

Occurrence of selected lower urinary tract symptoms in patients of a day hospital for neurotic disorders

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Summary

Aim. To assess the occurrence of selected lower urinary tract symptoms in the population of patients with neurotic and personality disorders.

Material and methods. This was a retrospective analysis of occurrence, co-existence and severity of two selected lower urinary tract symptoms in 3,929 patients in a day hospital for neurotic disorders. The KO“O” symptom checklist was used to measure the study variables.

Results. Although the symptoms associated with micturition are not the most prevalent symptoms of neurotic disorders, neither are they the most typical ones, the prevalence of urinary frequency referring to the last week before psychotherapy evaluated among the patients of a day hospital, was approximately 50%. Involuntary micturition, a symptom with a significant implication on the self-esteem and social functioning was much less common; it was reported by approximately 5% relatively healthy and young group of patients. Major bother from urinary frequency was reported by 9–14% of patients, whereas from involuntary micturition by only 0.6%–1% of the surveyed patients.

Conclusions. Selected urological symptoms seem to be prevalent among the patients with neurotic and personality disorders, and are independent of the specific diagnosis or patients' gender. Their co-existence with other symptoms of neurotic disorders reported by

the patients indicates their strongest relationship with the somatoform, dissociative, sexual and agoraphobic disorders.

Key words: neurotic disorders, urological symptoms, symptom checklist

Introduction

The co-existence of urological, neurotic, anxiety, depressive and post-traumatic symptoms is common and has been described for years by psychiatrist, urologists and gynecologists [1–6]. Unfortunately, the variable terminology is used in different periods of popularity of diverse classifications and terms which were often too brief (depression), vague (anxiety disorders) or simply general (psychological burdens, stress e.g. [7]). More and more so the research evidence is based on strong data from reproducible questionnaire-based surveys, using validated tools i.e., the depression or anxiety severity scales [8], as well as carried out among different cohorts – general population versus urological patients [1, 9], psychiatric patients or in patients from the specific subpopulations [8, 10–12]. Additionally, the results of these studies are often biased due to the co-existence of functional urological symptoms with other symptoms of the psychological origin and in the context of stressful circumstances [13].

For practical reasons, instructions and various psychometric tools, such as Polish Symptom Checklist KO“0” use common language expressions and refer to subjective patient’s experiences during approximately one week period prior to the study. Consequently, a degree of inaccuracy in the description of symptoms of neurotic disorders is being generated, as if they were obtained during an uncontrolled and unbiased interview. Therefore, patients using checklists describe a broader spectrum of complaints during direct questioning about the first or the most important (according to the examining clinician) symptoms, hence minimizing the risk of data contamination related to so-called specification of neurotic disorders [14]; which is also conflicting “narrower” definitions of single coded disorders within the International Classification of Diseases (ICD) or the Diagnostic and Statistical Manual of Mental Disorders (DSM). Thus, based on the studies, majority of patients with neurotic disorders show clear trait symptoms representative of a number of various syndromes, as well as of some other disorders to a lesser degree, however [15–17]. Moreover, these symptoms before treatment can highly vary [18], undermining thereby the main classification systems [19, 20]. Doctors other than psychiatrists can struggle with diagnosing, in relation to the somatoform disorders. Due to high variability of these disorders, they may mimic other conditions, which combined with the abundance of symptoms, a low probability of somatic origin, subtlety, as well as in the presence of psycho-social context, and a relatively good general patient condition allows a reliable diagnosis. Apart from the somatization, a lot of patients with the neurotic personality and the behavioral disorders report or manifest tension, anxiety, fear and disorders of experiencing, while others suffer mainly from the behavioral disorders. The “pseudo-urological” complaints, such as avoidance or difficult urination in unfamiliar places or in the presence of other people [21, 22] which, as a consequence, can result

in a fear of leaving own house or reducing the intake of liquids to a bare minimum, are particularly burdensome for these patients. Other dysfunctions can be associated with excessive experiencing of a urinary urgency or can be triggered when being secluded, or with a limited access to the toilet, together with a need to leave the room and/or to seek attention of others. Most genuine “urological” symptoms are: disordered pattern of micturition such as increased frequency of micturition, urinary incontinence, but above all the nocturnal enuresis (particularly embarrassing symptom often reported by many patients to have occurred in their childhood and/or adolescence). Urological complaints are often accompanied by either increased or reduced intake of fluids with a clear psychological component (stress-related dry mouth and fluid intake).

Current studies have suggested the association between a spectrum of lower urinary tract symptoms and mental disorders (anxiety and depression), as shown Gołabek et al. [1], or in the study by Perry et al. where a half of the examined women reported concurrent anxiety and LUTS [23]. It remains challenging to prove causality between i.e. embarrassment and fear and difficult urination or between agitation and urgency, wetting and sadness, embarrassment and social isolation – it is not clear which occurred first. Therefore, the classification of a “shy bladder” into the category of social phobia has not been unanimously confirmed [7, 24].

Thus, the aim of this study was to estimate the occurrence of urological complaints in patients with neurotic, personality and behavioral disorders, and to analyze such patients’ age, gender, and co-existing symptoms.

Aim

To estimate burden of selected subjective lower urinary tract symptoms in the population of patients with neurotic and personality disorders.

Material and methods

Decision about the psychiatric treatment in a day hospital was based on 2 psychiatric assessments, a psychological consultation and several questionnaires allowing to exclude schizophrenic, affective and exogenous or pseudoneurotic disorders, and severe somatic illnesses, including urological diseases [25]. The symptom checklist KO“0” was completed during evaluation for the treatment by 3,929 patients treated in a day hospital between 1980 and 2002, and served to ascertain the symptoms in terms of their possible neurotic disorder origin [26–28]. Patients were instructed to answer 138 closed questions in order to determine the occurrence and severity of 135 symptoms during a seven-day period prior to the study [26, 27]. The symptom checklist additionally allowed to determine the severity of symptoms in the group, which was included in the scales [29], and global severity of symptoms (OWK) [27].

Assessment of urological symptoms was based on two variables within the symptom checklist KO“0” (“132. Frequent need to urinate” and “111. Involuntary urination,

for example, bed wetting”). The instructions specified time of onset of symptoms as the period of 7 days preceding the study, and provided the scale for patient’s subjective assessment of the severity of symptoms as “0-a-b-c”, where “0” meant “symptom did not appear”, “a” – “symptom appeared, but was only slightly severe”, “b” – “symptom was moderately severe”, “c” – “symptom was extremely severe”. This is why it was impossible to exactly determine whether patients’ responses depicted either diurnal or nocturnal frequency, or both. It also was impossible to determine whether involuntary urination was accompanied by urinary incontinence or whether it was rather stress urinary incontinence, or complete involuntary day or night time urination.

Additional structured information referring to various aspects of patients’ life was obtained from the Biography Survey (structured closed questions interview) [30].

The majority of 3,929 subjects were diagnosed with one of the neurotic disorders or a personality disorder with a secondary neurotic disorder. Information with regard to the selected socio-demographic characteristics of the studied group was included in the Results section of this paper (Table 1). The data obtained from a routine diagnostic screening was used from the consented patients. The data was encrypted and anonymously stored and analyzed (Bioethics Committee consent no. 122.6120.80.2015). Odds ratios (ORs) for the co-existence of variable and nominal values for the co-existence of symptoms were calculated using logistic regression method [17, 31–40]. The differences between the distributions of variables were estimated according to the features of variables distribution by means of parametric and non-parametric tests. Correlations between the variables were calculated using Spearman’s rank correlation. The package STATISTICA PL version 12 was used.

