Affective Temperament Profiles of Overactive Bladder Patients

Aşırı Aktif Mesane Hastalarının Afektif Mizaç Özellikleri

Ali SARIBACAK¹, Kürşat ALTINBAŞ², Hasan YILMAZ³, Alp ÖZKAN⁴, Levend ÖZKAN⁴, Timuçin ORAL⁵

¹Konak Hospital, Clinic of Urology, Kocaeli, Turkey

²Çanakkale Onsekiz Mart University Faculty of Medicine, Department of Psychiatry, Çanakkale, Turkey

³Seka State Hospital, Clinic of Urology, Kocaeli, Turkey

⁴Kocaeli University Faculty of Medicine, Department of Urology, Kocaeli, Turkey

⁵Istanbul Commerce University, Department of Psychology, İstanbul, Turkey

ABSTRACT

Introduction: Overactive bladder (OAB) is generally characterized by urinary urgency with or without incontinence and increased frequency of voiding and nocturia. Although animal studies have demonstrated the relationship between defective serotonergic neurotransmission and OAB, its etiology is still unclarified. Temperament profiles are hypothesized to be related with serotonergic activity and are studied in many psychosomatic disorders. Thus, we assume that OAB is related with a certain type of temperament.

Method: 29 patients, who were admitted to the urology outpatient clinic at Kocaeli University and clinically diagnosed with OAB syndrome, were recruited for the study. Temperament profiles were evaluated with the Temperament Evaluation of Memphis Pisa Paris and San Diego Autoquestionnaire (TEMPS-A). Depressive, hyperthymic, cyclothymic, anxious and irritable temperament scores in patients were compared with those in 25 healthy controls.

Results: Patient and control groups were similar in terms of age ($p=.65$), sex ($p=.64$) and educational level ($p=.90$). Anxious temperament scores were higher ($p=.02$) and hyperthymic temperament scores were lower ($p=.02$) in patients with OAB compared to controls. Depressive, cyclothymic and irritable temperament scores were similar in both groups. There was no significant differences between men and women in both groups in terms of different temperament profile scores.

Conclusion: Hypothetically, there might be an association between anxious temperament and OAB syndrome reflecting serotonergic dysfunction. However, OAB syndrome must be considered from the aspect of the interdependence of psychosomatic implications in a narrow sense and psychosomatic dimensions due to the psychological predisposition in the individual case. (*Archives of Neuropsychiatry 2014; 51: 263-266*)

Key words: Psychosomatic disorders, over active bladder, temperament

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ÖZET

Giriş: Aşırı aktif mesane (AAM), genellikle idrar kaçırmasının eşlik ettiği veya etmediği ani sıkışma hissi, idrar sıklığında artma ve gece sık idrara çıkma ile karakterizedir. Hayvan çalışmalarının serotonerjik nörotransmisyonundaki bozukluğu AAM ile ilişkisini göstermesine rağmen etyoloji hala belirsizdir. Mizaç profillerinin serotonerjik aktivite ile ilişkili olduğu iddia edilmiş ve birçok psikosomatik bozuklukta çalışmalar yapılmıştır. Bu bilgiler ışığında hipotezimiz AAM'nin belli bir mizaç türü ile ilişkili olabileceğidir.

Yöntem: Kocaeli Üniversitesi üroloji polikliniğine başvuran ve AAM tanısı alan 29 hasta çalışmaya dahil edildi. Mizaç profilleri TEMPS-A ile değerlendirildi. Depresif, hipertimik, siklotimik, anksiyöz ve iritabl mizaç profilleri 25 sağlıklı kontrol grubu ile karşılaştırıldı.

Bulgular: Hasta ve çalışma grupları yaş ($p=.65$), cinsiyet ($p=.64$) ve eğitim seviyesi ($p=.90$) bakımından benzerdi. Kontrol grubu ile karşılaştırıldığında çalışma grubunda anksiyöz mizaç profilleri daha yüksek ($p=.02$), hipertimik mizaç profilleri daha düşük ($p=.02$) bulundu. Depresif, siklotimik ve iritabl mizaç profilleri her iki grupta benzer bulundu. Her iki grupta, erkek ve kadın hastalar arasında farklı mizaç profili puanlarında anlamlı fark saptanmadı.

