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STUDY OF ASSOCIATION OF MEAN PLATELET VOLUME IN PATIENTS WITH DIABETIC NEPHROPATHY

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Abstract

Background: Diabetic nephropathy (DN) is a significant microvascular complication of diabetes mellitus, contributing to chronic kidney disease (CKD) and cardiovascular risk. Mean platelet volume (MPV) has emerged as a potential biomarker of thrombotic and inflammatory activity.
Objective: To investigate the association between MPV and diabetic nephropathy.
Methods: A hospital-based cross-sectional study was conducted among 59 patients with type 2 diabetes mellitus and microalbuminuria. Clinical parameters including MPV, glycemic control indices, renal function markers, and comorbid conditions were assessed.
Results: Mean age was 61.7 ± 8.4 years with a male predominance (64.4%). The mean MPV was 11.1 ± 1.2 fL. Higher MPV values were associated with increased albuminuria, lower GFR, and thrombotic events. There was a positive correlation between MPV and severity of diabetic nephropathy.
Conclusion: Elevated MPV is significantly associated with DN and may serve as an adjunctive marker for disease severity and cardiovascular risk stratification. Routine MPV monitoring could aid in early identification of high-risk patients.

Key words: Mean Platelet Volume (MPV), Diabetic Nephropathy, Type 2 Diabetes Mellitus

INTRODUCTION

Diabetic nephropathy (DN) is a leading cause of chronic kidney disease (CKD) and end-stage renal disease globally. The pathogenesis of DN involves a complex interplay of hyperglycemia, oxidative stress, hemodynamic changes, and inflammatory processes. Recent studies suggest that hematologic markers such as mean platelet volume (MPV) may reflect disease progression and systemic thrombo-inflammatory status.

OBJECTIVES

To investigate association between MPV and Diabetic Nephropathy.

MATERIALS AND METHODS

Study Design: Hospital-based cross-sectional observational study
Setting: VIMS, Ballari
Sample Size: 59 patients with Type 2 diabetes mellitus and microalbuminuria
Inclusion Criteria: Diagnosed T2DM patients with microalbuminuria
Exclusion Criteria: Patients on antiplatelets, with malignancy, UTI, or cardiac failure
Data Collection: Clinical evaluation, laboratory tests including MPV, HbA1c, serum creatinine, microalbuminuria, etc.
Statistical Analysis: Descriptive and inferential statistics using SPSS v29. Significance at $p<0.05$

RESULTS

The study included 59 patients. The mean MPV was 11.1 ± 1.2 fL. MPV correlated positively with microalbuminuria levels and was higher in patients with complications like stroke and myocardial infarction.
Summary of Study Results: Mean Platelet Volume in Diabetic Nephropathy
This is summary of the results section from the study conducted by Dr. Ramu on the association of Mean Platelet Volume (MPV) in patients with Diabetic Nephropathy (DN). The study evaluated 59 patients with Type 2 Diabetes

Mellitus and microalbuminuria. The aim was to assess whether elevated MPV levels correlate with the severity of nephropathy and associated thrombotic risks.Table: Summary of Clinical Parameters (n = 59)
Summary of Clinical Parameters (n = 59)

Parameter	Mean ± SD
Mean Age (years)	61.7 ± 8.4
MPV (fL)	11.1 ± 1.2
Microalbuminuria (mg/L)	149.3 ± 55.1
Hb (g%)	12.7 ± 0.8
FBS (mg/dL)	183.6 ± 22.9
PPBS (mg/dL)	266.4 ± 27.8
HbA1c (%)	8.4 ± 0.9
Serum Creatinine (mg/dL)	1.9 ± 0.6
eGFR (mL/min/1.73 m²)	43.2 ± 9.4
Platelet Count (per µL)	220,800 ± 22,600
Systolic BP (mmHg)	140.8 ± 6.7
Diastolic BP (mmHg)	85.9 ± 4.8
BMI (kg/m²)	28.8 ± 1.7

DISCUSSION

The study results align with existing literature suggesting that elevated MPV is associated with increased thrombotic risk and severity of diabetic nephropathy. MPV serves as a marker for platelet activity, and higher levels may reflect enhanced platelet reactivity in a proinflammatory and prothrombotic state seen in DN. The findings suggest the potential utility of MPV in risk stratification and disease monitoring.

CONCLUSION

Elevated MPV is significantly associated with diabetic nephropathy and its complications. Routine MPV monitoring in diabetic patients may provide an early indicator of nephropathy progression and cardiovascular risk. Further large-scale prospective studies are needed to validate MPV as a clinical tool in DN management.

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