Results

Table 1. Severity of neurotic symptoms, types of disorders according to the ICD-10 and socio-demographic features of the studied patients

	Women (n = 2,582)	Men (n = 1,347)
Age: Mean ± standard deviation (Median)	33±9 (33)	32±9 (28)
Diagnosis* (primary):		
F44/45 Dissociative/conversion disorders or somatoform disorders	29%	25%
F60 Specific personality disorders	23%	29%
F40/F41 Phobic anxiety disorder/other anxiety disorders	17%	16%
F48 Neurasthenia	7%	14%
F34 Dysthymia	7%	5%
F50 Eating disorders	5%	0%
F42 Obsessive-compulsive disorders	2%	2%
F43 Response to severe stress, and adjustment disorders	1%	2%
Unidentified	9%	8%

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General severity of symptoms: M±SD (Median)	394±152 (387)	349±151 (336)
Education Lack/primary	9%	12%
Secondary (including students)	57%	56%
Higher	34%	32%
Employed	59%	70%
Unemployed	41%	30%
Pensioners	10%	7%
Students	23%	24%
Stable relationship/marriage	43%	47%
Unstable relationship/marriage	26%	21%
Single	31%	32%
No sexual intercourses	40%	35%
Sexual intercourses	60%	65%
Longer relationship	55%	53%
Fleeting, coincidental	3%	7%
Coincidental and longer	2%	5%

*Primary diagnoses were coded into the ICD-10 on the basis of medical history overview and the analysis of the equivalence in the classification systems used in the past and those currently used. SD = standard deviation

Correlation of occurrence and extreme severity of lower urinary tract symptoms in women and men with approximated diagnosis of the type of mental disorder according to the ICD-10

The prevalence of analyzed complaints was estimated in groups of women and men taking into account the type of mental disorder (diagnosis coded in categories of the ICD-10) on the basis of the analysis of the primary diagnoses and medical history). The results were presented in Table 2 and 3, in which the percentage, referring to rare diagnoses or diagnoses difficult to identify (approximated – coded according to ICD-10), were omitted.

Table 2. Percentages of the occurrence of complaints about urinary frequency and urinary incontinence in groups of women and men – in total and the subgroups in terms of diagnoses according to the ICD-10

	Urinary frequency		Urinary incontinence	
	Women	Men	Women	Men
Total ($n_w = 2,582$ $n_m = 1,347$)	*48%	*44%	5%	4%
Comparison in periods 1980-1990 vs. 1990-2002				
Years 1980-1990 ($n_w = 764$ $n_m = 587$)	47%	44%	#3%	3%
Years 1991-2002 ($n_w = 1818$ $n_m = 760$)	48%	44%	#6%	5%
Selected groups of diagnoses				

table continued on the next page

F44/45 Dissociative/conversion disorders or somatoform disorders ($n_W = 741$ $n_M = 336$)	①②54%	49%	**6%	**4%
F60 Specific personality disorders ($n_W = 596$ $n_M = 395$)	②44%	43%	5%	5%
F40/F41 Phobic anxiety disorder/other anxiety disorders ($n_W = 440$ $n_M = 208$)	①46%	41%	***4%	***2%
F48 Neurasthenia ($n_W = 193$ $n_M = 191$)	47%	43%	4%	4%

Statistically significant differences between pairs of percentages between the diagnoses (between the lines) were marked: ② $p < 0.0005$, ① $p < 0.01$, # $p < 0.05$. Statistically significant differences between women and men (between the columns) were marked: * $p < 0.05$, ** 0.01 , *** 0.001 , **** $p < 0.0001$, n_W – number of diagnoses in the group of women, n_M – number of diagnoses in the group of men. The comparison between periods 1980–1990 vs. 1990–2002 – statistically significant difference was marked # $p < 0.05$.

Overall, in groups of studied women urinary frequency was reported by 48% of them and urinary incontinence, for example, bed wetting – by 5% (Table 2). In the group of the studied men urinary frequency was reported by 44% of them, and urinary incontinence, for example, bed wetting – by 4% (Table 2). Urinary frequency was therefore much more frequent than urinary incontinence, it also occurred significantly more often in the group of women than in the group of men ($p < 0.05$), similar difference for incontinence was not identified in the analysis adjusted for gender. The highest percentages of urinary frequency during the week preceding the study were reported in the checklists of women with somatic or conversion/dissociative disorders (54%), (this percentage turned out to be significantly higher than in several other subgroups) and men with the same diagnosis (49%), and the lowest in women with personality disorders (44%) and men with anxiety disorders (41%) (Table 2). The statistically significant differences between the percentages of reported urinary incontinence in the analysis adjusted for gender was not found. Wetting occurred most frequently in women diagnosed with somatic or conversion/dissociative and somatization disorders (6%), and least frequently in the group of men with anxiety disorders (2%) (Table 2).

Table 3. The percentage of complaints about the most severe symptoms of urinary frequency and the complaints about the most severe urinary incontinence in groups of women and men – in total and subgroups in terms of diagnoses according to the ICD-10

	The most severe urinary frequency		The most severe urinary incontinence	
	Women	Men	Women	Men
In total ($n_W = 2,582$ $n_M = 1,347$)	***13%	***9%	1.0%	0.6%
Comparison between periods 1980–1990 vs. 1990–2002 (no statistically significant differences)				
Years 1980–1990 ($n_W = 764$ $n_M = 587$)	14%	8%	1%	0%
Years 1991–2002 ($n_W = 1,818$ $n_M = 760$)	13%	9%	1%	1%
Selected groups of diagnoses				

table continued on the next page

F44/45 Dissociative/conversion or somatoform disorders ($n_W = 741$ $n_M = 336$)	*14%	*9%	0.9%	0.9%
F60 Specific personality disorders ($n_W = 596$ $n_M = 395$)	#14%	#9%	1.0%	0.8%
F40/F41 Phobic anxiety disorder/other anxiety disorders ($n_W = 440$ $n_M = 208$)	12%	8%	0.5%	0.5%
F48 Neurasthenia ($n_W = 193$ $n_M = 191$)	10%	8%	0.5%	0.0%

The differences between percentages in the test for two indicators for the differences between the diagnoses (between the lines) were not found. Statistically significant differences between the groups of women and men (between the columns) were marked *# $p < 0.05$, *** $p < 0.0005$, n_W – number of diagnoses in the group of women, n_M – the number of diagnoses in the group of men.

As shown in Table 3, also extremely severe (answer “c” in Symptom Checklist KO“0”) urinary frequency was significantly more common in the group of women than in the group of men. Statistically significant differences in frequency dependent on mental disorder were not found. However, for extremely severe urinary frequency statistically significant differences in terms of gender were not found. It seems that the sex-adjusted differences relate more so to urinary frequency (significantly more often reported by women – both in extremely severe urination symptom (Table 3), and a general occurrence of symptoms (Table 2), and for wetting they did not occur in the whole studied group, even though they were observed in some subgroups of psychiatric diagnoses – Table 2 (but not in case of extreme severity, Table 3).

