

Correlation between Attention Deficit Hyperactivity Disorder and Giggle Incontinence

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Abstract

Background: Attention deficit hyperactivity disorder (ADHD) with decreased focus and urinary incontinence disorder are two common disorders in childhood. Some clinical studies focus on the relationship between hyperactivity disorder and urinary incontinence disorder. The aim of this study was to investigate the association between giggle incontinence and hyperactivity disorder.

Methods: This case-control study was conducted on 200 children referring to the pediatric clinic of Amir Kabir Hospital in Arak, Iran in two groups of 100 patients with and without giggle incontinence, and frequency of ADHD was compared. ADHD diagnosis was performed on the basis of DSM-IV-TR diagnostic criteria and the Conner's Parent Rating Scale-48 (CPRS-48) questionnaire by a psychiatrist.

Results: The mean age of children in the case and control groups was 2.26 ± 7.97 and 7.87 ± 1.87 years (p -value=0.430), and the ratio of male to female was 53 to 47 and 43 to 57 (p -value=0.157). It was also observed that the frequency of ADHD in the case and control groups was 23% and 11%, respectively (p -value=0.024).

Conclusion: According to the results of the recent study, it is concluded that there is a significant relationship between the incidence of ADHD and giggle incontinence disorder.

Keywords: Giggle incontinence; ADHD

Introduction

Attention deficit hyperactivity disorder (ADHD) is a developing state of attention deficit and distractions disorder with or without combination of hyperactivity. Based on DSM-5, there are three basic forms of ADHD including attention deficit, hyperactivity disorder, and combination of above forms [1]. Studies in children at school age have found that 10 to 50 percents of children are involved with ADHD disorder. Factors that increase the incidence of this disorder in children have not completely understood, but there is evidence of the role of

some genetic defects and functional impairment of the central nervous system [2,3].

Voiding dysfunction refers to daily urination disorders in children who have no neurological, anatomical, obstructive or infectious disease in their urinary tract. Some of the important causes of these urinary disorders include uncontrolled contractile detrusor muscle, pelvic floor muscle disorder (urinary dysfunction), and reduced ability to contracture detrusor muscle [4-6].

Hyperactivity disorder with decreased concentration and urinary incontinence disorder are two common disorders in childhood. Some population-based studies have shown evidence of a relationship between these two disorders [7,8].

Giggle incontinence is an uncontrolled bladder discharge due to laugh. The cause and etiology of this condition are unknown. This condition is not a type of stress urinary incontinence, nor is it due to weakness of the sphincter muscle. Urinary incontinence following laugh usually occurs in children between the ages of 5 and 7 years. Problems can be sustained until school age, but usually improve with increasing age [9].

Considering that giggle incontinence is a behavioral disorder and ADHD is also a neurobehavioral disorder in children, it seems that there is an association between these two disorders and treatment of each one will help to improve another. The aim of the present study was to investigate incidence of ADHD in children with giggle incontinence in comparison with normal children.

Material and Methods

The present study was conducted on children aged 5 to 18 years old referred to the pediatric clinic of Amir Kabir Hospital (Arak, Iran). All patients and their families were provided with a full explanation of the study's scope and informed consent was obtained. This study was received at the Arak Medical University Ethics Council with IR.ARAKMU.REC.1395.182 Code of Ethics.

In this study, 200 children were examined based on entry and exit criteria in two groups; Case group consists of 100 children with giggle incontinence and the control group consists of 100 healthy children. The diagnosis of giggle incontinence was performed based on history and examination by children's nephrology specialist. The diagnosis of ADHD was based on the diagnostic criteria of DSM-IV-TR and the Conner's Parent Rating Scale-48 (CPRS-48) questionnaire with sensitivity and specificity of 90.3% and 81.2% respectively. Final diagnosis of ADHD was performed by a psychiatrist [10].

The inclusion criteria for this study included age from 5 to 18 years old and giggle incontinence based on the diagnosis of nephrologist. Exclusion criteria included systemic diseases (heart failure, liver failure, renal failure, growth hormone deficiency, malabsorption, asthma, etc.), mental retardation, psychiatric disorders on interviewing and neurological disorders. Also, each patient was excluded from the study whenever they were willing to stop studying.