Sonuç: Kuramsal olarak anksiyöz mizaç ile AAM sendromu arasında serotonerjik disfonksiyonu işaret eden bir ilişki olabilir. Bunun yanı sıra, AAM sendromu, dar anlamda psikosomatik durumlarla ilişkili ve olgu bazında psikolojik hazırlayıcılara bağlı psikosomatik boyutlar yaklaşımıyla dikkate alınmalıdır. (*Nöropsikiyatri Arşivi 2014; 51: 263-266*)

Anahtar kelimeler: Psikosomatik bozukluklar, aşırı aktif mesane, mizaç

Çıkar çatışması: Yazarlar bu makale ile ilgili olarak herhangi bir çıkar çatışması bildirmemişlerdir.

Correspondence Address/Yazışma Adresi

Ali Saribacak, Konak Hastanesi, Üroloji Kliniği, Kocaeli, Türkiye

Gsm: +90 532 708 60 77 E-mail: saribacak@gmail.com Received/Geliş tarihi: 16.10.2012 Accepted/Kabul tarihi: 05.01.2013

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Introduction

Overactive bladder (OAB) was first defined by the International Continence Society (ICS) in 2002 and it is one of the subjects under discussion in urology today (1). In the absence of any underlying local pathology or metabolic condition, symptoms of urgency, frequency and nocturia form the primary diagnostic criteria for OAB. Since the main symptom is urgency, it can be accompanied by urge incontinence (2).

OAB is a common disorder and its prevalence in adults is reported to be 16.5%. However, this rate increases up to 20-40% with age (3). OAB is considered to be a disorder caused by loss of inhibition in detrusor muscle during the filling or voiding, or increase in excitation mechanisms. In other words, it is claimed that OAB is derived from involuntary detrusor contractions or decrease in inhibition (4). Even though considerable data have been obtained from studies concerning the etiology of the disorder, it has not been clearly understood yet. Some researchers believe that this is a psychosomatic reaction in case of no pathology can be defined after the urological evaluation and state that it is frequently observed depending on the postsynaptic serotonin dysregulation due to various psychiatric cases, mainly depression (5,6,7,8).

On the other hand, the view that temperament profiles, expressed as the tendency to show a certain automatic obedience to emotional stimuli form the basis of mood disorders, has been widely accepted since Emil Kraepelin (9,10,11,12). Moreover, various studies have reported that mood profiles are related with the course of illness and treatment response in non-psychiatric diseases regarding serotonergic dysfunction (13,14,15,16,17,18,19,20,21). It is clear that common biological pathways are responsible for both OAB and temperament profiles. In the light of these evidence, we aimed to compare temperament profiles of OAB patients and healthy controls.

Methods

Subjects

A total of 29 patients, who attended the urology outpatient clinic at Kocaeli University Medical Faculty between January and December 2009 and who agreed to participate in the study by providing written informed consent, were recruited for the study. The inclusion criteria were as of follows: OAB complaints for at least 6 months, at least one urgency episode per 24 hours, at least 8 micturitions per day in three-day voiding log, and age older than 18 years. Patients with a history of psychiatric treatment, pregnant subjects, patients with clinically significant hepatitis or renal disorder, those with active urinary or recurrent (4 or more episodes annually) urinary tract infections, individuals with a neurological disorder which can affect bladder functions (e.g. diabetes mellitus, stroke, multiple sclerosis, spinal cord injuries, Parkinson's disease), and patients with bladder outlet obstruction, urinary fistula, bladder or kidney stones, or interstitial cystitis were excluded. Healthy controls were selected among the hospital employees who did not have any urological complaint at least within the last six months and who did not have any history of psychiatric treatment. The exclusion criteria for the control

group were the same as for the study group. 29 OAB patients and 25 healthy controls who met the criteria were included in the study and all of the participants completed the study. The study was approved by the local ethics committee.

