Kaohsiung Journal of Medical Sciences (2016) 32, 91–95

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.kjms-online.com

ORIGINAL ARTICLE

The relationship between platelet–lymphocyte ratio and severity of erectile dysfunction

Alpaslan Akbas [a,*], Murat Tolga Gulpınar [a], Eyüp Burak Sancak [a], Mustafa Gunes [b], Murat Ucar [b], Muammer Altok [b], Mehmet Umul [b]

[a] *Department of Urology, Faculty of Medicine, Canakkale Onsekiz Mart University, Canakkale, Turkey*
[b] *Department of Urology, Faculty of Medicine, Suleyman Demirel University, Isparta, Turkey*

Received 23 July 2015; accepted 22 October 2015
Available online 28 December 2015

KEYWORDS
Erectile dysfunction;
Platelet–lymphocyte ratio

Abstract The prognostic importance of platelet–lymphocyte ratio (PLR) is already known for various artery diseases. In this study, the relationship between PLR and severity of erectile dysfunction (ED) is examined in patients with impotence. The data from patients suffering from erection problems was screened retrospectively. Detailed medical history, age, International Index of Erectile Function-5 (IIEF-5) scores, fasting blood glucose, lipid, whole blood count, and hormone profile values were examined. Patients with no ED were selected as the control group. All men answered the IIEF-5 questions and were then classified according to their scores. Patients were determined to have severe ED (scores 5–7), moderate ED (scores 8–16), or mild ED (scores 17–21). An IIEF-5 score greater than 21 was accepted for the control group. The PLR values from both patient and control groups were evaluated. Demographic data were similar in both groups. Mean PLR value was 104 in control and 118 in the patient group ($p < 0.001$). PLR value increased depending on the severity of ED. Mean PLR values were 108 in mild, 116 in moderate, and 130 in severe ED groups. Compared with the control group, this value was statistically significant for patients with moderate and severe ED ($p = 0.04$ and $p < 0.001$). PLR showed weak negative but significant correlation with IIEF-5 scores ($r = -0.27$ and $p < 0.001$). The PLR value was found to be higher in patients with ED. PLR value may be related to ED and its severity in patients with impotence.

Conflicts of interest: All authors declare no conflicts of interest.

* Corresponding author. Department of Urology, Faculty of Medicine, Canakkale Onsekiz Mart University, Canakkale, Turkey.
E-mail address: alpaslanakbas@comu.edu.tr (A. Akbas).

http://dx.doi.org/10.1016/j.kjms.2015.11.002

Introduction

Erectile dysfunction (ED) is described as an inability to stiffen and sustain an erection long enough for sexual intercourse [1]. It is a disorder that usually affects men between the ages of 40 years and 70 years and reduces their quality of life. It may be caused not only by endocrine, neurological, and psychological causes, but also may be a side effect of some medicines. Erection occurs due to a neurovascular process under hormonal control. Today, the International Index of Erectile Function-5 scoring system (IIEF-5) questionnaire is used in order to evaluate erectile function [2].

Risk factors for cardiovascular disease such as hypercholesterolemia, obesity, consumption of tobacco products, lack of exercise, and metabolic syndrome, are also risk factors for ED. Therefore, coronary artery diseases can be associated with vasculogenic ED [3].

Publications in recent years have emphasized the prognostic importance of platelet—lymphocyte ratio (PLR) for coronary artery diseases, various oncological diseases, and especially in acute coronary syndromes [4—8]. Increased PLR value in these diseases is an indication of poor prognosis.

The importance of PLR is unknown for ED patients, though they may share many common characteristics with acute coronary syndromes. There is no specific blood parameter showing ED. In this study, the relationship between PLR and ED (and its severity) was examined in patients with impotence.

Methods

The patients were screened after permission was received from Çanakkale Onsekiz Mart University Clinical Research Ethics Committee (2014-25; Canakkale, Turkey).