The analysis of occurrence and extremely severe symptoms in periods 1980–1990 vs. 1991–2002

In terms of frequency, statistically significant differences after adjusting for time when patients first commenced treatment (Table 2 and 3), were not found. Only one small, but statistically significant difference ($p > 0.05$) was related to an increase in percentage of urinary incontinence in the group of men after 1990 (Table 2).

Correlation of occurrence and extremely severe urological symptoms with patients' age

Table 4. Descriptive statistics of patients' age in groups of patients depending on the occurrence or extremely severe urinary frequency with statistical analysis

	Women			Men		
	No symptom	Symptom occurs	Extreme severity of symptom	No symptom	Symptom occurs	Extreme severity of symptom
N	1,349	1,233	325	756	591	115
age	***! 33 ± 9 33 (23; 38)	***34 ± 9 33 (28; 38)	! 34 ± 9 33 (28; 38)	^^^\$ 31 ± 9 28 (23; 38)	^^^33 ± 9 33 (23; 38)	\$ 33 ± 9 33 (23; 38)

Statistically significant differences between groups depending on the occurrence or extreme severity of symptoms estimated according to distribution by parametric (Student's t-test) or non-parametric (Mann-Whitney U test) tests, were marked *** $p < 0.0001$, ^^ $p < 0.0005$, ! $p < 0.05$; Mean values \pm standard deviations – (M \pm SD), as well as medians and quartiles – (Me (Q1; Q2)) were presented.

Table 5. Descriptive statistics of groups of patients in terms of age depending on occurrence or extremely severe urinary incontinence with statistical analysis

	Women			Men		
	No symptom	Symptom occurs	Extremely severe symptom	No symptom	Symptom occurs	Extremely severe symptom
N	2449	133	25	1294	53	8
Age	33 \pm 9 ns 33 (28; 38)	34 \pm 9 ns 33 (28; 43)	35 \pm 9 ns 38 (28; 43)	32 \pm 9 ns 28 (23; 38)	31 \pm 7 ns 28 (23; 38)	31 \pm 5 ns 31 (28; 36)

Statistically significant differences between the groups depending on presence or extremely severe symptoms were not found; Mean values \pm standard deviations (M \pm SD), as well as medians and quartiles – (Me (Q1; Q2)) were presented.

As shown in Table 4, urinary frequency (in general as well as in its extreme severity) was reported by a significantly older group of women and men (the significance of age difference between women reporting this symptom was related to a significant shift of the lower quartile of distribution towards the higher values), while there were no significant differences between distributions of age for the symptom of urinary incontinence (Table 5).

The correlation of occurrence and extreme severity of urological symptoms with the global neurotic symptom level (OWK) and subscales of KO“0”

Table 6. The descriptive statistics of global symptoms level (OWK) and the results from the checklist scales in groups of patients depending on presence of extreme severity of urinary frequency with statistical analysis

	Women			Men		
	No symptom	Symptom occurs	Extremely severe symptom	No symptom	Symptom occurs	Extremely severe symptom
Number	n = 1,349	n = 1,233	n = 325	n = 756	n = 591	n = 115
Global symptom level (OWK)	***!!!338 \pm 135 331 (237; 423)	***449 \pm 149 440 (343; 546)	!!!519 \pm 139 523 (413; 626)	^^^\$\$\$293 \pm 132 287 (196; 377)	^^^414 \pm 149 405 (302; 514)	\$\$\$477 \pm 146 483 (362; 578)
1. Phobic disorders	***!!!13.9 \pm 11.7 11.0 (4.0; 22.0)	***19.0 \pm 13.0 18.0 (9.0; 29.0)	!!!22.6 \pm 13.7 22.0 (12.0; 34.0)	^^^\$\$\$10.4 \pm 10.5 8.0 (0.0; 17.0)	^^^16.0 \pm 12.3 14.0 (5.0; 25.0)	\$\$\$18.8 \pm 12.9 16.0 (8.0; 29.0)
2. Other anxiety disorders	***!!!37.8 \pm 15.6 38.0 (26.0; 50.0)	***45.8 \pm 14.4 47.0 (36.0; 56.0)	!!!50.7 \pm 12.7 52.0 (42.0; 61.0)	^^^\$\$\$33.2 \pm 14.8 33.0 (23.0; 43.5)	^^^41.7 \pm 14.4 42.0 (32.0; 52.0)	\$\$\$46.3 \pm 13.1 47.0 (38.0; 56.0)
3. Obsessive-compulsive disorder	***!!!15.6 \pm 10.7 14.0 (8.0; 22.0)	***21.7 \pm 11.8 21.0 (12.0; 30.0)	!!!25.8 \pm 12.4 26.0 (18.0; 35.0)	^^^\$\$\$15.7 \pm 10.9 14.0 (8.0; 23.0)	^^^22.6 \pm 12.4 22.0 (12.0; 32.0)	\$\$\$27.5 \pm 13.2 28.0 (16.0; 37.0)