Procedure

All patients and the healthy controls who agreed to participate in the study signed the informed consent form and filled the socio-demographic data form which was developed by the researchers. After the urological examination, the participants underwent ultrasonographic evaluation of the urinary system, urinalysis and urodynamic tests. All participants received the Temperament Evaluation of Memphis Pisa Paris and San Diego Autoquestionnaire (TEMPS-A) and they were asked to complete it under the supervision of the researchers.

Data Collection Tools

Socio-demographic data form: This form, which was developed by the researchers, consists of urological examination and examination outcome data in addition to certain demographic data, such as age, sex, weight, educational level and marital status of the participants.

Temperament Evaluation of Memphis, Pisa, Paris and San Diego Autoquestionnaire (TEMPS-A): It was developed by Akiskal (22) and it is a 100-item self-report measure of affective temperament with depressive, cyclothymic, hyperthymic, irritable, and anxious subscales. The person gives an answer to the items as yes or no by taking his or her own life into consideration. Validity and reliability studies were done by Vahip and colleagues (23).

Statistics

SPSS version 13.0 for Windows was used for statistical analysis. Categorical variable comparison between patient and control groups was done by chi-square test and their mean age was compared by an independent samples t-test. TEMPS-A scores in patient and control groups were analyzed by an independent samples t-test for depressive, hyperthymic, cyclothymic and irritable temperament profiles, whereas anxious temperament scores were compared by the Mann-Whitney U-test since they were not normally distributed. A p value of less than 0.05 was considered statistically considered.

Results

62.1% (n=18) of the study group and 68% (n=17) of the control group were female. The mean age in the patient and control groups were 40.7 ± 12.5 years and 39.2 ± 13.5 years, respectively. In terms of educational level, it was found that 41.4% (n=12) of the patient group were primary school, 34.5% (n=10) were high school and 24.1% (n=7) were university graduates. The rate of primary school, high school and university graduates in the control group were 36.0% (n=9), 40.0% (n=10) and 24.0% (n=6), respectively. There was no statistically significant difference between the groups in terms of age (p=.65), sex, marital status and educational level (Table 1).

The most common complaints in the patient group was increased urinary frequency (79.3%, n=23) and urge incontinence (20.7%, n=6). Three females (10.3%) in the patient group and, one female (4.0%) in the control group were in menopause.

When TEMPS-A scale average scores were evaluated, it was determined that the average scores for Depressive temperament

were 7.97 ± 3.3 and 6.2 ± 3.5 , for Anxious temperament 9.6 ± 6.1 and 5.9 ± 4.6 , for Hyperthymic temperament 9.4 ± 4.4 and 12.2 ± 3.8 , for Cyclothymic temperament 8.4 ± 4.6 and 7.6 ± 4.5 and for Irritable temperament were 5.2 ± 3.8 and 3.8 ± 3.4 in patient and control groups, respectively and, the mean anxious temperament score in the patient group was found to be significantly higher ($p=.03$) while hyperthymic temperament scores was found to be significantly lower ($p=.02$) compared to the control group. Other temperament scores were similar between the groups (Table 2).

Discussion

This is the first study evaluating temperament profiles of OAB patients. The most significant finding of our study was significantly higher anxious temperament scores and significantly lower hyperthymic temperament scores in the patients compared to controls. Hypothetically, this finding can be concluded as either a common etiological pathway in both cases of affective temperament and OAB or patients feelings of anxiety due to the symptoms of OAB. In the literature on the etiology of OAB, the importance of low serotonergic function is particularly emphasized for urinary system physiology and OAB pathophysiology as well as for many psychiatric conditions such as depression and anxiety (24). Serotonin acts via 5-HT₂ receptors which are located on bladder smooth muscle and stimulation of 5-HT₂ receptors causes contraction by a direct effect on bladder smooth muscle or by an indirect effect through autonomic innervation of the bladder (4,25). Consistently, in an animal study, Cornelissen and colleagues have found that mice without serotonin reuptake transporter (5HTT) had significant bladder instability. It was shown that there was a significant increase in the frequency of spontaneous non-voiding bladder contractions and decrease in void volume in these mice (26).

