

ASSESSMENT OF SOME SERUM INFLAMMATORY MARKERS AND HORMONE PROFILE AMONG PATIENTS WITH ERECTILE DYSFUNCTION

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Introduction

Erectile dysfunction (ED) is characterized by consistent inability to achieve and maintain sufficient erection for satisfactory sexual intercourse. Subclinical inflammation with raised inflammatory markers including CRP, NLR, PLR among others have been associated with cardiovascular disease/coronary artery disease and male erectile dysfunction (ED) in addition to hormonal changes including serum estradiol, testosterone & prolactin. To our knowledge there is a paucity of studies comparing Penile Color duplex Doppler ultrasound, inflammatory markers and hormonal profile among patients with ED. Hence, this study aims to assess some serum inflammatory markers and hormone profile among patients with erectile dysfunction.

Aim of the work

The aim of this study was to assess some inflammatory, serum hormonal profile among patients with ED.

Patients and Methods

It’s a case control study. This study was conducted on 25 patients diagnosed with ED who attended the Andrology clinic of the Main University Hospital and 15 healthy men as control group with normal erectile function. Ethical approval and consent were issued. All subjects of the study were assessed with comprehensive history, physical exam and blood sampling for complete blood count and hormonal profile analysis. Patients with ED additionally were assessed using the International Index of Erectile Function score (IIEF-5) and penile Doppler ultrasound.

Results

ED patients were in range of 30.0 – 74.0 years with mean of 50.80 ± 11.39 years. Control group age ranged from 32.0 – 62.0 years with mean of 47.0 ± 9.02 years (P=0.251). Among the studied cases, 9 (36.0%) were smokers, 2(8.0%) alcohol drinkers and 1 (4.0%) had hypertension whereas in control group, 4 (26.7%) were smokers,0.0% drinkers and none had history hypertension. In ED group, the range of IIEF-5 score was 5-20 with a mean of 12.92 ±3.28. ED was mild in 4(16.0,13 (52.0%), mild to moderate in 7 (28.0%) moderate and severe in 1(4.0%).4 (16.0%) had probable arteriogenic ED, 3 (12.0%) had Arteriogenic ED and 18 (72.0%) had Venogenic ED. The proportions of elevated, normal and decreased levels of serum hormones were comparable in both study groups.Mean values of NLR and PLR were significantly higher in cases than controls (0.002 and 0.049 respectively) but not CRP. However, mean CRP, NLR & NLR were comparable in different subgroups of cases according to the severity of ED and type of ED.

Table 1: Socio-demographic data and clinical characteristics

	Cases (n = 25)	Control (n = 15)	p
	No (%)	No (%)	
Age (years)			
Min. – Max.	30.0 – 74.0	32.0 – 62.0	0.251
Mean ± SD.	50.80 ± 11.39	47.0 ± 9.02	
Risk factors			
Smoking	9(36.0)	4(26.7)	0.730
Alcohol	2(8.0)	0(0.0)	0.519
Hypertension	1(4.0)	0(0.0)	1.000
BMI (kg/m²)			
Min. – Max.	18.27 – 38.06	18.66 – 31.20	0.024*
Mean ± SD.	28.26 ± 4.65	24.71 ± 4.57	

Table 2: Pharmacopenile Doppler ultrasound, hormonal profile, and inflammatory markers

Variables	Cases No (%)	Controls No (%)	p
IIEF – 5 score			
Severe (5 - 7)	1 (4.0)		
Moderate (8 - 11)	7 (28.0)		
Mild to moderate (12 -16)	13 (52.0)		
Mild (17 - 21)	4 (16.0)		
Min. – Max.	5 – 20		
Mean ± SD.	12.92 ±3.28		
Type of ED (PPDU)			
Probable arteriogenic ED	4 (16.0)		
Arteriogenic ED	3 (12.0)		
Venogenic ED	18 (72.0)		
Prolactin (ng/mL)			
Elevated (>15.2)	1 (4)	3 (20)	FFp=0.139
Normal (4.04-15.2)	24 (96)	12 (80)	
Decreased (<4.04)	0 (0)	0 (0)	
Estradiol (pg/mL)			
Elevated (>42.6)	2(8)	2(13.3)	FFp=1.000
Normal (7.63-42.6)	22(88)	13(86.7)	
Decreased (<7.63)	1(4)	0(0)	
Total testosterone ^a (ng/mL)			
Elevated	1(4)	1(6.7)	FFp=1.000
Normal	24(96)	14(93.3)	
Decreased	0(0)	0(0)	
Total testosterone /Estradiol ratio			
Min. – Max.	6.79 – 80.49	11.5 – 34.92	0.420
Mean ± SD.	25.52 ± 19.82	21.14 ± 7.69	
CRP			
Min. – Max.	0.40 – 22.80	3.05 – 8.20	0.586
Mean	6.26 ± 4.80	4.55 ± 1.25	
NLR			
Min. – Max.	1.14 – 3.81	0.66 – 3.27	0.002*
Mean ± SD.	2.13 ± 0.75	1.36 ± 0.69	
PLR			
Min. – Max.	27.64 – 194.64	16.0 – 161.0	0.049*
Mean ± SD.	105.89 ± 45.18	79.21 ± 36.53	

Table 3: Relation of inflammatory biomarkers and ED severity classes

Informatory markers	IIEF – 5 score			P
	Moderate to Severe (8–11) (n = 8)	Mild to moderate (12 - 16) (n = 13)	Mild (17 - 21) (n = 4)	
CRP (mg/mL)				
Mean ± SD.	6.20 ± 3.78	6.57 ± 5.83	5.41 ± 3.70	0.786
NLR				
Mean ± SD.	2.20 ± 0.76	2.23 ± 0.80	1.71 ± 0.60	0.487
PLR				
Mean ± SD.	92.36 ± 47.44	114.61 ± 42.23	104.65 ± 55.89	0.568

Table (4):Relation of inflammatory markers to pharmacopenile Doppler in cases group

Inflammatory markers	PPDU			p
	Venogenic ED (n=18)	Probable Arteriogenic ED (n=4)	Arteriogenic ED (n=3)	
CRP (mg/mL)				
Mean ± SD.	5.23 ± 3.31	12.63 ± 7.25	3.97 ± 2.50	0.061
NLR				
Mean ± SD.	2.17 ± 0.69	2.33 ± 1.17	1.65 ± 0.51	0.487
PLR				
Mean ± SD.	115.83 ± 42.69	93.17 ± 54.12	63.25 ± 25.92	0.568

Conclusion

This study aimed to assess some inflammatory markers and hormone profile among patients with erectile dysfunction. NLR, PLR but not CRP inflammatory biomarkers of inflammation were statistically significantly elevated in patients with ED compared to controls. Hormonal changes were comparable in the study and control groups. Venogenic ED was the major type of ED. Patients with ED may have heightened subclinical inflammatory burden and these low cost readily available inflammatory markers can help in diagnosing ED. The appropriate screening for associated co-morbidities including increased risk of cardiovascular diseases and multidisciplinary management of patients with ED may contribute to improved sexual health of the patients.