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4. Conversions	***!!!29.8 ± 22.1 26.0 (12.0; 44.0)	***45.8 ± 25.8 43.0 (25.0; 63.0)	!!!55.5 ± 26.1 55.0 (35.0; 75.0)	^^^\$\$\$25.4 ± 20.1 22.0 (9.0; 36.0)	^^^42.4 ± 25.1 39.0 (22.0; 59.0)	\$\$\$50.0 ± 27.1 51.0 (27.0; 71.0)
5. Autonomic disorders (e.g. Cardiovascular system)	***!!!29.4 ± 15.6 29.0 (17.0; 40.0)	***39.2 ± 15.3 40.0 (28.0; 51.0)	!!!45.2 ± 14.5 47.0 (34.0; 56.0)	^^^\$\$\$24.4 ± 15.1 24.0 (12.0; 36.0)	^^^34.3 ± 15.3 35.0 (23.0; 46.0)	\$\$\$37.5 ± 16.1 36.0 (27.0; 50.0)
6. Somatoform disorders	***!!!20.0 ± 13.6 18.0 (9.0; 29.0)	***37.7 ± 17.3 36.0 (25.0; 49.0)	!!!47.1 ± 16.5 46.0 (36.0; 59.0)	^^^\$\$\$16.1 ± 12.3 14.0 (5.0; 24.0)	^^^33.9 ± 16.5 31.0 (22.0; 45.0)	\$\$\$42.5 ± 17.7 42.0 (29.0; 54.0)
7. Hypochondriasis	***!!!12.2 ± 10.1 11.0 (4.0; 20.0)	***16.7 ± 10.6 17.0 (8.0; 26.0)	!!!18.6 ± 10.5 20.0 (9.0; 27.0)	^^^\$\$\$12.7 ± 10.5 12.0 (4.0; 22.0)	^^^18.5 ± 10.3 20.0 (10.0; 27.0)	\$\$\$21.3 ± 10.5 23.0 (13.0; 30.0)
8. Neurasthenia	***!!!44.8 ± 18.6 46.0 (32.0; 59.0)	***54.2 ± 16.8 56.0 (43.0; 67.0)	!!!59.1 ± 16.2 61.0 (50.0; 71.0)	^^^\$\$\$40.1 ± 18.7 41.0 (26.5; 55.0)	^^^50.3 ± 17.1 52.0 (40.0; 63.0)	\$\$\$55.5 ± 16.8 60.0 (46.0; 69.0)
9. Depersonalisation and derealisation	***!!!11.2 ± 11.0 8.0 (4.0; 17.0)	***16.2 ± 13.0 14.0 (5.0; 25.0)	!!!20.2 ± 13.5 19.0 (9.0; 31.0)	^^^\$\$\$10.7 ± 10.7 8.0 (0.0; 17.0)	^^^16.2 ± 12.8 14.0 (5.0; 26.0)	\$\$\$18.6 ± 13.4 16.0 (8.0; 30.0)
10. Avoidance and dependency	***!!!32.7 ± 17.4 32.0 (20.0; 45.0)	***40.2 ± 17.3 41.0 (27.0; 53.0)	!!!45.3 ± 16.7 47.0 (35.0; 57.0)	^^^\$\$\$28.8 ± 17.9 28.0 (13.0; 42.5)	^^^36.9 ± 18.4 37.0 (23.0; 52.0)	\$\$\$41.9 ± 17.8 43.0 (27.0; 57.0)
11. Impulsivity and histrionic personality disorder	***!!!27.6 ± 13.1 28.0 (18.0; 37.0)	***32.9 ± 13.5 33.0 (23.0; 43.0)	!!!37.5 ± 12.6 39.0 (29.0; 48.0)	^^^\$\$\$20.2 ± 12.7 18.0 (10.0; 29.0)	^^^27.8 ± 13.4 28.0 (18.0; 38.0)	\$\$\$30.8 ± 12.9 29.0 (21.0; 41.0)
12. Inorganic sleep disturbances	***!!!11.6 ± 8.4 12.0 (4.0; 19.0)	***14.6 ± 8.6 16.0 (8.0; 21.0)	!!!17.1 ± 8.6 19.0 (11.0; 25.0)	^^^\$\$\$10.9 ± 8.2 11.0 (4.0; 18.0)	^^^14.0 ± 8.0 15.0 (8.0; 20.0)	\$\$\$16.5 ± 7.2 17.0 (12.0; 22.0)
13. Sexual dysfunctions	***!!!9.8 ± 9.8 7.0 (0.0; 16.0)	***13.4 ± 10.3 13.0 (4.0; 21.0)	!!!14.8 ± 11.1 14.0 (5.0; 24.0)	^^^\$\$\$9.5 ± 9.4 7.0 (0.0; 16.0)	^^^13.4 ± 9.5 12.0 (5.0; 20.0)	\$\$\$14.4 ± 9.3 14.0 (7.0; 21.0)
14. Dysthymia	***!!!27.9 ± 12.8 28.0 (19.0; 38.0)	***32.8 ± 12.1 34.0 (25.0; 42.0)	!!!35.9 ± 11.5 37.0 (29.0; 44.0)	^^^\$\$\$23.9 ± 13.1 25.0 (13.0; 33.0)	^^^29.6 ± 13.0 30.0 (20.0; 39.0)	\$\$\$32.7 ± 12.1 34.0 (25.0; 41.0)

Statistically significant differences between the groups depending on occurrence or extreme severity of symptoms according to the distribution by parametric or non-parametric tests were marked ***^^^!!!\$\$\$ $p < 0.001$. Mean values ± standard deviations – ($M \pm SD$), as well as medians and quartiles Me (Q1; Q2) were presented.

Table 6 shows that both in the group of women and men both the occurrence, and extremely severe urinary frequency in particular, were related to a significantly higher ($p < 0.001$) severity of symptoms: global symptom level (OWK) and all of 14 scales of symptom checklist. Likewise, both the occurrence and extremely severe urinary incontinence (Table 7) were noticed in the group of women and men with significantly higher global symptom level (OWK), and significantly higher values of thirteen out of fourteen scales of Symptom Checklist KO“0” – except for the scale 12 (inorganic sleep disturbances) in the group of men (Table 7).

Table 7. Descriptive statistics of global symptom level (OWK) and values of symptom checklist scales in the groups of patients in terms of either occurrence or extreme severity of urinary incontinence with statistical analysis

