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Evaluation of the Correlation between HbA1c Levels and Inflammatory Markers: Neutrophil-to-Lymphocyte Ratio and Monocyte-to-Lymphocyte Ratio in Controlled and Uncontrolled Type 2 Diabetes Mellitus

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Abstract

Aim: To assess the relationship between glycated hemoglobin (HbA1c) with inflammatory markers, neutrophil-to-lymphocytes ratio (NLR), and monocyte-to-lymphocytes ratio (MLR) in controlled and uncontrolled type 2 diabetes patients.

Methodology: After obtaining informed consent from patients who met the inclusion and exclusion criteria, 200 diabetic patients were included in the study using the simple randomization method. Following a detailed history and diagnosis, vital demographic information, and blood tests were collected from patients via a predesigned preliminary questionnaire. The following blood tests were collected: white blood cell (WBC), Hb, hematocrit (HCT), red cell distribution width (RDW), neutrophils, lymphocytes, HbA1c, blood glucose, NLR ratio, and MLR ratio. Data were entered and analyzed using Statistical Package for the Social Sciences version 25.0.

Results: The mean age of patients with controlled diabetes mellitus was 54.10 years, while that of patients with uncontrolled diabetes mellitus was 55.3 years. Glycemic control was more in the age group of 51–60 years. Around 54% of males and 46% of females were included in the present study, and no association was found between the two genders with

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poor and good glycemic control. Around 63.29% of participants with uncontrolled diabetes have an increased NLR, and 61.39% of participants with uncontrolled diabetes have an increased MLR. A strong association was found between the NLR and MLR with the glycemic control.

Conclusion: Uncontrolled diabetes mellitus had a positive association with inflammatory markers, that is, NLR and MLR. Statement of significance: Diabetes mellitus is the most common metabolic disorder in Asian countries. It leads to many acute and chronic complications in uncontrolled diabetes. Markers like the NLR ratio and MLR ratio are inexpensive and easily available for blood investigation. Hence, these markers are quite useful in differentiating controlled and uncontrolled diabetes and, therefore, useful in predicting blood sugar control in type 2 diabetes mellitus

Keywords: Diabetes mellitus, NLR, MLR, HbA1C