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SARS-CoV-2 shedding in saliva and dynamic changes in white blood cell counts

Parisa Shiri Aghbash
Tabriz University of Medical Sciences, Iran

Background: The most recent coronavirus (COVID-19) epidemic soon turned into a pandemic and presented a threat to the entire world. However, there is no reliable data on possible connections between SARS-CoV-2 shedding in bodily fluids, particularly saliva, and white blood cell (WBC) count. The possible relationship between changes in blood cell counts and viral shedding in saliva in a cohort of COVID-19 patients was examined in the current investigation.

Methods: In this early clinical study, 24 age-matched COVID-19 patients without comorbidities were observed for a total of 5 days to see whether changes in the amount of viral shedding in saliva would correlate with temporal changes in WBC count. Half of the patients were men, and the other half were women. By performing SARS-CoV-2 rapid antigen testing on patient saliva samples using the SARS-CoV-2 quick Antigen Test Kit (Roche, Basel, Switzerland), viral shedding in saliva was subjectively assessed. These patients were divided into two groups: those who coughed up sputum and those who did not. On days 1, 3, and 5, each patient's WBC counts, including leukocyte (LYM), neutrophil (NEU) counts were reported.

Results: According to the study's findings, both groups of people who had sputum had significantly higher levels of WBC, LYM, and NEU on the fifth day compared to the first day. However, there were no appreciable changes in the levels of lactate dehydrogenase (LDH), neutrophil-to-lymphocyte ratio (NLR), or C-reactive protein (CRP).

Discussions: This study demonstrates that measuring changes in the number of blood LYMs and laboratory values like CRP and LDH as biomarkers (it shown in the ROC curve) are reliable indicators of the quantity of viral shedding in both sputum-producing and non-sputum-producing individuals. The findings of our study indicate that the measured parameters show the degree of viral shedding in sputum-producing individuals.