Case-controlled Study

ANNALS OF MEDICINE & SURGERY

OPEN

Comparison of child abuse history in patients with and without overactive bladder: a case-control study

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Background: Child abuse is a major global concern in terms of healthcare and social welfare. Child abuse is associated with numerous physical and mental health issues, including anxiety and depression. Overactive bladder (OAB) is a bladder storage functional disease defined by urine urgency with or without urge incontinence and is frequently accompanied by frequency and nocturia. This disorder's origin is not entirely understood. Since OAB can be caused by problems of nervous system maturation or behavioural disorders, its correlation with child maltreatment is possible.

Objective: This study aimed to compare the occurrence of maltreatment in children with OAB to healthy children referred to Amirkabir hospital, Arak.

Method: This study included 100 children with overactive bladder and 100 healthy children without overactive bladder (ages 5–12 years) as case and control groups, respectively. Children referred to paediatric clinic at Amirkabir hospital in Arak, were selected as participants. Child abuse domains including psychological/emotional, physical, and neglect were diagnosed using a standardized child abuse questionnaire answered by the children. Data were analyzed by SPSS version χ^2 test, *t*-test, and Pearson's χ^2 test.

Results: The Prevalence of child maltreatment was significantly greater in the case group (31 cases) than in the control group (12 cases) ($P < 0.0001$). The psychological/emotional domain of child abuse was observed in 19 case group participants and 4 control group participants ($P = 0.001$), and the physical domain was observed in 29 case group participants and 11 control group participants ($P < 0.0001$). Despite this considerable difference, 10 and 8 children in the case and control groups, respectively, scored positively for the neglect domain ($P = 0.112$).

Conclusion: Child abuse is considerably more common in children with OAB than in healthy children, especially in the psycho-emotional and physical domains, and it is possible to prevent and treat this condition by notifying parents. Children with OAB should also be subjected to child abuse screening.

Keywords: case-control study, child abuse, child maltreatmen, lower urinary tract dysfunction, overactive bladder

Introduction

The WHO defines child abuse as a harm to the physical and mental health and well-being of a child under the age of 18 posed by his or her parents or caregivers[1]. It is classified into four types, according to the definition: physical abuse, emotional abuse, sexual abuse, and neglect[1]. About one-fourth of all children will encounter child abuse or neglect throughout their lifetime. 18% of maltreated children experience physical abuse, 78% experience neglect, and 9% experience sexual abuse[2]. Child abuse is a major global issue in terms of public health and social well-being, and it has lifelong negative physical and mental effects on its victims[3]. In many regions, child abuse is a common occurrence, yet parents have a limited understanding of any legal protections for their children[4]. It is widely acknowledged that the use of punishment, particularly physical punishment, to discipline children could have harmful effects on future generations[5]. Child abuse is related with a variety of physical and mental health problems, such as common mental disorders, post traumatic syndrome, self-injurious behaviour, personality disorder, psychosis, and sexually transmitted diseases[6-8]. Child abuse continues to be a substantial cause of paediatric morbidity

HIGHLIGHTS

- Overactive bladder (OAB) is a bladder storage functional disease defined by urine urgency with or without urge incontinence.
- This study aimed to compare the occurrence of maltreatment in children with OAB to healthy children.
- Child abuse is considerably more common in children with OAB than in healthy children, especially in the psycho-emotional and physical domains
- It is possible to prevent and treat child abuse by notifying parents.

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

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Annals of Medicine & Surgery (2023) 85:3264–3268

Received 14 April 2023; Accepted 10 May 2023

Published online 19 May 2023

http://dx.doi.org/10.1097/MS9.0000000000000859

and mortality, making identification of child abuse essential for all healthcare providers evaluating children in primary care and acute care settings[9].

Overactive bladder (OAB) is a bladder storage functional disorder characterized by the International Continence Society as urine urgency with or without urge incontinence, commonly accompanied by frequency and nocturia. This condition is prevalent within the paediatric population[10]. The reported Prevalence varies from 16.6 to 17.8% among healthy children aged 5–13 years[11]. OAB is a complex condition that is not fully understood. Although the origin is unknown, nervous system, detrusor smooth muscle, and urothelium dysfunction are all believed to contribute to overactive bladder[12]. This disorder is more likely to arise in the presence of certain risk factors (for example, being female, and getting older) as well as a number of medical problems such as depression and anxiety[13, 14]. Studies indicate that constipation is also associated with overactive bladder in children[15]. Because OAB can be caused by the nervous system maturation disorder or behavioural disorders, its association with child abuse, which is one of the causes of behavioural and psychiatric disorders in children, is likely.

