

Association of erectile dysfunction and urolithiasis

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Summary Objectives: In recent years, it has been shown that there is association between metabolic syndrome and urinary stone disease. Stone disease and erectile dysfunction (ED) are considered as systemic diseases which are associated with hormonal and metabolic disorders. Therefore we investigated the relationship between ED and urinary tract calculi. Material and methods: 98 male patients with urolithiasis and 59 randomly selected male patients without stone disease were included in the study. Serum testosterone (T) levels were measured and International Index of Erectile Function (IIEF)-15 questionnaire forms were used to assess ED.

Results: The prevalence of ED was found 29% (29 patients) in the urolithiasis group. Sixty-nine patients (71%) had no ED; 16 (16.3%) had mild, 5 (5.1%) had moderate and 8 (8.2%) had severe ED. None of the patients in the control group had severe or moderate ED, six patients (10.2%) had mild ED. Serum T levels were detected at the level of biochemical hypogonadism on 13 patients with stones (13.3%) and T levels were detected at the lower limit in 18 (18.3%) patients.

Conclusion: In our study we have shown that ED and low T levels are significantly associated with urolithiasis. We propose that the patients with urolithiasis should be evaluated for ED and hypogonadism.

KEY WORDS: Urolithiasis; Erectile dysfunction; Metabolic syndrome; Testosterone; Hypogonadism; IIEF.

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INTRODUCTION

Erectile dysfunction (1) is defined as the consistent inability to obtain and/or maintain a penile erection which is sufficient to permit satisfactory sexual intercourse (2). It is estimated that more than 150 million men worldwide have ED and the global prevalence is increasing along with aging population trends (3, 4). ED has been associated with signs of generalized arterial disease, as it frequently coexists with diseases with a high component of endothelial dysfunction, such as coronary artery disease, idiopathic systemic arterial hypertension,

atherosclerosis and end-stage chronic kidney disease. ED is also associated with cardiovascular disease risk factors, such as diabetes mellitus, dyslipidemia, and smoking (1, 5-7). Low testosterone levels are significantly associated with prevalence of MetS (8, 9).

Obesity and components of metabolic syndrome have been associated with nephrolithiasis, and several studies have suggested that metabolic syndrome is linked directly to the formation of urolithiasis (10-12). The higher prevalence of stone disease in patients with metabolic syndrome suggests that insulin resistance might have a role in the pathophysiology of nephrolithiasis (13, 14). Although, stone disease and ED are defined as systemic diseases which are associated with hormonal and metabolic disorders, there are few studies on the association of ED and stone disease. We estimated the association of ED with urolithiasis and testosterone levels in the patients who were admitted to our clinic.

MATERIAL AND METHODS

This study assessed the prevalence rate of ED in men with urolithiasis. We identified as the study group 98 male patients with urolithiasis who had experienced spontaneous stone passage or surgery for urolithiasis (percutaneous nephrolithotomy, ureterorenoscopy) or whose stones were radiologically (ultrasonography, computed tomography or intravenous urography) visible at the onset of clinical symptoms and 59 randomly selected male patients as the controls. Mean age of the study group was $48.49 \pm 10.87\#$ years (range: 28-67) and mean age of controls was 47.28 ± 8.62 years (range: 31-64). There was no significant difference between mean age of patients and control group. The study population for this case-control study consisted of patients who were admitted to our clinic. Subjects having severe cardiovascular disease, endocrine or neurological disease were excluded from study. Serum testosterone (T) levels were evaluated on blood samples taken between 08.00 and 10.00 in the fasting state. Serum T was measured using enzymatic methods with an auto-analyzer. International Index of Erectile Function (IIEF)-15 questionnaire which was validated for use in Turkey was

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applied to all patients. According to the IIEF-15 questionnaire, we evaluated scores between 6 and 10 as severe dysfunction, between 11 and 18 as moderate dysfunction, between 19 and 24 as mild dysfunction and between 25-30 no dysfunction. Low testosterone level was considered when < 110 ng/dl whereas levels from 110 to 285 ng/dl were considered as the lower limit of testosterone level. Local ethics committee approval had been obtained before the commence of the study.

STATISTICS

Analyses were completed using Chi-square tests. Odds ratios (OR) were calculated. Statistical determinations were within the 95% confidence interval (CI). All p values were two-tailed, and p < 0.05 was considered statistically significant. The data were analyzed with an SPSS (SPSS version 13.0, Chicago, IL) statistical software package.

RESULTS

The prevalence of ED was found 29% (29 patients) in the urolithiasis group. Sixty-nine patients (71%) had no ED, 16 (16.3%) mild ED, 5 (5.1%) moderate ED and 8 (8.2%) severe ED. None of the patients in the control group had severe or moderate ED and six patients (10.2%) had mild ED ($p = 0.0084$). A significantly higher proportion of ED was found among patients with urolithiasis compared with controls (Table 1).

Serum T levels were detected at the level of biochemical hypogonadism on 13 (13.3%) of patients with stones and T levels were detected at the lower limit in other 18 (18.3%) patients. Biochemical hypogonadism was never observed in the controls whereas T levels at the lower range were detected in only 8 patients ($p = 0.018$) (Table 2). Serum T levels were deducted at the lower limit in 3 patients with mild ED and at the level of biochemical hypogonadism in 7 patients with severe ED.

CONCLUSIONS

In our study we have shown that ED and low T levels are significantly associated with urolithiasis. We suggest that the patients with urolithiasis should be evaluated for ED

Table 1.
IIEF-15: International Index of Erectile Function.

	IIEF-5 severe ED (6-10)	IIEF-5 moderate ED (11-18)	IIEF-15 mild ED (19-24)	IIEF-15 No ED
Subject with stone	8 (9.2%)	5 (5.1%)	16 (16.3%)	69 (71%)
Subject without stone	-	-	6 (8.2%)	53 (89%) $P = 0.0084$

Table 2.
STL: Serum Testosterone Level.

	STL < 110 ng/dL	STL between 110 to 285 ng/dL
Subject with stone	13 (13.3%)	18 (18.3%)
Subject without stone	-	8 (13.5%)
		$P = 0.018$

and hypogonadism, and consequently life-style arrangements are to be planned for treatment.

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