The importance of gender difference in evaluation of relationship between MPV and serum biochemical parameters in type 2 diabetic patients

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Objectives:

Increased mean platelet volume (MPV) is emerging as an independent risk factor for thromboembolism, stroke and myocardial infarction. But the importance of gender difference in evaluation MPV levels is not known. Thus, in this study we tried to emphasize the importance of gender difference in evaluation of relationship between MPV and serum biochemical parameters in type 2 diabetic patients.

Methods:

In this retrospective study, a total of 509 patients with diabetes mellitus who hospitalized due to several causes were evaluated. Their age, gender, other comorbidities, HbA1c, and other biochemical parameters were recorded. All data were analyzed by using SPSS 22.0 statistical package for Windows.

Results:

A total of 509 patients consisted of 269 women and 240 men were included in this study. There were no significantly difference in regard to other comorbidities between genders ($p>0.05$). Mean age of women was 65.43±16.1 years and the mean age of men was 64.84±14.98 years ($p=0.669$). The mean MPV value of women was 8.61±1.40 fL and the mean MPV value of men was 8.52±1.47 fL. MPV value did not differ according to gender ($p=0.486$). Erythrocyte sedimentation rate (ESR) ($p=0.016$), HDL-cholesterol (Chol) ($p=0.024$), total-Chol ($p=0.01$), and platelet (PLT) ($p=0.035$) levels were significantly higher in women whereas urea ($p=0.08$), creatinine ($p=0.0001$), and triglyceride ($p=0.002$) levels were significantly higher in men (Table 1). There were positive correlations between MPV and urea, creatinine, uric acid, and PDW values and there were negative correlations between MPV and total-chol, LDL-chol, and PLT in women. Also there were positive correlations between MPV and HbA1c, glucose, uric acid, and PDW values and there were negative correlations between MPV and ESR and PLT values in men.

	Male Patients (n=240)			Female Patients (n=269)			p value
Variable	Minimum	Maximum	Mean±SD	Minimum	Maximum	Mean±SD	
Age (year)	20	95	64.84±14.98	20	96	65.43±16.10	0.669
ESR (mm/hr)	1	120	47.90±35.5	2	120	55.63±33.43	0.016
HbA1c (%)	4.60	16.80	7.62±2.58	4.60	17.60	7.98±2.75	0.162
Glucose (mg/dL)	18	886	195.29±159.54	15	1455	222.03±196.97	0.086
Urea (mg/dL)	6	689	110.68±86.71	15	433	92.52±70.64	0.008
Creatinine (mg/dL)	0.30	146.50	3.85±9.80	0.34	15.98	2.45±2.45	0.0001
Uric acid (mg/dL)	1.80	20.90	7.15±2.69	1.30	19.81	7.35±3.18	0.446
HDL-Chol (mg/dL)	5	79	33.77±12.63	5	90	37.21±15.03	0.024
Total-Chol (mg/dL)	52	470	160.70±60.25	72	354	174.97±55.67	0.001
LDL-Chol (mg/dL)	2	336	95.13±45.58	13	247	99.95±40.78	0.107
Triglycerid (mg/dL)	24	7115	228.28±674.31	42	1375	190.93±161.16	0.002
CRP (mg/L)	0.03	46.58	6.60±8.93	0.02	32	5.04±6.70	0.476
WBC x103 (/mm3)	0.7	63.9	10.53±6.61	1.2	37.5	10.38±6.32	0.440
PLT x103 (/mm3)	5	685	252.7±125.1	3	1118	277.9±139.7	0.035
PDW (%)	11.30	34.80	17.48±2.77	9.30	27.50	17.34±2.36	0.836
MPV (fL)	5.33	17.10	8.52±1.47	5.03	15.10	8.61±1.39	0.486

Table 1. difference of patients' characteristics and blood parameters among genders.
SD: standard deviation, ESR: erythrocyte sedimentation rate, HbA1c: hemoglobin a1c, -chol: cholesterol, CRP: c-reactive protein, WBC: white blood cell, PLT: platelet, PDW: platelet distribution width, MPV: mean platelet volume. A value of $P<0.05$ was considered statistically significant.

Conclusion:

We did not find any difference in MPV values between male and female patients with diabetes. But we have showed that the significance of correlation analysis between MPV and each biochemical parameter depended upon gender. Thus the importance of gender difference in studies evaluating MPV levels in diabetic patients should be considered.

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