Since discovering a connection between these two disorders can be useful in treating each of them and improving their prognosis , and no studies on the association between child abuse and OAB have been conducted so far, the aim of this study was to compare the incidence of child abuse in children with OAB to healthy children referred to Amirkabir Hospital in Arak.

Methods

This case-control study was conducted on 200 children aged 5–16 referred to the paediatric clinic at Amirkabir Hospital in Arak. The study included 200 children; 100 with OAB who fulfilled the inclusion criteria as a case group and 100 healthy children without OAB bladder and no history of other urinary abnormalities who had been referred to Amirkabir Hospital as outpatients for reasons such as a cold and met the inclusion criteria as a control group. OAB was described as the presence of a total of urine symptoms, including frequency (an increase in the number of urinations twice as much as before), urgency (the need to urinate quickly), and urinary incontinence (urination out of the patient's control), as well as dilated ureters, a small bladder neck, and bladder wall hypertrophy in VCUG, and also exclusion of other urinary and renal disorders. Examination and diagnosis were performed by a paediatric nephrologist.

Inclusion criteria were as follows: (1) Age range from 5 to 16. (2) No history of major depressive disorder, anxiety disorders, schizophrenia, or mental retardation. (3) Absence of a history of epilepsy, diabetes, immunodeficiency, or organ transplantation. (4) No history of significant trauma to the genital region; no history of diagnostic or treatments involving surgery on the kidneys, bladder, ureter, external urinary tract, genitals, or perineum. (5) Absence of a family history of congenital disorders, particularly the kidney and urinary tract system. (6) No chronic drug use history. Exclusion criteria included parents' refusal to continue participating in the study.

The matching method was used to select the control group such that children in both groups were matched in terms of age, sex, growth level, socioeconomic status, number of family members, and place of residence, with a standard deviation of ± 2.

After obtaining informed consent from the children's parents or guardians, the parents and their children were asked questions to complete the basic demographic and clinical information, as well as the child abuse questionnaire.

The questionnaire selected for this study is a standardized child abuse questionnaire designed by University of Arak students[16]. The questionnaire's average clarity and relevance are 80.36 and 92.5, respectively. The mean repeatability is 0.95 with intracluster correlation coefficient, and 0.92 with Cronbach's alpha. The questionnaire has been utilized in child abuse studies in Iran due to its high validity and reliability. This questionnaire examines three aspects of child abuse: psychological/emotional, physical, and neglect. A total of 26 questions were asked, with 10 representing psychological and emotional abuse, 10 representing physical abuse, and the final 6 representing neglect in this 26-item questionnaire. The questions were posed to children, and in some cases, parents were requested to assist. The responses to the questionnaire questions are never, no, yes but low (sometimes), and always. If the child answers positively (yes but low, always) to at least one of the questions in one of the aspects, the child is considered abused in that aspect.

The data were analyzed using SPSS software version 18 and descriptive statistical methods to determine the frequency and percentage of variables, as well as the mean and SD. Student *t*-test was utilized to examine quantitative variables, whereas χ^2 was utilized to examine qualitative values. Notably, Pearson's χ^2 test was utilized to analyze the association between the child abuse questionnaire's results and the study variables. Results with a P value less than 0.05 were considered significant.

The current study received ethical approval from the ethical review committee of Arak University of medical sciences.

Results

The mean age of the 200 children was 10.21 ± 3.14 years. In total, 102 boys (51%) and 98 girls (49%) were in the two groups. Table 1 and Table 2 show the basic demographic and clinical information of children and parents (or child caregivers) in both groups. The age, sex, and place of residence distributions were similar in the two groups of children. In addition, there was no significant difference between the two groups in terms of parents' education, the history of maternal illness during pregnancy, the frequency of parents' consanguinity, the average number of permanent residents in the child's place of residence, and the children's birth weight.

In the case group, 9 mothers (9%) reported exposure to high-risk agents (cigarettes, alcohol, substances, teratogenic medications) during pregnancy, while 8 mothers (8%) revealed such a history in the control group.

The responses of the two groups to the child abuse questionnaire's psychological/emotional, physical, and neglect areas are displayed in Table 3. According to the interpretation of the child abuse questionnaire, there was no significant difference between the two groups in terms of the neglect domain. In contrast, positive cases in the psychological/emotional and physical domains were significantly higher in children with OAB than in healthy children.

