Title:

Cytopenias in Hospitalized patients of COVID-19 during first and other waves

Introduction:

COVID-19 is a global pandemic and since December 2019 we have seen different variants and different severity levels of this disease. Laboratory parameters has played quite an important role in diagnosis as well predicting the prognosis and disease course. The corona virus SARS CoV-2 which is responsible for the current global pandemic that has resulted in considerable morbidity and mortality[1].

COVID-19 is highly communicable disease and can lead to diversity of symptoms ranging from mild fever, dry cough, myalgias and headache to at times gastrointestinal symptoms including abdominal pain, diarrhea and vomiting [2]. Pakistan being at the adjacent border of China and Iran was at great threat of infiltration and two confirmed case of Corona virus were reported in city Karachi and Islamabad on February 26th 2020[3].To date Pakistan Has faced more than three waves of COVID-19, the first wave span from late May to Mid July 2020, second wave spans from early November to mid December 2020 and third wave spans from Mid March 2021 to June 2021.

COVID-19 and its relationship with laboratory parameters have been well established by many studies. The clinicians might consider the hematological and biochemical parameters in the patients with COVID-19 in future decision-making. These indicators may sustain clinical decisions to recognize high fatality case and poor diagnosis in the initial admission phase[4].COVID-19 is considered mainly to involve respiratory system, but multi systemic involvement is also seen in the evolving data from managing the patients of COVID-19. Hemopoietic system is one of them and blood count anomalies like neutrophilia and lymphopenia are particularly seen in COVID-19 patients and also have a prognostic significance[5].NLR (neutrophil to lymphocyte ratio), MLR (monocyte to lymphocyte Ratio) And PLR be used as a useful predictive marker for the disease course as well as severity and outcome of COVID-19 patients. Systemic immune inflammatory index (SII) has a positive prognostic value[6].

Objective:

It was observed that cytopenias are more prominent in patients during subsequent waves of COVID-19. The aim of this study was statistical verification of this observed phenomena.

Materials and methods:

Study design: Retrospective Cross-sectional study

Sample size: 202

Study Setting: Department of Pathology and Department of Medicine, FMH.

Eligibility criteria:

Inclusion Criteria:

- COVID-19 positive Hospitalized patients
- Both genders
- All ages

Exclusion Criteria:

- Know patients with Chronic liver disease
- Known patients with Hematological disorders

Materials and methods:

Clinical and laboratory data as well as outcome of total 202 COVID-19 PCR positive patients admitted in Fatima memorial Hospital, Lahore, Pakistan will be collected after IRB approval and informed consent from patient during first and other waves. Data of First wave is from May 2020 to July 2020, second wave from early November to Mid December 2020 and third wave from Mid-march to June 2021. Comparison of data on basis of SII as well hematological parameters of First Wave will be compared to other waves of COVID-19. CBC will be performed on Sysmex XN-10. WHO normal values will be taken as reference for CBC. Neutrophil to lymphocyte ratio (NLR) will be calculated as N/L And >3 will be considered as raised NLR. Platelet to lymphocyte Ratio (PLR) will be calculated as P/L. Raised PLR will be >149 for Males and >172 for females. Monocyte to lymphocyte ratio will be also calculated by M/L and >0.23 will be considered as raised value. Systemic immune inflammatory index is calculated by P x N/L. SII > 600 will be labelled as raised and bad prognostic tool.

Statistical analysis:

Continuous variables will be analyzed by Man-Whitney analysis and categorical variables will be analyzed by independent T test. All the data will be entered and analyzed in SPSS 25. P-value equal to or less than 0.05 will be considered significant.

References:

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