Original Research Article

The relationship between chronic lower urinary tract symptoms and psychological disorders in women referring to Baqyiatallah hospital clinic in Tehran city

Running head: chronic lower urinary tract symptoms

Abstract

Introduction:

Lower urinary tract symptoms (LUTS) refer to a group of medical symptoms with the prevalence of 62.5% in men and 66.6% in women. LUTS[1] was associated with increased risk of having clinically relevant depressive symptoms or depression and vice versa. We assumed that patients with chronic lower urinary tract symptoms who referred to urology clinic and have negative urologic evaluations, may suffer from psychological symptoms such as anxiety, depression or obsession.

Method and material:

This was a cross-sectional, single group survey of women living in Tehran province. Patients who were suffering from lower urinary tract symptoms for over than 6 months, were included in the study. We evaluate the presence of LUTS by asking the patients about their problems of urinary tract in two major categories: Filling or irritative symptoms - e.g. frequency, urgency, dysuria, nocturia, stress incontinence, urge incontinence. Chi square and independent T tests were used to evaluate the correlation between study variables. All statistical analysis were performed using SPSS software version 16.

Results:

There was a positive correlation between irritative symptoms and depression symptoms ($p<0.001$) and a negative correlation between obstructive symptoms and depression ($p<0.001$). There was no association between LUTS and symptoms of OCD[2]. The mean age of participants with positive BDI[3] was higher than those with negative BDI. ($p= 0.007$)

Discussion:

The results of this study emphasized the important association of LUTS and depression. In conclusion, depressive disorder can increase the risk of developing LUTS or accelerate this process. So when a patient with either urinary or depression symptoms referred to a psychiatry center, he should be screened for the other disease. This requires an adequate interaction between urology and psychiatry departments to achieve.

Introduction:

[1] Lower Urinary Tract Symptoms
[2] Obsessive- Compulsive disorder
[3] Beck depression inventory

Lower urinary tract symptoms (LUTS) refer to a group of medical symptoms with the prevalence of 62.5% in men and 66.6% in women. (1) Litman and McKinlay (2) estimate that by 2025, there will be 52 million adults in the USA with LUTS, suggesting an increasing burden of LUTS on society.

Results from several studies showed that the presence of chronic medical conditions including LUTS was associated with increased risk of having clinically relevant depressive symptoms or depression. In terms of public health impact, it was shown that the presence of depressive symptoms among people with chronic conditions are associated with increased disability, morbidity and mortality (3–5).

Depressive disorders are a very common group of diseases, with an overall prevalence of 2 – 15% (6). Depression can have a severe impact on the overall health, personal and family life of patients, as well as on health economics (7). According to the National institute of Mental Health, the US lifetime prevalence of depression is 16.5% (8).

Depression is expected to become the second leading cause of disease burden by the year 2020 (9). Depression plays an important role in the pathogenesis of many chronic diseases, such as chronic obstructive pulmonary disease, inflammatory bowel disease, arthritis, asthma, diabetes and congestive heart failure (10). This relationship also exists between depression and many urological diseases, such as incontinence (11, 12) and urolithiasis (13).

Most of the patient that suffer from urinary symptoms would not accept that their symptoms have a psychological origin. Since every patient may demonstrate a psychological symptoms of an organ which is anatomically and physiologically normal, we decided to determine the relationship between urinary tract symptoms and depression and Obsessive-compulsive disorders. This is important because by early diagnosis of psychological etiology of the urinary symptoms, the expensive and time-consuming tests can be avoided from performing.

We assumed that patients with chronic lower urinary tract symptoms who referred to urology clinic and have negative urologic evaluations, may suffer from psychological symptoms such as anxiety, depression or obsession.

Method and material:

This was a cross-sectional, single group survey of women living in Tehran province. The institutional board and ethical committee of baqyiatallah University of medical sciences approved this study with written, informed consent obtained from all participants. Data were collected from 2012 to 2014. Participant were recruited from the urology clinic of baqyiatallah hospital.

Patients who were suffering from lower urinary tract symptoms for over than 6 months, were included in the study. Then all the participant underwent urine analysis, urine culture, sonography and urodynamic test. The patients with positive urine analysis and culture or abnormal sonographic findings were excluded from the study.

Lower urinary tract symptoms (LUTS). Although numerous questionnaires have been developed for the evaluation of female LUTS, no certain instrument has established as the preferred one for collecting and reporting subjective information about LUTS in women. So we evaluate the presence of LUTS by asking the patients about their problems of urinary tract in two major categories: Filling or irritative symptoms - e.g. frequency, urgency, dysuria, nocturia, stress incontinence, urge incontinence.