On the other hand, in recent studies, it was claimed that temperament profiles, which are believed to be genetically inherited, are especially related to gene polymorphisms which cause serotonergic dysfunction (27,28,29,30). In a current study by Pluess et al., it was reported that there is an association between negative emotionality and prenatal maternal anxiety exposure of infants with serotonin transporter polymorphism (5HTTLPR). They have claimed that the anxious temperament profiles of these infants were found when they were exposed to maternal anxiety prenatally and in the presence of 5HTTLPR allele (31). Similarly, Hayden et al. have pointed out the relationship of 5HTTLPR allele with negative emotionality and anxious temperament and (32). However, in another study, Landaas et al. used TEMPS-A for

the assessment of temperament profiles, and they reported no relationship between 5HTTLPR polymorphism and cyclothymic temperament profile (33).

Taking all these findings into consideration, the view that temperament profiles and OAB etiology share the common serotonergic dysfunction pathway becomes more significant. The finding of our study indicating significantly higher anxious temperament scores in OAB patients compared to control, is consistent with this opinion. Naturally, the absence of an assessment of serotonergic function in our study is an important limitation. In addition, the absence of any other clinical and biological study evaluating temperament profiles among OAB patients makes it more difficult to have more comments on the etiology. Other limitations are relatively small sample size and exclusion of the control group due to past psychiatric history without being evaluated for any current psychiatric disorder. Evaluation of axis I and axis II psychiatric disorders would lead to make more comments on this association. In spite of all these limitations, we believe that this study shall make a significant contribution to the literature as it is the first study evaluating the temperament profiles of OAB patients. Conducting advanced biological and genetic research in this field with larger sample size, which also evaluates the serotonergic functions, will provide significant information regarding the etiology of OAB

Table 1. Sociodemographic Characteristics of OAB Patients and Control Group

	OAB n %		Control n %		x2	p
Gender						
Female	18	62.1	17	68.0	.21	.65*
Male	11	37.9	8	32.0		
Educational status						
Primary	12	41.4	9	36.0	.21	.90*
High School	10	34.5	10	40.0		
University	7	24.1	6	24.0		
Marital Status						
Married	19	65.5	20	86.0	24.0	.24*
Single	10	34.5	5	24.0		
Age (year)	Mean		Sd		F	p
OAB	40.75		12.5		.13	.66*
Control	39.16		13.5		.13	.66*
OAB: Overactive Bladder, Sd: Standard deviation, c2: Value of chi-square, * p >0.05 not significant						

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Table 2. Comparison of TEMPS-A Scores of OAB patients and control group

Type of Temperament	OAB Mean±SD	Control Mean±SD	F	p
Depressive	7.97±3.35	6.16±3.49	.13	.06
Hyperthymic	9.41±4.40	12.16±3.80	.79	.02
Irritable	5.17±3.77	3.80±3.43	.77	.17
Cyclothymic	8.38±4.60	7.60±4.50	.002	.53
Anxious *	9.59±6.13	5.88±4.58	-2.21	.03

OAB: Overactive Bladder, SD: Standard deviation *Mann Whitney U Test is used cause Anxious temperament scores does not fit normal distribution. Z value is used instead of F value

disorder which considerably affects the quality of life and, will enable to develop new treatment strategies.

In the light of the findings of our study and the current literature, it can be stated that the relationship between the anxious temperament profiles and OAB depends on the serotonergic system. Therefore, when evaluating OAB, anxious temperament profiles should be taken into consideration and psychosomatic approach must be kept in mind.

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Disclosure

The authors disclosed no proprietary or commercial interest in any product mentioned or concept discussed in this article.

