TÜBİTAK

Turkish Journal of Medical Sciences

http://journals.tubitak.gov.tr/medical/

Research Article

Turk J Med Sci
(2016) 46: 807-811
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doi:10.3906/sag-1502-90

Evaluation of behavioral problems in patients with monosymptomatic nocturnal enuresis: a prospective controlled trial

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Received: 17.02.2015 • **Accepted/Published Online:** 16.08.2015 • **Final Version:** 19.04.2016

Background/aim: The aim of the present study was to evaluate the behavioral and emotional patterns of patients with nocturnal enuresis (NE) and compare them with those of healthy subjects.

Materials and methods: Thirty-eight children and adolescents with monosymptomatic NE who were admitted to our hospital's pediatric and urologic outpatient clinics and 46 age-matched, healthy subjects were enrolled in this study. To compare behavioral patterns in these patients, the Child Behavior Checklist (CBCL) was used. Patients' ages, occupations, educational, and socioeconomic status, and mothers' age at delivery were compared in the two groups. One-way ANOVA was used for statistical analysis.

Results: Enuretic children were found to have more behavioral problems than nonenuretic children with regard to social ($P = 0.008$) and attention ($P = 0.018$) problems. There were no significant differences in anxiety or attractiveness problems between the groups ($P > 0.05$); however, patients with enuresis were more likely to exhibit these behavioral problems than healthy subjects. The demographics of the patients were significantly different in the two groups in favor of the control group.

Conclusion: It was shown that patients with enuresis have more social and attention problems than the control group. Treating these patients effectively will increase the likelihood that they will not develop behavioral problems.

Key words: Behavioral problems, nocturnal enuresis, psychological problems

1. Introduction

Nocturnal enuresis (NE) is defined as bed-wetting at night as the result of uncontrolled urination that is expected to be controlled at the age and neurological development of the patient; it is a medical problem for both the child and the family (1,2). According to various studies, the prevalence of enuresis is between 3.8% and 24%. In Turkey, however, the mean prevalence is between 11.5% and 19%, with 2.4% in adolescents (3–7).

Behavioral disorders can appear in a child as a result of emotional reactions to negative environmental influences and the natural difficulties of growing up. Thumb-sucking, nail-biting, enuresis, antisocial behavior, and even harming others or violating social rules are examples of such behaviors. These behavioral disorders are frequently seen in both childhood and adolescence, and they are more common in male patients under 18 (8).

According to a number of studies, behavioral disorders and psychological problems are seen at a higher rate in children with NE as a result of continued bed-wetting and decreased self-esteem. With the majority of nocturnal enuretic children, it is anxieties about other children noticing and humiliation, shyness, and social isolation that bring children face to face with psychological and behavioral problems (9). While some studies establish a relationship between NE and hyperactivity, other studies indicate that alongside behavioral problems, school performance problems can occur and that these increase with age (10). Family-oriented reports say that emotional, social, and behavioral problems are seen more frequently in enuretic children than in children who do not wet their bed (11).

The purpose of this study was to investigate behavioral problems observed in children with primary NE.

2. Materials and methods

Our study included 90 patients who applied to our urology and pediatric clinics with complaints about night bed-wetting. Thirty-eight children and adolescents ranging in age from 8 to 18 years who were diagnosed with NE,

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agreed to join our study, and filled out our survey form were accepted into the study. In the same time period, 46 children and adolescents between 8 and 18 who were comparable in age to the study group and were healthy, showing no symptoms of NE, formed our control group.

For all cases in the study group, a detailed patient history and voiding history was taken and a physical examination was performed. To exclude any organic causes, complete urinalyses, urine cultures, and urinary system ultrasounds were performed. In the initial visit a 34-question survey, which included questions about causes and socioeconomic level and demographic structure of the patients' families, was filled out. In addition, the Children's Behavioral Checklist (CBCL) survey, an instrument that assesses behavioral disorders in children, was given to parents to fill out after adapting the questionnaire to be culturally relevant to our participants. The surveys were collected and the results were compared. The same procedure was conducted for the control group.