The Pearson's χ^2 test revealed a significant relationship between child abuse (child abuse questionnaire results) and maternal education ($P = 0.01$, $r = 0.71$), monthly family income

Table 1

Basic demographic and clinical information of children and their caregivers in case and control groups

Variable	Case group (100 children)	Control group (100 children)	*P*
Age (mean ± SD) (years)	48.14 ± 10.2	95.05 ± 9.2	0.09
Sex (%)			
Male	52	50	0.93
Female	48	50	
Father's education (%)			
Illiterate	15	14	0.42
High school	7	8	
Diplome or Associate's degree	43	41	
Bachelor's degree	19	21	
Master's degree or above	16	16	
Mother's education (%)			
Illiterate	28	29	0.08
High school	10	11	
Diplome or Associate's degree	39	37	
Bachelor's degree	13	11	
Master's degree or above	10	12	
Monthly income (%)			
Low	19	21	0.412
Moderate	49	44	
High	32	35	
Place of residence (%)			
Rural	38	31	0.64
Urban	62	69	
(Kgs)(mean ± SD)Child's birth weight	68.63 ± 3.7	63.94 ± 3.7	0.66
Child's birth age (mean ± SD) (week)	24.6 ± 5.28	47.55 ± 25.6	0.47

Table 2

Information on the people in the child's residential area and the high-risk behaviours of the child's caregivers in case and control groups

Variable	Case group (100 children)	Control group (100 children)	*P*
Maternal disease in pregnancy (%)	12	11	0.46
Maternal exposure to high-risk agents during pregnancy (%)	9	8	0.58
Parents' consanguinity (%)	29	31	0.15
No. permanent residents in the child's place of residence (mean ± SD)	23.2 ± 5.1	5.3 ± 2	0.63
Loss of parents (%)			
One	13	11	0.33
Both	6	4	
Smoking by the child's parents or caregivers (%)	32	29	0.4
Living with stepfather (%)	6	4	0.613
Living with stepmother (%)	11	9	0.712
Living with family members (%)	5	3	0.14
Lack of physical or mental health of the father (%)	16	14	0.54
Lack of physical or mental health of the father (%)	4	3	0.9

($P = 0.001$, r = 0.4), number of family members (or number of people living in the child's place of residence) ($P = 0.02$, r = 0.5), loss of one or both parents ($P = 0.002$, r = 0.41), and place of residence ($P = 0.03$,r = – 0.32) (higher in children living in rural areas(. In addition, there was a significant correlation between child abuse and living with a stepmother ($P = 0.04$, r = 0.1), living with relatives ($P = 0.0001$, r = 0.2), and father's drug addiction ($P = 0.0001$, r = 0.8). Furthermore, the correlation between child abuse and hyperactive bladder was significant ($P = 0.003$, $P = 0.5$), in contrast to the correlation between child abuse and healthy children ($P = 0.122$, r = 0.81). However, no significant relationship between child abuse and other study variables was discovered.

Discussion

According to the findings of this study, the demographic, epidemiological, and clinical baseline characteristics of children with OAB and healthy children were similar. Child abuse ($P < 0.0001$), and particularly its psychological/emotional ($P = 0.001$) and physical ($P < 0.0001$) aspects, were significantly higher in children with OAB than in healthy children. Child abuse was also found to be significantly associated with the mother's education level, the number of family members, monthly family income, loss of parents, place of residence, living with stepmother, living with relatives, and father's drug addiction in our study.

The Prevalence of child abuse is increasing in both developing and developed countries[17]. According to the WHO, the first step in preventing child abuse is to promote public awareness. The studies suggest that notifying parents and caregivers has a higher effect on lowering the occurrence of child abuse than establishing criminal punishments[1]. Given the importance of the subject, identifying individual, familial, and social factors associated with child abuse can be a helpful guide to minimizing its incidence and preventing short-term and long-term physical and psychological effects. OAB is defined as a set of urinary symptoms that include frequency, urgency, and urge incontinence[9]. Although the exact aetiology of this disease has not been determined, neurological disorders, or bladder detrusor smooth muscle disorders have been recognized as potential causes[11]. Studies indicate that OAB and associated urinary disorders have been associated with a larger disorder that affects multiple organs in the body, including neuropsychiatric disorders, mood disorders, and behavioural issues[18]. Child abuse might be considered one of the causes of urinary problems due to its extensive impact on children's psychological diseases.