	Women			Men		
	No symptom	Symptom occurs	Extreme severity of symptom	No symptom	Symptom occurs	Extreme severity of symptom
number	n = 2,449	n = 133	n = 25	n = 1,294	n = 53	n = 8
Global symptom level (OWK)	***!!!384 ± 148 376 (276; 482)	***526 ± 167 528 (405; 649)	!!!582 ± 142 584 (462; 651)	^^^\$\$\$341 ± 148 329 (238; 444)	^^^476 ± 179 453 (361; 632)	\$\$\$596 ± 165 590 (438; 724)
1. Phobic disorders	***!!!15.8 ± 12.4 14.0 (5.0; 24.0)	***25.8 ± 13.1 28.0 (15.0; 36.0)	!!!30.3 ± 10.6 29.0 (24.0; 36.0)	^^^\$12.6 ± 11.5 9.0 (4.0; 20.0)	^^^20.4 ± 13.7 21.0 (8.0; 33.0)	\$\$\$26.6 ± 9.7 30.5 (16.0; 34.5)
2. Other anxiety disorders	***!!!41.4 ± 15.5 42.0 (30.0; 53.0)	***47.0 ± 14.8 50.0 (38.0; 58.0)	!!!52.4 ± 10.9 55.0 (47.0; 59.0)	^^\$36.7 ± 15.1 37.0 (26.0; 48.0)	^^41.8 ± 17.5 44.0 (27.0; 55.0)	\$\$\$51.6 ± 16.6 51.5 (45.5; 66.5)
3. Obsessive-compulsive disorders	***!!!18.0 ± 11.5 17.0 (9.0; 26.0)	***27.2 ± 12.2 27.0 (19.0; 37.0)	!!!30.0 ± 11.8 32.0 (23.0; 38.0)	^^^\$\$\$18.4 ± 11.9 17.0 (9.0; 26.0)	^^^27.3 ± 13.7 27.0 (18.0; 38.0)	\$\$\$38.6 ± 9.9 38.0 (30.5; 48.0)
4. Conversions	***!!!36.2 ± 24.4 32.0 (17.0; 52.0)	***59.8 ± 28.6 59.0 (39.0; 81.0)	!!!68.6 ± 27.0 75.0 (50.0; 88.0)	^^^\$\$\$31.8 ± 23.3 28.0 (13.0; 46.0)	^^^57.3 ± 27.2 56.0 (38.0; 79.0)	\$\$\$67.1 ± 23.3 69.5 (50.5; 85.0)
5. Autonomic disorders (e.g. Cardiovascular system)	***!!!33.6 ± 16.1 33.0 (21.0; 46.0)	***43.1 ± 15.1 44.0 (31.0; 55.0)	!!!51.6 ± 13.1 52.0 (45.0; 61.0)	^^28.4 ± 15.8 28.0 (16.0; 40.0)	^^38.2 ± 16.4 37.0 (26.0; 52.0)	ns 41.4 ± 22.0 45.5 (19.5; 61.5)
6. Somatoform disorders	***!!!27.5 ± 17.1 25.0 (14.0; 38.0)	***47.2 ± 20.0 49.0 (31.0; 64.0)	!!!51.5 ± 19.5 54.0 (33.0; 66.0)	^^\$23.3 ± 16.3 21.0 (11.0; 33.0)	^^39.2 ± 19.6 39.0 (23.0; 55.0)	\$\$\$50.1 ± 26.4 50.0 (25.5; 74.0)
7. Hypochondriasis	***!!!14.1 ± 10.6 13.0 (4.0; 23.0)	***19.5 ± 9.7 21.0 (12.0; 28.0)	!!!24.1 ± 9.1 27.0 (21.0; 29.0)	^^15.1 ± 10.7 16.0 (4.0; 24.0)	^^19.0 ± 10.6 19.0 (9.0; 28.0)	ns 22.5 ± 10.8 24.5 (12.5; 32.5)
8. Neurasthenia	***!!!49.0 ± 18.4 51.0 (37.0; 63.0)	***54.6 ± 18.0 56.0 (46.0; 70.0)	!!!60.9 ± 16.9 59.0 (54.0; 77.0)	^^\$44.2 ± 18.7 46.0 (30.0; 59.0)	^^^54.0 ± 15.6 55.0 (44.0; 64.0)	\$\$\$61.5 ± 11.6 61.0 (55.0; 65.5)
9. Depersonalizations and derealizations	***!!!13.2 ± 12.0 10.0 (4.0; 21.0)	***20.9 ± 14.9 21.0 (8.0; 33.0)	!!21.6 ± 14.3 19.0 (12.0; 31.0)	^^^\$\$\$12.8 ± 11.8 9.0 (4.0; 20.0)	^^^20.9 ± 14.4 16.0 (9.0; 33.0)	\$\$\$32.1 ± 14.1 35.5 (19.5; 40.0)
10. Avoidance and dependency	***!!!35.8 ± 17.7 37.0 (22.0; 49.0)	***44.8 ± 16.3 48.0 (34.0; 57.0)	!!!49.7 ± 14.2 49.0 (42.0; 60.0)	^^^\$\$\$32.0 ± 18.5 32.0 (17.0; 46.0)	^^^41.6 ± 18.3 41.0 (28.0; 57.0)	\$\$\$58.6 ± 14.2 58.5 (55.0; 67.5)
11. Impulsivity and histrionic personality disorder	***!!!29.7 ± 13.5 30.0 (20.0; 40.0)	***38.1 ± 12.5 38.0 (29.0; 48.0)	!!!40.5 ± 11.7 37.0 (34.0; 49.0)	^^^\$\$\$23.2 ± 13.4 22.0 (13.0; 33.0)	^^^30.4 ± 15.0 33.0 (17.0; 42.0)	\$\$\$41.0 ± 10.6 40.5 (33.5; 48.5)
12. Inorganic sleep disturbances	***!!!12.8 ± 8.6 13.0 (4.0; 20.0)	***17.6 ± 7.7 19.0 (13.0; 24.0)	!!18.6 ± 7.6 19.0 (14.0; 25.0)	ns \$12.2 ± 8.3 13.0 (4.0; 19.0)	Ns 14.3 ± 8.1 15.0 (9.0; 20.0)	\$19.0 ± 7.3 19.0 (12.5; 26.0)
13. Sexual dysfunctions	***!!!11.3 ± 10.2 9.0 (0.0; 19.0)	***15.8 ± 9.9 17.0 (7.0; 23.0)	!16.6 ± 10.5 19.0 (7.0; 25.0)	^^11.1 ± 9.6 9.0 (4.0; 18.0)	^^15.0 ± 10.5 14.0 (7.0; 22.0)	ns 17.0 ± 12.4 16.0 (7.0; 28.5)
14. Dysthymia	***!!!30.0 ± 12.7 31.0 (21.0; 39.0)	***35.1 ± 12.7 37.0 (27.0; 45.0)	!!38.2 ± 12.4 39.0 (32.0; 46.0)	^^\$26.2 ± 13.3 27.0 (16.0; 36.0)	^^^31.8 ± 13.5 33.0 (27.0; 40.0)	\$\$\$38.9 ± 12.0 38.5 (34.5; 48.5)

Statistically significant differences between the groups depending on either occurrence or extremely severe symptoms according to the distribution by parametric or non-parametric tests were marked ***[^]!!\$\$\$ p < 0.001, [^]!! p < 0.01, [^]!\$ p < 0.05. Mean values ± standard deviations – (M±SD), as well as medians and quartiles (Me (Q1; Q2) were presented.

The analysis of correlation (non-parametric, Spearman’s method) between the variables described above, was conducted and the results were presented in Tables 8 and 9.

Table 8. Correlation between either the occurrence of symptoms or extremely severe urinary frequency according to age and severity of neurotic symptoms (Spearman’s r correlation coefficient)

	Women		Men	
	Occurrence of symptom	Extremely severe symptom	Occurrence of symptom	Extremely severe symptom
Age of respondents				
Age	***0.08	***0.08	***0.10	***0.10
Global symptom level				
OWK	***0.36	***0.40	***0.38	***0.40
Scale components of Symptom Checklist KO ⁰				
1. Phobic disorders	***0.20	***0.23	***0.24	***0.25
2. Other anxiety disorders	***0.26	***0.29	***0.27	***0.29
3. Obsessive-compulsion disorders	***0.26	***0.29	***0.28	***0.30
4. Conversions	***0.32	***0.35	***0.35	***0.36
5. Autonomic disorders (e.g. Cardiovascular system)	***0.30	***0.33	***0.30	***0.31
6. Somatoform disorders	***0.50	***0.54	***0.53	***0.55
7. Hypochondriasis	***0.21	***0.23	***0.27	***0.28
8. Neurasthenia	***0.25	***0.28	***0.27	***0.29
9. Depersonalizations and derealization	***0.20	***0.23	***0.22	***0.23
10. Avoidance and dependency	***0.21	***0.24	***0.21	***0.24
11. Impulsivity and histrionic personality disorder	***0.19	***0.23	***0.28	***0.29
12. Inorganic sleep disorders	***0.17	***0.20	***0.19	***0.21
13. Sexual dysfunctions	***0.18	***0.19	***0.22	***0.22
14. Dysthymia	***0.19	***0.22	***0.21	***0.22

Statistical significance was marked ***p < 0.0005, **p < 0.005, *p < 0.05; significant correlations of R > 0.30 were marked in bold – (Spearman’s r correlation coefficient).

Statistically significant correlations, however, only weak ones (R < 0.11) between extremely severe urinary frequency and age were found in both groups of women

and men (Table 8). However, there was moderately strong ($R\ 0.30\text{--}0.36$), statistically significant correlation of the occurrence and extremely severe urinary frequency with global symptom level (OWK), and with the scales number 4. (Conversions) and 5. (Autonomic disorders of Cardiovascular system) and the strongest correlation with the scale number 6. (Somatization disorders) ($R > 0.5$).