References

- Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, van Kerrebroeck P, Victor A, Wein A; Standardisation Sub-committee of the International Continence Society. The standardisation of terminology of lower urinary tract function: report from the Standardisation Sub-committee of the International Continence Society. *Neurourol Urodyn* 2002; 21:167-178.
- Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, Van Kerrebroeck P, Victor A, Wein A; Standardisation Sub-Committee of the International Continence Society. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. *Urology* 2003; 61:37-49.
- Kulaksızoğlu H. Botulinum Toxin Applications in Overactive Bladder Symptoms Secondary to Neurological Diseases. *Archives of Neuropsychiatry* 2010; 47: 44-47.
- Demirci DA CA. The Pathophysiology of the Overactive Bladder. *Türk Urol Sem* 2010; 1:23-26.
- Bodden-Heidrich R, Beckmann MW, Libera B, Rechenberger I, Bender HG. Psychosomatic aspects of urinary incontinence. *Arch Gynecol Obstet* 1999; 262:151-158.
- Steers WD, Lee KS. Depression and incontinence. *World J Urol* 2001; 19:351-357.
- Hullfish KL, Fenner DE, Sorser SA, Visger J, Clayton A, Steers WD. Postpartum depression, urge urinary incontinence, and overactive bladder syndrome: is there an association? *Int Urogynecol J Pelvic Floor Dysfunct* 2007; 18:1121-1126.
- Sung VW, West DS, Hernandez AL, Wheeler TL 2nd, Myers DL, Subak LL; Program to Reduce Incontinence by Diet and Exercise (PRIDE). Association between urinary incontinence and depressive symptoms in overweight and obese women. *Am J Obstet Gynecol* 2009; 200:557.1-5.
- von Zerssen D, Akiskal HS. Personality factors in affective disorders: historical developments and current issues with special reference to the concepts of temperament and character. *J Affect Disord* 1998; 51:1-5.
- Erkiran M, Sonmez G, Evren C, Aytaçlar S, Oral T. The factor analytic symptom structure of manic episode and its relationship with affective temperaments. *Türk Psikiyatri Derg* 2008; 19:157-166.
- Conrad R, Wegener I, Imbierowicz K, Liedtke R, Geiser F. Alexithymia, temperament and character as predictors of psychopathology in patients with major depression. *Psychiatry Res* 2009; 165:137-144.
- Mechri A, Kerkeni N, Touati I, Bacha M, Gassab L. Association between cyclothymic temperament and clinical predictors of bipolarity in recurrent depressive patients. *J Affect Disord* 2011; 132:285-288.
- Santos Dde M, Lage LV, Jabur EK, Kaziyama HH, Iosifescu DV, Lucia MC, Fraguas R. The association of major depressive episode and personality traits in patients with fibromyalgia. *Clinics (Sao Paulo)* 2011; 66:973-978.
- Kurt E, Ozaras N, Alatas G. Affective temperament in stroke patients. *Acta Neuropsychiatr* 2008; 20:295-299.
- Scuderi G, Pompili M, Innamorati M, Pasquale N, Pontremolesi S, Erbuto D, Mazzeo F, Venturini P, Lester D, Serafini G, Tatarelli R, Girardi P. Affective temperaments are associated with higher hopelessness and perceived disability in patients with open-angle glaucoma. *Int J Clin Pract* 2011; 65:976-984.
- Gois C, Barbosa A, Ferro A, Santos AL, Sousa F, Akiskal H, Akiskal K, Figueira ML. The role of affective temperaments in metabolic control in patients with type 2 diabetes. *J Affect Disord* 2011; 134:52-58.
- Boz C, Velioglu S, Ozmenoglu M, Sayar K, Alioglu Z, Yalman B, Topbas M. Temperament and character profiles of patients with tension-type headache and migraine. *Psychiatry Clin Neurosci* 2004; 58:536-543.