The study included patients suffering from erection problems who attended the urology clinics of two university hospitals between 2009 and 2013. Detailed medical history, age, IIEF-5 scores, fasting blood glucose, lipid, whole blood count, and hormone profile values were included in the study. Men with no ED comprised the control group. These patients applied to the urology clinics for urological reasons, such as renal cyst, hydrocele, inguinal hernia, etc. The inclusion criteria for the control group were whole blood count, no sexual problems, and an IIEF-5 score over 21. Lipid and hormone profiles were obtained from the hospital information system. Informed consent was obtained from the control group and patients who attended the hospital because of incomplete medical history. Patients reached by phone or those whose data were obtained from the hospital information system did not provide informed consent.

Patients were included in this study after examining their detailed sexual history and eliminating possible underlying reasons for impotence. Patients were excluded if they had any inflammatory, cardiovascular, and/or hematologic (such as leukocytosis and trombocytopenia) diseases, psychogenic reasons, hormonal disorders (hyperprolactinemia, hypogonadism), or neurological disorders (multiple sclerosis and seizure), failure to obtain their hemograms, findings of infection, or the use of medicines affecting blood count and erectile function (antiaggregants, beta blockers, and antidepressants). Furthermore diabetic or hypertensive patients were excluded. Individuals who did not have a sexual relationship for over a year or without a sexual partner were also excluded from the study. All men were asked to complete the IIEF-5 form (used for evaluation of erectile dysfunction) and were divided into four groups according to their scores. Patients with an IIEF-5 score between 22 and 25 were defined as the control group. Patients with a score between 17 and 21 were defined as mild ED, between 8 and 16 as moderate ED, and between 5 and 7 as severe ED. Complete blood counts from all patients, fasting blood glucose, lipid, and hormone profile levels were recorded from their files.

The Kolmogorov—Smirnov test was used to determine whether the sampling was normally distributed. Continuous variables are summarized as mean ± standard deviation. Two independent and one-way analysis of variance tests were used as parametric tests. The Kruskal—Wallis variance and the Mann—Whitney *U* test were used as nonparametric tests. Discrete variables are presented as frequency and

Table 1 General characteristics and whole blood counts of the study population.

	Control group $N = 175$	Erectile dysfunction group $N = 262$	p^*
Age (y)	53.8 ± 8.4	54 ± 11.7	0.4
Body mass index (kg/m^2)	27.3 ± 2.6	27.1 ± 2.9	0.4
Prolactin (ng/mL)	5.8 ± 2.7	6 ± 3.3	0.3
Testosterone (ng/mL)	5.6 ± 2.1	5.4 ± 2.5	0.4
Fasting blood glucose (mg/dL)	86.3 ± 8.8	91.1 ± 9.2	0.23
Total cholesterol (mg/dL)	196.6 ± 15.3	192.8 ± 13.3	0.2
LDL cholesterol (mg/dL)	107 (58—135)	115 (55—139)	0.3
HDL cholesterol (mg/dL)	45 (33—73)	38 (29—67)	0.06
Smoking, *N* (%)	40 (23)	65 (25)	0.32
WBC ($10^3/mm^3$)	7.7 ± 1.6	8.1 ± 2.1	0.51
Platelet ($10^3/mm^3$)	225.4 ± 42	238.8 ± 64	0.09
Neutrophil ($10^3/mm^3$)	4.6 ± 1.3	4,7 ± 1.7	0.86
Lymphocyte ($10^3/mm^3$)	2.3 ± 0.8	2.1 ± 0.6	0.08
Hematocrit (%)	43.8 ± 3.5	43.4 ± 4.1	0.7
NLR	2.16 ± 0.9	2.44 ± 1.3	0.08
PLR	104.7 ± 6.9	118.3 ± 7.7	<0.001
Mean platelet volume (fL)	11.7 ± 2.5	14.05 ± 3.3	<0.001

* $p < 0.05$ was considered statistically significant.
HDL = high density lipoprotein; LDL = low density lipoprotein; NLR = neutrophil lymphocyte ratio; PLR = platelet lymphocyte ratio; WBC = white blood cell.