Table 9. Correlation of the occurrence and extreme severe symptom of urinary incontinence with age and severity of neurotic symptoms (Spearman's r correlation coefficient)

	Women		Men	
	Occurrence of symptom	Extremely severe symptom	Occurrence of symptom	Extremely severe symptom
Age of respondents				
Age	ns 0.02	ns 0.02	ns - 0.01	ns - 0.01
Global symptom level				
OWK	***0.18	***0.18	***0.15	***0.14
Scale components of Symptom Checklist KO"O"				
1. Phobic disorders	***0.16	***0.16	***0.11	***0.12
2. Other anxiety disorders	***0.08	***0.08	*0.06	*0.06
3. Obsessive-compulsion disorders	***0.16	***0.16	***0.13	***0.13
4. Conversions	***0.18	***0.18	***0.18	***0.18
5. Autonomic disorders of cardiovascular system	***0.13	***0.13	***0.11	***0.11
6. Somatoform disorders	*** 0.21	*** 0.21	***0.16	***0.16
7. Hypochondriasis	***0.12	***0.12	*0.07	*0.07
8. Neurasthenia	***0.07	***0.07	***0.10	***0.10
9. Depersonalizations and derealization	***0.12	***0.12	***0.12	***0.12
10. Avoidance and dependency	***0.11	***0.11	***0.10	***0.10
11. Impulsivity and histrionic personality disorder	***0.13	***0.13	**0.09	***0.09
12. Inorganic sleep disorders	***0.12	***0.12	Ns 0.05	ns 0.05
13. Sexual dysfunctions	***0.10	***0.10	*0.08	*0.08
14. Dysthymia	***0.09	***0.09	**0.09	**0.09

Statistical significance was marked *** $p < 0.0005$, ** $p < 0.005$, * $p < 0.05$; ns – statistically non-significant; correlations of more than 0.20 were marked in bold (Spearman's r correlation coefficient).

As shown in Table 9, no statistically significant correlations were found between the occurrence and extremely severe symptom of urinary incontinence and patients' age in both groups of women and men. Moreover, in the group of women only weak (but

statistically significant) correlations ($R < 0.2$ were found for the global level symptom (OWK) and for the thirteen scales of Symptom Checklist KO“0”, except for scale number 6. (Somatoform disorders) for which a moderate correlation with both the occurrence and extremely severe symptom of urinary incontinence was found (Table 9). In the group of men even a moderate correlation was not found (all $R < 0.2$). Moreover, for the scale 12 (Inorganic sleep disturbances), no significant correlation was found.

Co-existence of lower urinary tract symptoms with neurotic disorders

In order to determine whether the neurotic symptoms correlated the most with the two studied urinary tract symptoms, the analysis of correlations between remaining 133 symptoms included in Symptom Checklist KO“0” was performed. The results of the most strongly correlating (in the series of regression analysis with one variable) variables, which describe the symptoms were presented in Tables 10–13.

Table 10. The results of logistic regression analyses with one variable conducted in the group of women illustrating the strongest correlations for the occurrence of frequent urination with other neurotic disorder symptoms

	chi ²	OR (-95%CL; +95%CL)
132. frequent need to urinate		
111. involuntary urination e.g. bed wetting	49.47	***3.87 (2.59; 5.79)
31. bloating, involuntary bowel emptying	185.19	***3.01 (2.57; 3.54)
134. muscle pain, e.g. back pain etc.	149.71	***2.80 (2.37; 3.31)
117. unspecified, migratory pain	145.33	***2.63 (2.25; 3.09)
131. burning in the gullet, heartburn	135.30	***2.62 (2.22; 3.09)
98. excessive thirst	132.21	***2.52 (2.15; 2.95)
107. pain, other genital organs symptoms	101.47	***2.47 (2.07; 2.95)
69. diarrhea	101.07	***2.40 (2.02; 2.86)
49. dry mouth	113.55	***2.40 (2.04; 2.82)
32. compulsion for unnecessary duplication of work	115.15	***2.36 (2.02; 2.77)
Remaining 124 symptoms were omitted		

Table presents the symptoms (except for second urological symptom) for which the regression analysis found the strongest correlations of the coefficients $OR > 2.3$ and values $chi^2 > 100$; statistical significance of the coefficients OR was marked *** $p < 0.0001$. Table includes the values of coefficients OR with 95% confidence interval (-95%CL; +95%CL). Symptoms common for women and men were highlighted

Table 11. Results of one variable logistic regression analysis conducted in the group of men and women illustrating the strongest correlations for the occurrence of urinary frequency along with other neurotic symptoms

	chi ²	OR (-95%CL; +95%CL)
132. frequent need to urinate		
111. involuntary urination e.g. bed wetting	37.72	***7.71 (3.60; 16.49)

table continued on the next page

133. torticollis	67.81	***3.61 (2.62; 4.96)
31. bloating, involuntary bowel emptying	126.00	***3.58 (2.85; 4.49)
98. excessive thirst	107.63	***3.22 (2.57; 4.03)
107. pain/aches, other genital organs symptoms	60.80	***3.14 (2.34; 4.23)
94. excessive saliva in the mouth	83.22	***3.11 (2.42; 3.99)
131. burning in the gullet, heartburn	84.28	***2.81 (2.25; 3.51)
32. compulsion for unnecessary duplication of work	82.94	***2.78 (2.22; 3.47)
37. exaggeration in avoiding illness	77.72	***2.69 (2.15; 3.36)
11. itchiness of skin, transient skin rashes	68.85	***2.66 (2.11; 3.37)
136. nausea, sickness	70.04	***2.58 (2.06; 3.24)
129. muscle tension	68.70	***2.57 (2.05; 3.22)
109. photosensitization, hypersensitivity to sound and touch	69.99	***2.56 (2.05; 3.20)
43. temporary paresis of arms or legs	45.00	***2.55 (1.93; 3.38)
93. muscle spasms	69.29	***2.54 (2.04; 3.18)
63. temporary loss of sight or hearing	59.17	***2.53 (1.99; 3.21)
135. buzzing in the ears	66.26	***2.53 (2.02; 3.17)
Remaining 117 symptoms were omitted		

Table presents the symptoms (except for second urological symptom) for which the regression analysis found the strongest correlations of the coefficients $OR > 2.5$ and values $\chi^2 > 45$; statistical significance of the coefficients OR was marked *** $p < 0.0001$. Table includes the values of coefficients OR with 95% confidence interval (-95%CL; +95%CL). Symptoms common for women and men were highlighted.

The occurrence of urinary frequency in both men and women correlated the most with the co-existence of the following symptoms: involuntary micturition, bloated stomach and involuntary bowel emptying, excessive thirst, pain and other genital organs symptoms, "heartburn", unnecessary duplication of work (Table 10 and 11). Strong correlation with muscle pains and migratory pains, dry mouth and diarrhea were found only in the group of women.

However, in the group of men strong correlations with other symptoms were noted – several from the groups of conversions/dissociations and others, such as excessive saliva in the mouth, hypochondriac avoidance, itchiness and nausea, etc. (Table 10 and 11).