Patients in whom pathologies were found via physical examination, clinical history, or laboratory or radiological studies, patients who were diagnosed with something other than NE, and patients who declined to fill out the information form or CBCL form were excluded.

For both the study and control groups, cases were divided into two groups: those ages 8 to 11, and those over 12. Age 12 was selected as the threshold because it is the age when abstract thinking develops and the transition into the teenage years begins.

In the data evaluation, frequency and percentage data collected from the surveys were calculated. The enuretic and nonenuretic groups were compared first. Then, arithmetic mean and standard deviation values were calculated regarding in-group difference, such as sex and age, using t-test analyses. Significance was set at $P < 0.05$. The results of the surveys and psychometric evaluation were compared. A one-way ANOVA was used.

2.1. Statistical analysis

The t-test was used for statistical analysis. One-way ANOVA was used to compare the survey results to the psychometric evaluation results. SPSS, version 13.0, was used for the statistical analyses. $P < 0.05$ was considered significant.

3. Results

The study group consisted of 18 girls (47.4%) and 20 boys (52.6%). The control group included 26 girls (56.5%) and 20 boys (43.5%). The age range was 8 to 18 in both the control and study groups; the mean ages for the control and study groups were 10.76 and 10.89, respectively; no significant difference was found for age (Table 1).

Of the study group participants, 26 (68.4%) were between ages 8 and 11, and 12 participants (31.6%) were over the age of 12. In the control group, 32 (69.6%) cases were between 8 and 11 years of age, and 14 (30.4%) cases were over the age of 12. In the study group, 11 (28.9%) patients had hyperactivity, 10 (26.3%) had phobias, 9 (23.7%) were nail-biters, 8 (21.7%) had tics, and 2 (5.3%) stuttered or had a speech disorder. In the control group, hyperactivity was seen in 16 (34.8%) cases, phobia in 8 (17.4%), nail-biting in 14 (30.4%), tics in 2 (4.3%), and stuttering or speech disorders in one (2.2%). Thumb-sucking and fecal incontinence were not seen in either group. When comparing the two groups based on the survey form, the complaint of hyperactivity was reported at a significantly higher rate by parents in the control group. An evaluation of CBCL was conducted according to eight subgroups, and a comparison of both groups is shown in Table 2.

In the study group, girls had significantly higher scores than boys in the social withdrawal subdimension ($P = 0.035$). In the other subdimensions there was no significant difference between the groups. In the control group girls had significantly higher scores only in the subdimension of anxiety and irritability ($P = 0.077$). Upon evaluation of the CBCL scores in the study group, taking both age subgroups separately, there was no significant difference between the age subgroups, nor was any obvious relationship detected. In the control group, there was no significant difference between subgroups besides the significant difference in social problems seen among children between ages 8 and 11.

Table1. Demographic features of groups.

		Enuresis group	Control group
N		38	46
Sex	Girls	18 (47.4%)	26 (56.5%)
	Boys	20 (52.6%)	20 (43.5%)
Age	8–18 age (years)	10.76 ± 6.89	10.89 ± 7.34
	8–11 age	26 (68.4%)	32 (69.6%)
	12 age and above	12 (31.6 %)	14 (30.4%)

Table 2. Comparison of CBCL scores of both groups according to subgroups.

	Groups	Number (N)	Average	Standard deviation	P-value
Social withdrawal	Case Control	38 46	3.1579 2.8913	2.83 2.50	0.649
Somatic problems	Case Control	38 46	0.7632 0.7391	1.12 0.85	0.912
Anxiety- depression	Case Control	38 46	6.2895 5.5217	4.39 3.77	0.392
Social problems	Case Control	38 46	2.7632 1.5217	2.48 1.65	0.008**
Thought problems	Case Control	38 46	1.1053 1.0435	1.35 1.26	0.829
Attention problems	Case Control	38 46	5.6053 4.0000	3.31 2.79	0.018*
Felonious behavior	Case Control	38 46	2.1316 1.6739	2.75 2.10	0.391
Aggressive behavior	Case Control	38 46	8.9211 7.4130	7.56 6.02	0.312

*: $P < 0.05$.
**: $P < 0.01$.

