

Hematological parameters and its risk factors on progression and classification of COVID-19 patients admitted at millennium COVID-19 treatment and care center

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Introduction: COVID-19 is public health pandemic in the globe going on currently. Alteration of hematological parameters in patients confirmed with COVID-19 pandemic is evolving as an important feature of disease progression and classification. Hence, this study aims to identify hematological parameters and related risk factors in patients with COVID-19 Pandemic at Millennium COVID-19 Treatment and Care Center, Addis Ababa, Ethiopia.

Methods and Materials: This study is prospective Cohort included patients with COVID-19 Pandemic admitted at Millennium COVID-19 Treatment and Care Center an emergency Center of the Capital of Addis Ababa, Ethiopia. Socio-demographic, Clinical, Treatment, Hematology Laboratory and patient outcome data were collected using standard questionnaire and compared between patients with Mild, Moderate, Severe and Critical disease defined according to COVID-19 Clinical Management Pocket book, published by Ministry of Health Ethiopia and Ethiopian Public Health Institute jointly on June 2020. This study assessed the risk factors associated with clinical illness and poor progression. Vital hematological and coagulation factors were investigated with linear mixed model, and Coagulation Screening with sepsis induced coagulopathy and with international Society of Thrombosis and Hemostasis Evident Disseminated Intravascular Coagulation Scoring system were applied.

Results: Out of 1,339 COVID-19 Patients admitted to Millennium COVID-19 Treatment and Care Center from May 17,2020 up to August 25, 2020, 499 patients were included in this study. The incidence of thrombocytopenia (a platelet Count <100x10⁹ cells per Liter) in patients admitted to ICU or very critical disease 295 (59% out of 499) was significantly higher than those with severe disease 153 (30% of 499) or moderate 49 (10% of 499) disease (P<0.0001). The number of Eosinophils and lymphocytes were significantly lower in very critical patients than Severe or moderate disease (P<0.0001). Troponin, CK-MB and Prothrombin time (PT) analytes were significantly increase as disease severity increases (P<0.001). In multivariate analysis, death was associated with increased Neutrophil to Lymphocyte ratio (N/L ration > 12.5; odds ratio (OR) 8.6 (95CI 1.2-12.56) P=0.0035). Thrombocytopenia (a platelet Count <100x10⁹ cells per Liter; odds ratio (OR) 7.43 (1.65-13.62) P=0043). Prolonged prothrombin time (>18 s; OR 6.41 (1.73-14.25) P=0017, and increased troponin (>43 pg/L; OR 8.53 (1.63-12.78) P=00042). Hemorrhagic, Thrombotic and Sever diabetic events were a very common complications and comorbid respectively in patients who died (63 (63% of 103). Sepsis induced

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coagulation and disseminated intravascular Coagulation increased over time in patients who encounter death according to international Society of Thrombosis and Hemostasis Evident Disseminated Intravascular Coagulation Scoring system.

Conclusion: Complete Blood count (CBC), measurement of troponin a cardiac marker and prothrombin time and Neutrophil to lymphocyte ration can help physicians to assess severity and prognosis of COVID-19 patients admitted at hospitals or emergency Centers.

Keywords: CBC, COVID-19, Neutrophil to Lymphocyte ratio, Prothrombin Time (PT).

Biography

Yakob Gebregziabher Tsegay currently working in the Department of Medical Biotechnology, Institute of Biotechnology at University of Gondar, Gondar, Ethiopia.

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