Table 12. The results of single variable logistic regression analyses conducted in the group of women illustrating the strongest correlations for the occurrence of urinary incontinence with other neurotic symptoms

111. involuntary urination, e.g. bed wetting	χ^2	OR (-95%CL; +95%CL)
87. unpleasant feelings connected with self-abuse	160.92	***7.93 (5.48; 11.45)
107. pain, other genital organs symptoms	109.04	***5.73 (3.99; 8.24)

table continued on the next page

133. torticollis	97.20	***5.11 (3.59; 7.29)
51. faintness	84.81	***4.58 (3.23; 6.50)
43. temporary paresis of arms or legs	79.65	***4.35 (3.08; 6.16)
61. agoraphobic anxiety	67.72	***3.94 (2.78; 5.59)
132. frequent need to urinate	49.47	***3.87 (2.59; 5.79)
76. breaking things in anger	63.23	***3.78 (2.67; 5.35)
94. excessive saliva in the mouth	63.03	***3.76 (2.66; 5.31)
117. unspecified migratory pains	45.00	***3.70 (2.47; 5.57)
Remaining 124 symptoms were omitted		

Table presents the symptoms (except for second urological symptom) for which the regression analysis found the strongest correlations of the coefficients (OR > 3.5) and values ($\chi^2 > 45$); statistical significance of the coefficients OR was marked *** $p < 0.0001$. Table includes the values of coefficients OR with 95% confidence interval (-95%CL; +95%CL). Symptoms common in women and men were highlighted.

Table 13. The results of single variable logistic regression analyses conducted in the group of men illustrating the strongest correlations for the occurrence of urinary incontinence(question 132) with other neurotic symptoms

111. involuntary urination e.g. bed wetting	χ^2	OR (-95%CL; +95%CL)
132. frequent need to urinate	37.72	***7.71 (3.60; 16.49)
107. pain, other genital organs symptoms	53.21	***6.8 (3.64; 11.19)
43. temporary paresis of arms or legs	32.37	***4.45 (2.55; 7.78)
123. loss of balance	23.52	***4.16 (2.23; 7.74)
133. torticollis	24.46	***3.86 (2.18; 6.84)
51. faintness	23.29	***3.85 (2.14; 6.91)
73. temporary aphonia	23.08	***3.60 (2.07; 6.27)
117. unspecified, migratory pain	18.43	***3.59 (1.93; 6.69)
61. agoraphobic anxiety	21.83	***3.50 (2.01; 6.11)
Remaining 125 symptoms were omitted		

Table presents the symptoms (except for second urological symptom) for which the regression analysis found the strongest correlations of the coefficients (OR > 3.5) and values ($\chi^2 > 15$); statistical significance of the coefficients OR was marked *** $p < 0.001$. Table includes the values of coefficients OR with 95% confidence interval (-95%CL; +95%CL). Symptoms common for women and men were highlighted.

Urinary frequency (second urological symptom), genital organs symptoms, temporary paresis of the arms or legs, migratory pain, torticollis, agoraphobic anxiety correlated with urinary incontinence both in women and men. Taking into account the co-existence of urinary incontinence, a sense of discomfort associated with masturbation

ranked high in women (but not in men). Other symptoms found in the analysis only in the group of women were excessive salivation and breaking things out of anger. Temporary aphonia and loss of balance strongly correlated with male urinary incontinence.

Discussion

This retrospective questionnaire-based study of 3,929 patients from a day hospital for neurosis treatment confirmed the occurrence of two lower urinary tract symptoms.

Frequent need to urinate was a very common symptom – reported by almost half of the respondents in the period of a week preceding the Symptom Checklist completion, and urinary frequency was reported significantly more often in the group of women than in men. Second symptom, urinary incontinence was reported much less frequently in the studied population (about 5%). The differences in the frequency of urinary incontinence in terms of gender were not found and only a weak correlation with age was found.

The above-mentioned observations may be explained by the fact that in the studied group most of the respondents were relatively young, who, on one hand, did not suffer from serious burdens of the disease (which would warrant a psychotherapy in a day hospital), and on the other did not have any symptomatic morphological or functional lesions within the lower urinary tract which are typical for older people. Diseases of the prostate associated with age in men, as well as the morphological and functional lesions related to the bladder and the urethra common both in men and women, may cause day and night time frequency, as well as the urinary incontinence [41–43].

Analyses of both urinary frequency and urinary incontinence in patients with neurotic and personality disorders were conducted from the most aggregated parameters, such as gender, duration of treatment (before vs. after 1990, the period of great socio-cultural change in Poland, moreover, in the middle of the study), general primary clinical diagnosis, global symptom level, through the groups of symptoms corresponding to scales of the Symptom Checklist KO“0”, to the single symptoms – variables of the questionnaire. Urinary frequency (both its occurrence and in extreme severity) was connected, irrespective of the respondents' gender, with significantly high burden of neurotic symptoms globally classified (as OWK coefficient), as well as in the sub-groups (scales of the Symptom Checklist). Similar, non-specific results were achieved for much less frequent symptom – involuntary micturition (urinary incontinence).

In relation to the main groups of approximate diagnosis (coded according to the ICD-10), the most commonly occurring in collectively created (estimating and coding the diagnoses made many years ago into ICD-10 specifications) groups were the conversion-dissociative and somatoform disorders. Similar results were obtained with the use of correlation analysis, where correlations of occurrence and extremely severe urinary frequency were found (the strongest with the scale number 6. (Somatoform disorders), slightly less strong correlations were noted with the scale number

4. (Conversions), and 5. (Autonomic disorders of Cardiovascular system). However, correlations of urinary incontinence were weak and limited to the scale of conversion in the group of women.

In the scope of analysis of single symptoms occurrence, the obtained results show considerable correlation of the urinary tract complaints reported in the Symptom Checklists, in particular with the somatoform or conversion disorders (and certain correlation between both analyzed “urological” complaints). The co-existence of both symptoms with complaints referring to the genital organs and reporting discomfort associated with masturbation in the group of women (important symptoms in patients with neurotic and personality disorders [31–34, 37] cannot be ignored either.

It should be emphasized that other numerous neurotic disorders co-existed with the lower urinary tract symptoms, but they were less probable.

The methodological limitations of this work (long-term retrospective analysis of a questionnaire study on a large group of day hospital patients) do not allow for the extrapolation of its results in the population of psychiatric patients (wider than patients qualified for the subsequent psychotherapy in psychotherapeutic centers with day units for neuroses treatment), or in the group of primary care patients or specialized urological centers. However, the results of this study, mainly due to a large number of study patients and the subgroup analyses in terms of gender and the diagnosis (in terms of age to the lesser degree), allow for the conclusion that the need of more detailed exploration in these populations and with the use of more detailed tools (interview and questionnaires) referring to the urological symptoms that patients are burdened with, is justifiable. The suggestions for further studies will allow to overcome present limitations in the interpretation of the results of the study based on two questions only including simple, colloquial expressions and descriptions combining the features of various options of lower urinary tract symptoms.

Clinical experience of psychotherapy in day hospitals shows that episodes of interrupting therapeutic sessions (individual or group), leaving to the toilet and the need of micturition take place, however, they happen less frequently than due to panic attack with typical symptom of increased heartbeat. Likewise, only single patients report the fear of urination outside their place of residence or another familiar place. Slightly larger group of patients does not come in time for the sessions due to increased need of urination just before the start of the session or during breaks between the group sessions. The authors of this study cannot recall any case reported directly by the patient – of an episode of involuntary, uncontrolled micturition during the psychotherapeutic sessions. However, it is not out of the question that such situations take place particularly in case of women with gynecological and urological symptoms, but they are concealed (e.g. by using diapers or pads), or some patients do not decide for the participation in a group therapy in a day hospital (which might mean more severe “urological” symptoms in a wider population than analyzed). The obtained results of the study are considered important because the “pseudourological” symptoms are neither frequently

nor easily reported directly by the patients with neurotic disorders who do not have to be aware – neither do their doctors – of the psychogenic nature of their symptoms.