4. Discussion

Our research results show that social and attention problems were significantly more common in the NE group than the control group. The enuresis group also presented higher scores in the other six CBCL scale areas, but these were not significant. Unexpectedly, hyperactivity was significantly higher in the control group in our study. Actually, many studies imply that hyperactivity is more related to diurnal enuresis. The results found in our study may be due to the small number of cases or parents' exaggerated characterizations of hyperactivity.

NE is one of the most frequent problems in childhood in which various factors like urological, neurological, or endocrine pathologies, familial predisposition, and developmental factors play a role. To obtain satisfactory treatment, NE has been studied for centuries (12).

There are many studies evaluating the relationship between NE and behavioral disorders in children. Most of the existing studies show that these two variables coexist; few studies have demonstrated a cause and effect relationship between these variables (13). Behavioral disorders must be considered as a spectrum ranging from minor disorders like nail-biting, thumb-sucking, or urinary problems to serious disorders like theft, pyromania, and aggressive behaviors. Until now, studies about these subjects have returned divergent results. The common opinion is that there are no major differences between normal children and enuretic children apart from minor differences like nail-biting, thumb-sucking, phobia, tics, hyperactivity, and encopresis (14). We, likewise, did not observe in our study any significant difference between the enuretic group and the control group in terms of these kinds of behavioral disorders.

In Ferguson and Horwood's (15) study, while no serious psychiatric disorders were found in the enuretic children, increased anxiety levels, behavioral problems, and attention deficits were found, especially in children over 10 years of age. Rey et al. (16) showed that there was a positive relationship between enuresis and hyperactivity. In another study conducted with 3,600 enuretic children between 6 and 16 years of age, it was determined that fear, heightened levels of depression, social and attention problems, and harmful and aggressive behaviors are 2 to 4 times more common in children with NE (17). The CBCL is the scale most frequently used in our country for evaluating children's behavioral disorders. In this scale, children's behavioral problems are evaluated according to eight subgroups. Additionally, in our study, when we evaluated the cases with primary NE, significant differences between the two groups were found only in the

subgroups for social and attention problems. The results showed that enuretic children are more problematic in these two subgroups. Even though significant differences were not found in the other subgroups, enuretic children had higher scores for all subgroups. These results do not differ from those reported in previous studies on this subject.

Affective style and social role expectations differ for girls and boys. This opens the way for the sexes to present different characteristics in psychometric evaluations. Though impacted by many variables, there is an increase in the frequency of behavioral disorders in boys and of depressive symptoms in girls during the adolescent period. Multiple studies have shown that behavioral disorders are more common in boys, that they are associated with many factors such as socioeconomic level or familial relationships, and that ratio and severity increases with age (18–20). Scores in the "social withdrawal" subgroup in the enuretic group and the "anxiety/depression" subgroup in the control group are significantly higher in girls than boys when comparing CBCL scores according to sex in our study. Besides this difference, we did not observe the expected difference with regard to sex in the NE and control groups; this may be explained by the small size of the sample.

Studies on behavioral problems in enuretic children show that age differences become more evident with higher frequencies of NE. While urination and defecation problems, thumb-sucking, and temper tantrums are more common in young school-age children, such behaviors as alcohol and substance abuse, self-harm, or damaging one's environment are more frequently seen in adolescents. Depression is seen more commonly in adolescent girls (15). In our study, we separately evaluated the two subgroups of 8- to 11-year olds and +12-year olds in both the enuretic and control groups to determine if age differences influence behavioral problems. When comparing the CBCL scale according to age groups, it was only the 8- to 11-year old subgroup of the control group that was experiencing more social problems. In the enuretic group, no differences with regard to behavioral problems were detected between the 8- to 11-year old and the adolescent subgroups. However, the literature shows that behavioral problems appear at a higher rate in enuretic children for whom treatment has failed, who wet the bed more frequently, and who are older. Having a small number of patients from a single center is one weakness of the present study.

In conclusion, through better treatment of NE, we not only can help enable children to wake up dry in the morning, but we can also impact the child and family positively, contributing to a better start in life for the child through enhancing their self-esteem and reducing the risk of emotional and behavioral problems manifesting later in life.

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