Voiding or obstructive symptoms - e.g. poor stream, hesitancy, terminal dribbling, incomplete voiding, overflow incontinence (due to chronic urinary retention). Urinary symptoms were asked and reported in qualitative manner (have or have not).

Depressive symptoms. Depression was diagnosed by a trained interviewer in a face-to-face session using Beck depression inventory (BDI). Depression was defined as scoring 10 and above.

Obsessive- compulsive symptoms. Obsessive- compulsive disorder (OCD) was diagnosed using OCD screening test. The score of 12 and higher were considered as OCD.

Chi square test and corresponding confidence interval of 95% were used to calculate the correlation between LUTS and clinically relevant depressive symptoms and obsessive-compulsive disorder. Chi square test and its 95% CI also used for confounding factors for this relationship. These confounding factors include age grouping and marriage status. To evaluate the relationship between age and the study variables, we first examined the normality of age-related data using the Kolmogorov-Smirnov test, then we used the independent-T test with a confidence interval of 95%. All statistical analysis were performed using SPSS software version 16.

Results:

A total of 100 patients were included in the study. All the participants were female. The mean age of participants was 38.88 with a standard deviation of 9.97. The youngest and the oldest patient were 16 and 60 years old, respectively.

Of the participants, 85 (85%) were married and 15 patients (15%) haven't been married. 74 patients had irritative symptoms and 27 were suffering from obstructive urinary symptoms.

55% of patients had positive BDI test and 36% of patients showed a positive OCD test. Of the 100 participants, only 21 patient s had abnormal urodynamic test.

Table 1 shows the correlation between the pair of variables, calculated using Kendall's tau coefficient. Each of two variables with a positive Kendall's tau coefficient increase together and vice versa.

Table 1. Correlation between LUTS and depression and OCD symptoms

Variable	Predictor	OR	95% CI	Kendall's tau	P value
Depression	Irritative symptoms	6.533	2.329-18.331	0.380	‹0.001
	Obstructive symptoms	0.140	0.050-0.392	-0.401	‹0.001
	Urodynamic test	7.741	2.372-25.261	0.373	‹0.001
OCD	Irritative symptoms	0.696	0.279-1.737	-0.078	0.436
	Obstructive symptoms	1.320	0.533-3.270	0.060	0.548
	Urodynamic test	0.892	0.330-2.411	-0.023	0.822

The two group of positive and negative irritative symptoms, obstructive symptoms, OCD test and urodynamic test did not have significant difference regarding the mean age of participants, but there was a statistically significant difference in the mean age of participants who have and have not positive BDI test. There is also a correlation between marriage status and BDI test. (Table 2)

Table 2. Correlation of age and marriage status with the study variables.

	Irritative symptoms			Obstructive symptoms			Urodynamic test			BDI test			OCD test		
	+	-	P	+	-	P	Normal	Abnormal	P	+	-	P	+	-	P
Age (mean± SD)	38.51 ± 10.00	39.92 ± 10.02	0.538	39.14±10.18	38.68 ± 9.96	0.750	39.53 ± 9.63	36.43 ± 11.10	0.207	41.27± 6.65	35.96± 9.68	0.007	37 ± 9.46	39.94± 10.17	0.159
Marriage status (N.%)															
Married	64	21	0.482	22	63	0.549	71	14	0.265	49	36	0.008	28	57	0.129
Single	10	5		5	10		8	7		6	9		8	7	

Discussion:

This study investigated retrospective correlation of LUTs, depression and obsessive-compulsive disorder in a homogenous group of women complaining of LUTS for at least 6 months and found a relationship between LUTS and depression symptoms, but there didn't find any association between OCD and LUTS.

Depression is a major public issue and fourth cause of disease burden by the year of 2000. This disorder is responsible for 4% of total disability-adjusted life years. (14) The lifetime incidence of depression is estimated to be 2-15 %. (15)

We often see the symptoms of depression along with other chronic disease which can worsen the outcomes of the underlying disease. This disorder also may change the patient's mentality about his or her disease. In most of the cases, the associated depression and other psychological disorders may haven't been diagnosed in a patient presenting with chronic disease. As a result, all the attention is turning to the treatment of the underlying condition.

Several studies have shown a significant correlation between depression and incontinence in elderlies (16, 17), but few studies have investigated the association of LUTS and depression. In this cross sectional studies, LUTS has been shown to be associated with anxiety and depression (18-20), but the majority have not distinguished between LUTS clusters. In agreement with our result, recently published data from a large-scale registry study of Taiwanese men showed a higher likelihood of anxiety for storage, rather than voiding symptoms. Although in the present study, the voiding or obstructive cluster of LUTS showed a negative correlation, this means that if you have obstructive symptoms, depression will be less, but because the number of patients with obstructive symptoms in comparison with patients with irritative symptoms was lower (74 versus 27), this finding cannot be judged properly. In a study of 1980 old men, patients filled out a specifically designed questionnaire. Wong et al. (21) showed a significant correlation between moderate to severe LUTS and clinically relevant depressive disorder. Johnson et al. (22) investigated the difference in severity of nocturia between depressed and non-depressed patients. It turns out that in depressed patients, the nocturia is more severe.

