Erythrogram Indicators as Prognostic Biomarkers in Patients with Coronavirus Disease 2019

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BACKGROUND

Despite the decrease in acute Coronavirus disease 2019 (COVID-19) cases, the impact of the SARS-CoV-2 pandemic remains significant in the fields of respiratory medicine and the management of infectious diseases. COVID-19 has posed unprecedented challenges to global public health, highlighting the importance of prognostic biomarkers in critically ill patients. The oxidative stress in COVID-19 is associated with impairment in various organs and systems, leading to erythrocyte injury. It may promote the elevation of red cell distribution width (RDW) and systemic inflammation (Ayala et al. 2021; Fors et al., 2024; Wang et al. 2022).

PURPOSE

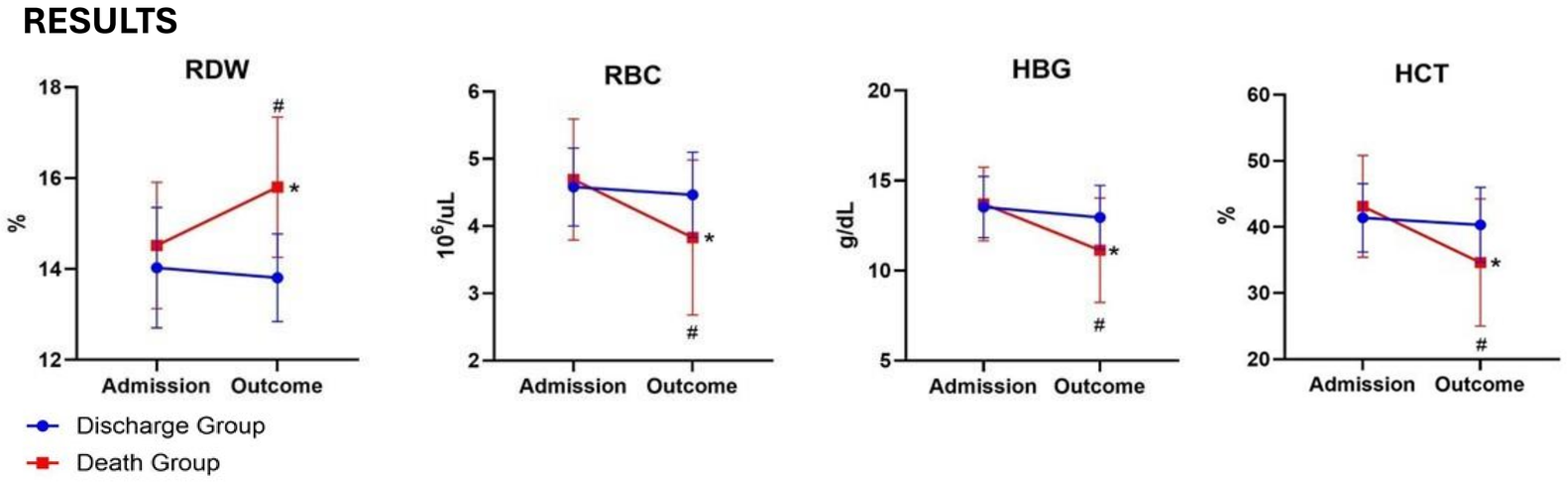
The present study examined the prognostic value of erythrogram indicators in intensive care unit (ICU) patients affected by COVID-19, emphasizing their role in predicting severe clinical outcomes.