Table 3

Percentage of child abuse aspects in both groups with and without OAB

Aspect	Case group (100 children)	Control group (100 children)	*P*
Psychological/emotional	19	4	0.001
Physical	29	11	< 0.0001
Neglect	10	8	0.112
Child abuse (all 3 aspects)	31	12	< 0.0001

OAB, overactive bladder.

Numerous studies have been undertaken thus far to study child abuse and assess its Prevalence in various geographic regions. According to a 2015 report issued in the United States, 9.2% of American children were abused. In addition, 7.3% of the cases were attributed to negligence, 17.2% to physical abuse, and 8.4% to sexual abuse[19]. According to our findings, child maltreatment in the neglect and physical domains occurred in 8% and 11% of healthy children, respectively.

Akmatov *et al.*[20] conducted a study to examine and assess the influencing factors of various types of child abuse in different countries. The study of 124 916 children was conducted in 28 developing countries and their suburbs using the Multiple Indicator Cluster Surveys (MICS) reports. The results revealed that, on average, up to 83% of children in continental African countries experienced moderate to severe psychological and physical abuse, whereas this rate is significantly lower in European countries (up to 46%). This study showed that child abuse has a significant correlation with large families and average to low monthly income. Our findings on the association between child abuse and the number of family members and monthly family income were consistent with those of this study. Furthermore, in our study, the percentage of child maltreatment in the group of healthy children was 12%.

Exploring the association between urinary and faecal disorders and child abuse is due to theories based on psychological reasons for the development of these disorders in children. According to some studies, the relationship between these disorders and child abuse, due to their possible impact on each other, can be helpful in treating both of these problems to improve patients' prognosis[21,22]. However, few studies in this field have been undertaken so far.

A study undertaken by Anderson and colleagues assessed the Prevalence of aberrant urogenital and gastrointestinal findings in children with sexual abuse complaints. In this study, 13% of 5–9 year olds, 14.7% of 10–16 year olds, and 18.2% of 17–18 year olds suspected of being abused exhibited enuresis, whereas encopresis was reported in 2.3% of them[23]. Rajindrajith and colleagues conducted a study into the association between functional constipation and child abuse. The study comprised 1792 children with an average age of 14.4 years. The findings revealed that the Prevalence of constipation is considerably higher in children with a history of any sort of child abuse than in children without a history of child abuse[24]. Yildirim and colleagues, in a study of urinary tract symptoms in children subjected to child sexual abuse, discovered that the frequencies of nocturnal enuresis (24.7%), diurnal incontinence (17.1%), urgency (22.9%), and continence manoeuvres (20%) in the children with a history of sexual touch were higher than those in the sexual penetration group (5.9%, 0%, 0%, 17.6%, and 5.9%, respectively). In the sexually abused group, the incontinence rate was 30.76%, while in the control group, it was 23.3%. The difference was not significant, although[25].

The results of our study were similar to the mentioned studies, which indicated a higher incidence of defecation problems and urinary incontinence in mistreated children. The association between urinary disorders such as OAB in children and child abuse can be considered possible based on the results of the present study and other studies in this field. However, due to differences in sample size and some of the results, as well as a general lack of studies in this regard, it is recommended that additional studies be conducted, taking into account more clinical factors and larger sample size in other areas, in order to reach a comprehensive conclusion.

One of the limitations of our study was that the sexual aspect of child abuse was not examined in the study's questionnaire. It is advisable that future studies focus on this area in order to build preventative strategies and improve the prognosis of child abuse victims, despite the difficulties that may occur in the way of onesty in answering questions related to the sexual aspect of child abuse.

Conclusion

Child abuse, particularly in the psycho-emotional and physical domains, is significantly greater in children with OAB than in healthy children, and it is feasible to prevent and treat this disorder by alerting parents. Furthermore, the findings indicate that children with OAB should be screened for child abuse.

Ethics approval and consent to participate

The Ethics Committee of the Arak University of Medical Sciences granted legal and ethical approval with the ethics number of IR.ARAKMU.REC.1394.356.

Consent for publication

Not applicable.

Source of funding

This research did not receive any funding.

Author contribution

All authors in the article have made significant contributions, and all authors agree on the manuscript's content.

Conflicts of interest disclosure

The authors declare that they have no competing interests.

Research registration unique identifying number (UIN)

NA.

Guarantor

Roham Sarmadian.

Provenance and peer review

Not commissioned, externally peer-review.

Availability of data and materials

The datasets used and/or analyzed during the current study will be provided upon request form corresponding author.

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