Only weak correlation between urinary frequency and age, irrespective of gender, was observed. As far as incontinence is concerned, there was a lack of such correlation in both groups, even a weak one (statistically insignificant correlation coefficients). This could be explained by relatively young patient age and relatively good overall health. This fact can confirm psychogenic nature of the symptom.

The observation that both of the “urological” symptoms, the occurrence of symptoms and their extremely severe form correlated with significantly higher global symptom level (OWK) and significantly higher scales of the Symptom Checklist, suggests that they also correlated with an intense discomfort/distress (not necessarily caused by the occurrence of these symptoms).

The strongest correlations (coexistence) of urinary frequency in both women and men were related to the second urological symptom (urinary incontinence), as well as similar symptom of difficulties in controlling physiological functions (bloating and bowel emptying), symptoms probably related to the physiology of excessive micturition – excessive thirst (the latter one can be related to psychogenic polydipsia [44–46]) and genital organs symptoms that might belong to the group of sexual disorders (e.g. erectile dysfunction [47] and other sexual dysfunctions [48, 49] obviously including those associated with age [50]) or complex urological disorders – urethral pain syndrome of complex etiology among others of psychogenic nature [51]), and the part of a group of obsessive-compulsive disorder – compulsive repeating (literature reports such a connection in children [52]).

Depending on gender – it turned out that the symptoms of migrating pain (most probably of somatoform disorder, dissociative or conversion disorder), and similar symptoms related to functional digestive disorders (heartburn, diarrhea) often referring to neurotic symptoms (e.g. [38]) more strongly correlated with the urge of frequent urination in the group of women (more prone to the urological pain symptoms [51]). It seems that those accompanying symptoms are relatively more frequent in the context of sexual traumas [10, 53]. However, the following symptoms correlated with the urge of frequent urination in the group of men: dissociation disorders – temporary paresis, sight weakness, hearing deficiency and other sensory function deficits – buzzing in the ears and photosensitivity, hypersensitivity to sound, touch as well as muscle tension and muscle spasms, hypochondria and avoidance behavior.

Both in women and men, urinary incontinence was related to frequent urination (second urological symptom), the genital organs complaints, temporary paresis of the limbs, migratory pains, torticollis, agoraphobic anxiety (most probably in relation to the difficulty in controlling, among others, this scope of physiology while being far from safe place).

In women (but not in men) high rank in terms of co-existence with urinary incontinence was reached by the discomfort associated with masturbation (the fact that can

be related to symbolism of “wetting” in the context of physiology of sexual pathology of excitement in women). It is worth mentioning that in literature the occurrence of urological symptoms in women was associated with distorted sexual life with partners suffering from erectile dysfunction [54], and other dysfunctions of a relationship [55]. The observation of a strong correlation between the urological symptoms and genital organs complaints seems to be important as well, which is supported in clinical experience by frequent reporting urological or gynecological symptoms such as inflammation, irritation, vaginal discharge, infection etc. as “easier to report” or “incorrectly located”. Such a tendency to omit, avoid, distort sexual thread also was supported by clinicians and the medical students [56, 57].

Other symptoms found in this analysis in relation to urinary incontinence, but only in women, were excessive salivation and breaking things out of anger – both possible for interpretation as associated with anger. In the group of men the loss of balance and temporary aphonia (histerical mutism) were the symptoms strongly correlating with urinary incontinence.

Obsessive-compulsive disorder symptoms were found to correlate with the pseudo-urological symptoms and could refer to toilet activities, but unfortunately the available data cannot support this assumption.

It seems interesting that the correlations between the pseudo-urological and pseudo-cardiac symptoms (also during the analyses of co-existence of “cardiac” symptoms with other symptoms [39]), which can result from “separate directions” of autonomous stimulation in relation to the genitourinary and the digestive system versus cardiovascular system were not found.

Additionally, the group of single anxiety symptoms – apart from the agoraphobic anxiety associated with the symptom of involuntary micturition (or at least the sense of it) – did not correlate with the lower urinary tract symptoms. This might seem surprising especially in relation to panic attacks (described to have correlated with the urinary tract symptoms, for example, [58]), however, rapidly increasing symptoms from the cardiovascular system dominate within the group, and any possible occurrence of urge urinary incontinence during a panic attack was not sufficiently reported in the Symptom Checklist.

It is interesting that the correlation of urinary incontinence with the group of symptoms forming the scale of the Inorganic sleep disturbances did not appear – the correlation with bed wetting (e.g. [59, 60]) was expected.

Another group of potential correlations seems to be anger syndrome which did not appear among those and most strongly correlated with the pseudo-urological symptoms (apart from the above-mentioned excessive salivation and breaking things – the symptoms which do not unequivocally belong to direct outburst of anger as they might include e.g. responses related to clumsiness and dropping things in anger). The observation is in accordance with the results of Sobański et al. [40], who showed complete lack of any significant correlation of urinary incontinence with the symptom of anger

outburst, suggesting that even if (as in children) in the studied adult patients the wetting-anger correlation would exist, the aware experiencing of anger practically excludes it.

Individual contexts of the urological symptoms occurrence in the studied patients were not available. They could allow for symbolical interpretations of some of the situation-symptom correlation (e.g. frequent micturition – lack of interest in work, regression – wetting etc.), which would create favorable circumstances for interpretation useful in psychotherapy, which is a basic method of neurotic and personality disorder treatment.

Recommendations for diligent screening in terms of psychiatric nature among the urological patients [61–66], as well as the psychiatric symptoms in terms of urological background should be advocated [67].

Conclusions

1. The most common lower urinary tract symptoms – in the form of urination frequency – occurred in nearly half of the studied patients (48% women and 44% men) with neurotic and personality disorders treated in psychotherapeutic day unit, and the greatest severity affected as much as 13% of women and 9% of men.
2. Urinary incontinence, the most serious burden for only a small number of patients (5% of the respondents, and extreme severity only about 1%). Both analyzed symptoms more frequently referred to women.
3. In the analysis of frequency of occurrence and severity of the “urological” symptoms in patients diagnosed during 1980–1990 vs. 1991–2002 periods, significant differences, apart from the increase in the percentage of urinary incontinence occurrence, were not found.
4. For both symptoms – frequent and involuntary urination, both their occurrence, as well as extreme severity significantly correlated with patients’ global burden of neurotic symptoms, regardless of gender.
5. Only weak correlation between urinary frequency and patients’ age, regardless of gender, was found. In groups of women and men there was no, even weak, correlation for the symptom of urinary incontinence.
6. Analysis of co-existence with other neurotic symptoms indicated the strongest correlations between urinary frequency and somatoform and autonomous digestive disorders, bloating, diarrhea, thirst and pain syndromes of genital organs in both women and men. Furthermore, the group of co-existing conversion-dissociative symptoms seemed to be important in men.
7. Urinary incontinence both in women and men significantly correlated with pain syndromes of genital organs (in women also with the discomfort associated with masturbation), which may suggest the need to extend the clinical interview in these patients by this area.

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