

INTRODUCTION

- Many studies have examined the correlation between markers of inflammation and psychiatric diagnoses involving depression or suicidality.
- Inflammatory markers of note include neutrophil-to-lymphocyte ratios, mean platelet volumes, leukocyte numbers, and platelet to lymphocyte ratios
- It has been seen that higher levels of subclinical inflammation are correlated with more severe psychiatric diagnoses.
- No such study has examined this correlation in the Emergency Department.

MATERIALS & METHODS

Patients who presented to the Vidant Medical Center Emergency Department in 2016 with diagnoses of Suicidal Ideation or Attempt were randomly selected.

A retrospective chart review of selected patients collected data on neutrophil-to-lymphocyte ratios, mean platelet volumes, leukocyte numbers, and platelet to lymphocyte ratios from CBCs.

Additional data identifying group differences was collected, These variables include time of the lab blood draw, age, gender, history of unipolar depression, history of hypertension, current SSRI use, positive urine drug screen, and group Status (admitted/discharged)

Multiple linear regression analysis was used to test if group differences predicted increased levels of inflammatory markers.

HYPOTHESIS

We hypothesize that when compared to patients presenting with suicidal ideations who were discharged, patients who were admitted would be found to have evidence of subclinical inflammation. If true, this could help guide future disposition decisions regarding patients presenting with suicidal ideations.

RESULTS

The overall regressions showed that assessed variables did not explain a significant amount of the variance in neutrophil-to-lymphocyte ratio ($R^2 = 0.083$, $F(8, 133) = 1.509$, $p = 0.160$), platelet-to-lymphocyte ratio ($R^2 = 0.039$, $F(8, 133) = 0.674$, $p = 0.714$), leukocyte number ($R^2 = 0.073$, $F(8, 133) = 1.315$, $p = 0.241$), and mean platelet volume ($R^2 = 0.095$, $F(8, 133) = 1.746$, $p = 0.093$).

It was found that none of these variables significantly predicted neutrophil-to-lymphocyte ratio or platelet-to-lymphocyte ratio ($p > 0.05$). Only age significantly predicted leukocyte number ($\beta = -0.251$, $p = 0.013$). Age ($\beta = -0.247$, $p = 0.014$) and hypertension ($\beta = 0.224$, $p = 0.026$) significantly predicted mean platelet volume.

Neutrophil-to-Lymphocyte Ratio Coefficients							Platelet-to-Lymphocyte Ratio Coefficients								
Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error				Beta	Lower Bound		Upper Bound	B				Std. Error	Beta
(Constant)	.513	.738		.695	.488	-.947	1.974	(Constant)	79.779	21.720		3.673	.000	36.818	122.741
Discharged vs Admitted	.665	.358	.162	1.857	.066	-.043	1.374	Discharged vs Admitted	5.546	10.537	.047	.526	.600	-15.296	26.388
Age	.024	.015	.163	1.637	.104	-.005	.053	Age	.507	.434	.119	1.168	.245	-.351	1.364
Time of Blood Draw	.477	.357	.112	1.336	.184	-.229	1.184	Time of Blood Draw	9.222	10.506	.076	.878	.382	-11.560	30.003
Male vs Female	-.141	.355	-.034	-.397	.692	-.844	.562	Male vs Female	4.268	10.455	.036	.408	.684	-16.411	24.947
Unipolar Depression	-.310	.383	-.076	-.811	.419	-1.068	.447	Unipolar Depression	11.554	11.263	.098	1.026	.307	-10.723	33.832
Current SSRI Use	-.275	.410	-.062	-.670	.504	-1.085	.536	Current SSRI Use	-6.145	12.055	-.048	-.510	.611	-29.989	17.700
Positive Drug Screen	.073	.360	.018	.203	.839	-.639	.785	Positive Drug Screen	-4.442	10.583	-.037	-.420	.675	-25.375	16.491
Hypertension	.131	.429	.031	.306	.760	-.717	.979	Hypertension	.312	12.610	.003	.025	.980	-24.629	25.253

Leukocyte Number Coefficients							Mean Platelet Volume								
Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error				Beta	Lower Bound		Upper Bound	B				Std. Error	Beta
(Constant)	8.612	.904		9.531	.000	6.825	10.400	(Constant)	8.912	.368		24.230	.000	8.184	9.639
Discharged vs Admitted	.648	.438	.130	1.479	.142	-.219	1.515	Discharged vs Admitted	-.053	.178	-.026	-.298	.766	-.406	.300
Age	-.045	.018	-.251	-2.510	.013	-.081	-.010	Age	-.018	.007	-.247	-2.503	.014	-.033	-.004
Time of Blood Draw	.116	.437	.022	.264	.792	-.749	.980	Time of Blood Draw	.267	.178	.126	1.502	.136	-.085	.619
Male vs Female	.163	.435	.033	.376	.708	-.697	1.024	Male vs Female	.323	.177	.157	1.825	.070	-.027	.673
Unipolar Depression	-.708	.469	-.141	-1.510	.133	-1.634	.219	Unipolar Depression	.090	.191	.044	.472	.638	-.287	.467
Current SSRI Use	.340	.502	.063	.677	.500	-.652	1.331	Current SSRI Use	-.037	.204	-.017	-.181	.857	-.441	.367
Positive Drug Screen	.346	.440	.068	.785	.434	-.525	1.217	Positive Drug Screen	-.042	.179	-.020	-.233	.816	-.396	.313
Hypertension	-.594	.525	-.114	-1.132	.260	-.444	1.632	Hypertension	.479	.214	.224	2.244	.026	.057	.902

DISCUSSION

Our findings showed that there was no significant correlation between patients who presented to the Emergency Department with Suicidal Ideations and elevated levels of subclinical inflammation regardless of whether these patients were admitted or discharged.

With these findings, we can begin to examine if elevated levels of inflammation can be correlated with other group differences in patient populations. Potential areas of exploration include:

- Differences in levels of inflammation in those who present with Suicide Attempt versus those who present for nonpsychiatric diagnoses.
- Differences in inflammatory levels in those with current diagnoses of Depression but not actively suicidal to those who are actively suicidal but with no previous psychiatric diagnosis.

REFERENCES

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