Clinical Chemistry, Inflammatory, Coagulation and Arterial Blood Gas Biomarkers among Filipino COVID-19 Patients in a Secondary Hospital in Isabela, Philippines

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In the Philippines, a lack of data was observed on the investigation of laboratory biomarkers as effective prognostic predictors for COVID-19 patients with underlying conditions. This study aimed to evaluate hematological, clinical chemistry, inflammatory, coagulation, and arterial blood gas biomarkers and related signs and symptoms in assessing survival based on COVID-19 severity of Filipino patients with hypertension and diabetes mellitus as comorbidities.

A retrospective approach was utilized for the selection, analysis, and evaluation of 85 severe COVID-19 patients. Forty-one have diabetes mellitus and forty-four have hypertension, of which 9 from each group are nonsurvivors. Data collected between January 2021 and February 2022 included patients' baseline laboratory results and signs and symptoms. All were subjected to statistical analysis and interpretation.

Findings showed that COVID-19 hypertensive patients, upon admission, presented a significant elevation of white blood cell count ($p=0.012$), creatinine ($p=0.003$), and procalcitonin ($p=0.002$) and a significant decrease in hemoglobin ($p=0.039$), hematocrit ($p=0.009$), bicarbonate ($p=0.016$), and base excess ($p=0.032$). Those presenting with difficulty in breathing were seen to have a higher chance of survival. Meanwhile, COVID-19 diabetes mellitus patients presented a significant elevation of white blood cell count ($p=0.022$), creatinine ($p=0.006$), and procalcitonin ($p=0.005$) and a significant decrease of hematocrit ($p=0.032$), partial pressure of carbon dioxide ($p=0.045$), and bicarbonate ($p=0.027$). These findings were seen to be associated with a higher risk of no survival.

Certain areas of the study can be further improved, such as using a larger sample size, collecting data from admission until discharge, differentiating types of hypertension, diabetes mellitus, and COVID-19 variants, and including serological biomarkers and vaccination status. These would help increase specificity and reliability whilst broadening the reach of the current findings.

Keywords: Biomarkers, Comorbidities, COVID-19, Diabetes mellitus, Hypertension