- Gonda X, Rihmer Z, Zsombok T, Bagdy G, Akiskal KK, Akiskal HS. The 5HTTLPR polymorphism of the serotonin transporter gene is associated with affective temperaments as measured by TEMPS-A. *J Affect Disord* 2006; 91:125-131.
- Hwang JW, Lyoo IK, Kim BN, Shin MS, Kim SJ, Cho SC. The relationship between temperament and character and psychopathology in community children with overweight. *J Dev Behav Pediatr* 2006; 27:18-24.
- Sanchez-Roman S, Tellez-Zenteno JF, Zermeno-Phols F, García-Ramos G, Velázquez A, Derry P, Hernández M, Resendiz A, Guevara-López UM. Personality in patients with migraine evaluated with the "Temperament and Character Inventory". *J Headache Pain* 2007; 8:94-104.
- Boz C, Gazioglu S, Altunayoglu V, Hocaoglu C. Effect of serotonergic antidepressant therapy on temperament and character scales in patients with chronic tension-type headache. *Psychiatry Clin Neurosci* 2007; 61:534-542.
- Akiskal HS, Akiskal KK, Haykal RF, Manning JS, Connor PD. TEMPS-A: progress towards validation of a self-rated clinical version of the Temperament Evaluation of the Memphis, Pisa, Paris, and San Diego Autoquestionnaire. *J Affect Disord* 2005; 85:3-16.
- Vahip S, Kesebir S, Alkan M, Yazici O, Akiskal KK, Akiskal HS. Affective temperaments in clinically-well subjects in Turkey: Initial psychometric data on the TEMPS-A. *J Affect Disord* 2005; 85:113-125.
- Dmochowski RR. The puzzle of overactive bladder: controversies, inconsistencies, and insights. *Int Urogynecol J Pelvic Floor Dysfunct* 2006; 17(6):650-658.
- de Groat WC. Influence of central serotonergic mechanisms on lower urinary tract function. *Urology* 2002; 59(Suppl 1):30-6.
- Cornelissen LL, Brooks DP, Wibberley A. Female, but not male, serotonin reuptake transporter (5-HTT) knockout mice exhibit bladder instability. *Auton Neurosci* 2005; 122:107-110.
- Serretti A, Mandelli L, Lorenzi C, Landoni S, Calati R, Insacco C, Cloninger CR. Temperament and character in mood disorders: influence of DRD4, SERTPR, TPH and MAO-A polymorphisms. *Neuropsychobiology* 2006; 53:9-16.
- Serretti A, Calati R, Giegling I, Hartmann AM, Möller HJ, Colombo C, Rujescu D. 5-HT2A SNPs and the Temperament and Character Inventory. *Prog Neuropsychopharmacol Biol Psychiatry* 2007; 31:1275-1281.
- Kraemer GW, Moore CF, Newman TK, Barr CS, Schneider ML. Moderate level fetal alcohol exposure and serotonin transporter gene promoter polymorphism affect neonatal temperament and limbic-hypothalamic-pituitary-adrenal axis regulation in monkeys. *Biol Psychiatry* 2008; 63:317-324.
- Holmboe K, Nemoda Z, Fearon RM, Sasvari-Szekely M, Johnson MH. Dopamine D4 receptor and serotonin transporter gene effects on the longitudinal development of infant temperament. *Genes Brain Behav* 2011; 10:513-522.
- Pluess M, Velders FP, Belsky J, van IJendoorn MH, Bakermans-Kranenburg MJ, Jaddoe VW, Hofman A, Arp PP, Verhulst FC, Tiemeier H. Serotonin transporter polymorphism moderates effects of prenatal maternal anxiety on infant negative emotionality. *Biol Psychiatry* 2011; 69:520-525.
- Hayden EP, Klein DN, Sheikh HI, Olino TM, Dougherty LR, Dyson MW, Durbin CE, Singh SM. The serotonin transporter promoter polymorphism and childhood positive and negative emotionality. *Emotion* 2010; 10:696-702.
- Landaas ET, Johansson S, Halmøy A, Oedegaard KJ, Fasmer OB, Haavik J. No association between the serotonin transporter gene polymorphism 5-HTTLPR and cyclothymic temperament as measured by TEMPS-A. *J Affect Disord* 2011; 129:308-312.