METHODS

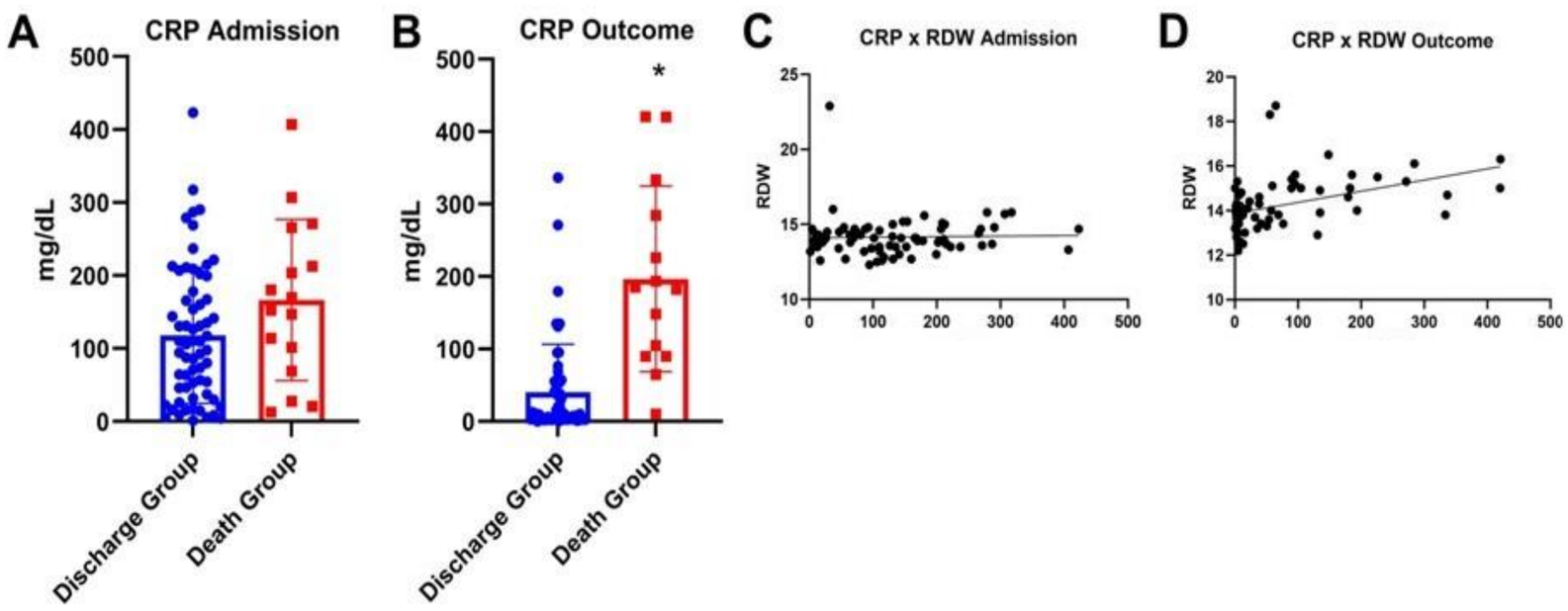
This study is part of an observational, descriptive, and analytical research project conducted based on data collected from the medical records of patients with confirmed COVID-19 diagnoses admitted to the ICU at Hospital Bom Pastor (Rio Grande do Sul, Brazil). It involved 91 ICU patients (36 women and 55 men), categorized into two groups: discharge group and death group.

RESULTS

The discharge group presented an increase in RDW when comparing admission values with those at the time of outcome along with a decrease in red blood cell (RBC) count, hemoglobin (HBG), and hematocrit (HCT). At the time of outcome, patients who did not survive had higher RDW and lower RBC count, HBG, and HCT values compared to patients who were discharged.



The circulating C-reactive protein (CRP), an inflammatory response marker, did not correlate with RDW at admission, while it increased in the death group. The RDW increase was also associated with the rise of CRP levels.



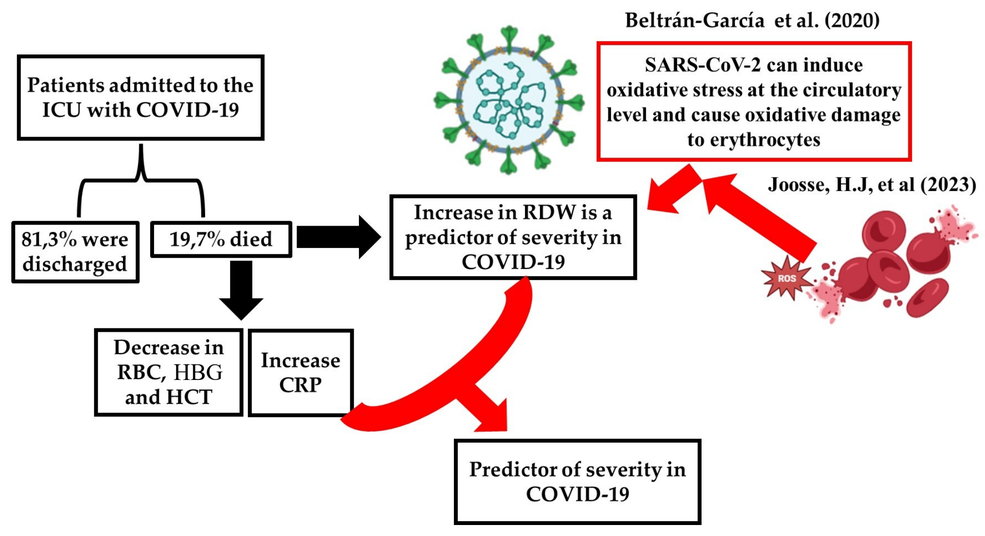
Spearman r	
r	0.09019
95% confidence interval	-0.1416 to 0.3126
P value	
P (two-tailed)	0.4323
P value summary	ns

Spearman r	
r	0.5085
95% confidence interval	0.3025 to 0.6691
P value	
P (two-tailed)	<0.0001
P value summary	****

CONCLUSIONS

Elevated RDW and CRP levels at hospital admission may be reliable prognostic biomarkers of unfavorable outcomes.

These preliminary data can contribute to more comprehensive laboratory monitoring during hospitalization.



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