There are several different mechanism that cause a patient with LUTS to develop depressive symptoms and vice versa. Apparently, with prolongation of LUTS, the patient's quality of life will be affected. The decrease in quality of life in a patient with LUTS can eventually leads to development of depressive symptoms and even clinical depression disorder. Eckhardt et al. (23) proved a strong correlation between the bothersome of LUTS and quality of life. On the other hand, from the social prospective, urological disease considered negatively by the patients and family members. Gannon et al. (24) showed that men have a very negative view about prostatic disease and think of it as a sign of becoming old. Men often feel ashamed and anxious about expressing their urological disease. (25) Sleep disturbance due to nocturia ca also affect the patient's mood. (22, 26)

The relationship between obsessive-compulsive disorder and urinary symptoms has not been assessed in any study. In this study, this disorder was investigated because in patients with urinary symptoms, particularly incontinence and irritative symptoms, the patient repeatedly wet his underwear. Over time, may be an obsessive behavior regarding the hygiene and clean clothes become to emerge. These behaviors may predispose the obsessive-compulsive disorder. As with depression, the disorder is usually not diagnosed. However, in the present study, no association was found between irritative and obstructive symptoms and OCD. The reason can be attributed to the small number of samples examined. The lifetime and 12-month prevalence of OCD is estimated to be 2.3% and 1.2%, respectively. (27) Based on this information, for every 100 participants, we may diagnosis one case of OCD. So to have an enough number of OCD cases and a significant correlation between OCD and LUTS, we needed a larger sample size. The other reason for the lack of association between OCD and LUTS is our tool for the diagnosis of OCD. This tool is merely a screening questionnaire. The sensitivity of this questionnaire is relatively high, but it doesn't have the specificity to diagnosis the disorder. Maybe if we used a more powerful questionnaire, we would yield a better and more significant results regarding the association of OCD and LUTS.

As you see in table 2, there is a correlation between age and depression symptoms. This means that in participants with positive BDI test, the mean age was higher. This indicates that aging on his own has an impact on emerging of depression symptoms. Therefore, to reduce the independent impact of the aging process on depression symptoms, in comparison with previous studies, we used a healthy and younger population. The questionnaire were completed voluntarily. In contrast to study conducted by Johnson et al. (29), which investigated the correlation of just one symptom of nocturia and depression, we tried to distinguish the correlation of LUTS clusters including irritative and obstructive symptoms with depression and OCD.

Because of the time and finance limitations, we conducted this study on a retrospective manner. The sample size of our study was low in comparison with similar study. This was also because of limited time and finance. In this study, we just examined the qualitative status of LUTS and psychological evaluations and their correlation, but we cannot demonstrate the impact of depression on development of LUTS. Depression has been shown to cause LUTS through influencing different hormonal pathways. (28)

Despite these limitation, the results of this study emphasized the important association of LUTS and depression. In conclusion, LUTS can increase the risk of a developing depressive disorder or accelerate this process. So when a patient with either urinary or depression symptoms referred to a medical center, he should be screened for the other disease. This requires an adequate interaction between urology and psychiatry departments to achieve.

Reference:

Irwin DE, Milsom I, Hunskaar S et al. Population-based survey of urinary incontinence, overactive bladder, and other lower urinary tract symptoms in five countries: results of the EPIC study. Eur Urol 2006; 50: 1306–14

Litman HJ, McKinlay JB. The future magnitude of urological symptoms in the USA: projections using the Boston Area Community Health Survey. BJU Int 2007; 100: 820–5

Sherwood A, Blumenthal JA, Trivedi R, Johnson KS, O'Connor CM, et al. Relationship of depression to death or hospitalization in patients with heart failure. Arch Intern Med. 2007; 167: 367–373.

Sundquist J, Li X, Johansson SE, Sundquist K (2005) Depression as a predictor of hospitalization due to coronary heart disease. Am J Prev Med 29: 428–433.

Bula CJ, Wietlisbach V, Burnand B, Yersin B (2001) Depressive symptoms as a predictor of a 6 month outcomes and services utilization in elderly medical inpatients. Arch Intern Med 161: 2609015.