Patients in both groups were evaluated for the prevalence of ADHD disorder and finally the data were analyzed using SPSS (version 22.0) and independent samples t-test and chi-square tests. The significance level of all tests was determined at 5% level.

Results

The results of this study showed that the average age of the children was 7.85 ± 2.07 years. It was also observed that 48% of the totals were males and 52% of them were females. Totally 94.5% of children lived in the city and the rest were rural residents (Table 1). It was also observed in this study that 9.5% of the total number of children weighed birth weight less than 2500 g and 1% of them weighed more than 4000 g. 7.5% of children had preterm delivery births.

In the present study, 23% of children in the case group and 11% of the children in the control group had ADHD, which was statistically significant (Table 2).

Variable		Case group	Control group	p-value
Age (mean \pm SD)		7.97 \pm 2.26	7.74 \pm 1.87	0.430
Gender	Male	53 (53%)	43 (43%)	0.157
	Female	47 (47%)	57 (57%)	
Habitation	Urban	95 (95%)	94 (94%)	0.756
	Rural	5 (5%)	6 (6%)	
Father's education	Non	2 (2%)	2 (2%)	0.981
	Elementary	20 (20%)	22 (22%)	
	High school	50 (50%)	46 (46%)	
	Collage	28 (28%)	30 (30%)	
Mother's education	Non	2 (2%)	2 (2%)	0.710
	Elementary	15 (15%)	13 (13%)	
	High school	55 (55%)	53 (53%)	
	Collage	28 (28%)	32 (32%)	
Birth weight	<2499 gr	9 (9%)	10 (10%)	0.357
	2500-3999 gr	89 (89%)	90 (90%)	
	>4000 gr	2 (2%)	0 (0%)	
Gestational age	<38 week	8 (8%)	7 (7%)	0.788
	38-42 week	92 (92%)	93 (93%)	
	>42 week	0 (0%)	0 (0%)	

Table 1: Characteristics of children.

Variable		Case group	Control group	p-value
ADHD	Yes	23 (23%)	11 (11%)	0.024
	No	77 (77%)	89 (89%)	
Total		100 (100%)	100 (100%)	

Table 2: Attention deficit hyperactivity disorder in children.

Discussion

ADHD and urinary incontinence are among the most common childhood disorders, and there is evidence of a correlation between these two disorders, therefore, evaluation of the association of different types of urinary incontinence and ADHD seems necessary [11]. The aim of the present study was to investigate the relationship between ADHD disorders and giggle incontinence.

Results of our study indicated that children with and without giggle incontinence, who were similar in terms of demographic factors, delivery factors and determinants of economic status, were statistically different in the frequency and incidence ADHD.

In the study of von Gontard A et al. 9.6% of children with enuresis had ADHD symptoms, while only 3.4% of non-enuresis children showed ADHD symptoms [12].

Another study by Baeyens D and colleagues found that ADHD in children with urinary incontinence increases [13]. In a study conducted by Yousefi chajjan and colleagues, it was observed that the prevalence of Obsessive-Compulsive Disorder in children with enuresis was significantly higher than non-infected children [14]. Another study also found that the frequency of ADHD in children with infrequent voiding disorder was significantly higher than that in the control group [15]. It can be seen that the results of the recent study are almost similar to those of previous studies, which confirms the association between ADHD disorders and giggle incontinence.

Genetic studies of ADHD and nocturnal dysfunction have shown that these diseases do not have the same genetic background, and therefore the combination of these diseases does not have a genetic cause [16,17]. Combination of hyperactivity disorder with urinary incontinence disorder can lead to some clinical consequences. One of these consequences is that the treatment becomes more difficult, and these children have fewer compulsions, as well as less therapeutic responses [18,19].

There were some limitations in the recent study, one of the most important of which was the lack of completion of questionnaires and the lack of cooperation among parents of children. Other limitations of this study are the lack of examination of other psychiatric disorders in children, which are suggested to be investigated in subsequent studies.

Conclusion

According to the results of the recent study, it is concluded that there is a significant relationship between incidence of giggle incontinence and ADHD. This issue highlights the importance of screening and review of ADHD in children with giggle incontinence, vice versa.

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