Ayuso-Mateos JL , V á zquez-Barquero JL , Dowrick C et al . Depressive disorders in Europe: prevalence fi gures from the ODIN study . Br J Psychiatry 2001 ; 179 : 308 – 16

Rutter M , Maughan B . Psychosocial adversities in childhood and adult psychopathology . J Personal Disord 1997 ; 11 : 4 – 18

Kessler RC , Berglund P , Demler O , Jin R , Merikangas KR , Walters EE . Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication . Arch Gen Psychiatry 2005 ; 62 : 593 – 602

Michaud CM , Murray CJ , Bloom BR . Burden of disease – implications for future research . J AMA 2001 ; 2 85 : 535 – 9.

Moussavi S , Chatterji S , Verdes E , Tandon A , Patel V , Ustun B . Depression, chronic diseases, and decrements in health: results from the World Health Surveys . Lancet 2007 ; 370 : 851 – 8

Zorn BH , Montgomery H , Pieper K , Gray M , Steers WD . Urinary incontinence and depression . J Urol . 1999 ; 162 : 82 – 4.

Melville JL , Fan MY , Rau H , Nygaard IE , Katon WJ . Major depression and urinary incontinence in women: temporal associations in an epidemiologic sample . Am J Obstet Gynecol 2009 ; 201 : 490 . e1 – 7

Angell J , Bryant M , Tu H , Goodman M , Pattaras J , Ogan K . Association of depression and urolithiasis . Urology 2012 ; 79 : 518 – 25

Hyman S , Chisolm D , Kessler R , Patel V , Whiteford H . Mental disorders . In Jamison DT , Mosley WH , Bobadilla JL, Measham AR eds , Disease Control Priorities in Developing Countries , 2nd editon. New York : Oxford University Press, 2006 : 605 – 25

Ayuso-Mateos JL , V á zquez-Barquero JL , Dowrick C et al . Depressive disorders in Europe: prevalence figures from the ODIN study. Br J Psychiatry. 2001 ; 179 : 308 – 16.

Zorn BH , Montgomery H , Pieper K, Gray M , Steers WD . Urinary incontinence and depression . J Urol. 1999 ; 162 : 82 – 4.

Melville JL , Fan MY , Rau H , Nygaard IE , Katon WJ . Major depression and urinary incontinence in women: temporal associations in anepidemiologic sample . Am J Obstet Gynecol 2009 ; 201 : 490 .1 – 7

Milsom I, Kaplan SA, Coyne KS, Sexton CC, Kopp ZS. Effect of bothersome overactive bladder symptoms on health-related quality of life, anxiety, depression, and treatment seeking in the United States: results from EpiLUTS. Urology. 2012; 80(1):90–6.

Coyne KS, Kvasz M, Ireland AM, Milsom I, Kopp ZS, Chapple CR. Urinary incontinence and its relationship to mental health and health-related quality of life in men and women in Sweden, the United Kingdom, and the United States. Eur Urol. 2012; 61(1):88–95.

233. Breyer BN, Kenfield SA, Blaschko SD, Erickson BA. The association of lower urinary tract
234 symptoms, depression and suicidal ideation: data from the 2005–2006 and 2007–2008 National
235 Health and Nutrition Examination Survey. J Urol. 2014; 191(5):1333–9.
236. Wong SY , Hong A , Leung J , Kwok T, Leung PC , Woo J . Lower urinary tract symptoms and
237 depressive symptoms in elderly men . J Affect Disord 2006 ; 96: 83 – 8.
238. Johnson TV , Abbasi A , Ehrlich SS, Kleris RS , Raison CL , Master VA. Nocturia associated
239 with depressive symptoms . U rology 2011 ; 77: 183 –186.
240. Eckhardt MD , van Venrooij GE , van Melick HH , Boon TA . Prevalence and bothersomeness
241 of lower urinary tract symptoms in benign prostatic hyperplasia and their impact on well-being .
242 J Urol 2001; 1 66 : 563 – 8
243. Gannon K , Glover L , O ' Neill M, Emberton M . Lower urinary tract symptoms in men: self-
244 perceptions and the concept of bother. BJU Int 2005 ; 96: 823-7.
245. Glover L , Gannon K , McLoughlin J, Emberton M . Men 's experiences of having lower
246 urinary tract symptoms: factors relating to bother . BJU Int 2004; 94: 563-7.
247. Marschall-Kehrel D . Update on nocturia: the best of rest is sleep. Urology 2004 ; 64: 21 – 4.
248. Ruscio A, Stein D, Chiu W, Kessler R. The Epidemiology of Obsessive-Compulsive Disorder
249 in the National Comorbidity Survey Replication. Mol Psychiatry. 2010 Jan; 15(1): 53–63.
250. Asplund R , Henriksson S , Johansson S, Isacsson G . Nocturia and depression. BJU Int 2004 ;
251 93 : 1253 – 6.
252