Psychiatric and Other Medical Conditions in Children with Enuresis

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Abstract: Enuresis is defined in the DSM-V as the repeated voiding of urine into bed or clothes at least twice a week for at least three consecutive months in a child who is at least 5 years of age. Prevalence of enuresis in Egyptian children (6-12 years old) was ranged from 8.29% to 17.5%. Enuresis is classified as nocturnal, diurnal, and combined types. The nocturnal-only subtype of enuresis, sometimes referred to as monosymptomatic enuresis, is the most common subtype. Etiology of NE is still controversial. Delay of nervous system maturation, low bladder capacity, abnormalities of the urinary tract, inadequate secretion of antidiuretic hormone, genetic factors, immature waking mechanisms, deep sleep, neurologic bladder problems, bacteriuria, diet, socioeconomic status, and psychogenic factors were suggested as etiologic factors. So, the aim of our study was to determine the possible psychiatric and other medical disorders found in enuretic children above 5 years of age. Our cross sectional study was done on 150 Egyptian children attending Pediatric outpatient clinics in Damietta governorate with nocturnal enuresis with the mean age of studied cases was 7.05 years. After full history taking, general and local examinations, they underwent CBCL and MINI-KID scores assessment.

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1. Introduction

Childhood enuresis defined as the voluntary or involuntary repeated discharge of urine into clothes or bed after a developmental age when bladder control should be established. It is a common behavioral condition reported in millions of children worldwide **(Monge Zamorano et al., 2005).** Most children have obtained bladder control during the day and night by age of five years. The diagnosis of enuresis is made when urine is voided twice a week for at least three consecutive months or clinically significant distress occurs in areas of the child's life as a result of the wetting **(Boris and Dalton, 2007).**

Enuresis is one of the most common disorders in childhood and adolescence and is a frequent manifestation with important psychological and social consequences (**Can et al., 2004).** Bedwetting may be divided into the primary type, in which the child has never been dry at night, and secondary type, in which a child who has been continent for at least 6 months begins to wet the bed again **(Robson, 2009)**.

Primary enuresis represents approximately 90% of all cases. Secondary enuresis most frequently occurs between the ages of 5 and 8 years and is more common in late school-aged children. Secondary enuresis may occur as a result of stressful environmental events, such as move to a new house, marital conflict, birth of a sibling, or death in the family. Such bedwetting is typically more transitory and has a better prognosis than primary enuresis **(Boris and Dalton, 2007).**

Nocturnal enuresis is urinary incontinence for nighttime, beyond five years. The classical definition of mono-symptomatic nocturnal enuresis assumes a clinical situation without daytime incontinence. Nocturnal enuresis results when the bladder is able to fill to its functional capacity and contracts reflexively during sleep. While nocturnal enuresis is normal in infants, a series of maturational processes, hormonal, neural and structural, results in nocturnal urinary continence by age 5 years in most children. Maturational delay or pathological alteration in one or more of these processes can results in persistent primary enuresis or secondary onset of nocturnal enuresis, with a possible presence of sleep troubles **(Chandra et al., 2004).**

Enuretic children have the sense of social difference and isolation. Also, some of them do express low self-esteem **(Lottmann and Alova, 2007).**

Aim of the Work

The aim of this work was to determine the possible psychiatric and other medical disorders found in enuretic children above 5 years of age.

2. Patients and Methods

(A) Patients:-

This cross sectional study was done on 150 Egyptian children selected from pediatric and psychiatric outpatient clinics, Al-Azhar University Hospital- Damietta, over a period from August 2016 to May 2017.

The study was approved by the Local Ethical Committee of the Al-Azhar University Hospital-Damietta. In addition, written informed consent obtained from caregivers to enroll their children in the study after explaining how this measurements and questionnaires being used in this study have a significant role in diagnosis and management of their children and accepted their sharing in the study.

Inclusion criteria:

- Age: Children above the age of 5 years complaining from enuresisaccording to DSM-5.
- Gender: both sexes.

Exclusion criteria:

- Children with chronic medical condition.
- Children taking medications for which enuresis is a possible side effect e.g. diuretics.

(B) **Methods**: -

All patients were subjected to the following:

A) Clinically

- **Comprehensive history taking with stress on:**
  - Residence, family stress, family history of enuresis, duration and no of bed wets per week, difficult awakening of sleep, drinking during the night.
  - Symptoms suggestive of dysfunctional voiding (holding maneuvers and interrupted stream).
  - History of recurrent urinary tract infections and daytime symptoms (urgency, frequency, leakage and burning micturition).
  - History of medical treatment and previous psychiatric advice.
- **Comprehensive general and local examination with stress on:**
  - Full psychiatric and mental status examination in addition to physical and neurological examination.
  - Other examination to assess any medical comorbidity.

B) Laboratory investigations:

- Urine analysis (microscopic examination for hematuria and pyuria).
- Urine culture (in cases of pyuria).

C) Psychological examination:

Psychiatric examination by using Childhood behavior checklist (CBCL) and Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID) scores:

A validated Arabic version of the MINI-KID (Sheehan *et al.*, 2010; Ghanem, 1998) was administered to detect comorbid psychiatric diagnoses in participating children.

The Checklists were filled by parents for their offspring to detect:

- Generalized anxiety disorders.
- Social anxiety disorder (SAD).
- Attention deficit hyperactivity disorder (ADHD).
- Dysthymia.
- Obsessive Compulsive Disorder (OCD).
- Learning disabilities.

Statistical Analysis:

The statistical analysis of data was done using excel program (Microsoft Office 2013) and SPSS (statistical package for social science) program (SPSS, Inc., Chicago, IL) version 20.

Qualitative data were presented as frequency and percentage. Chi square and Fisher's exact tests were used to compare groups. Quantitative data were presented by mean, SD or median and range. Comparisons between two groups were done using t-test (for parametric) or Man Whitney (for non-parametric), while comparison between more than two groups were done using ANOVA or Kruskal Wallis tests (for non-parametric).

N.B: p is significant if <0.05 at confidence interval 95%.

3. Results:

In the present work, In the present work, the mean age of studied cases was 7.05 years. Males (57.3%) were and urban residents were (52%), In the present work, the majority of studied cases had primary nocturnal enuresis (68%). Only 19.3% had positive family history. Finally, the average number of bed wets per week was 3.59 days, In the present work, the most frequent factor associated with enuresis among studied children was the presence of family stress (52%); the most frequent family stress was the presence of physical or verbal punishment. Difficult awakening of sleep (42%) and drinking during the night (40%) were the next common factors. Dysfunctional voiding and adenoids were reported among 17.3% and 10% of cases respectively. As regard to medical disorders among studied cases, the majority of cases had no medical diseases, while the most frequent disorder was adenoids (10.7%) followed by bronchial asthma (8.7%) and constipation (7.3%). In the present study, the most frequent psychiatric disorder was generalized anxiety disorder (10%), followed by social anxiety disorder (8.7%) and ADHD (4.7%). Learning disabilities was reported among 7.3% of cases. there was no statistically significant difference between types of enuresis as regard medical disorders, SAD and dysthymia. Generalized anxiety

disorders was more frequent among secondary type with statistically significant difference; while learning disabilities and ADHD were more frequent among primary type, but without statistically significant difference. patients with both generalized and social anxiety disorders had statistically significant higher frequency of family stress.

Table (1): Comparison between types of enuresis in relation to medical and psychiatric disorders associated with enuresis

Variable	Type of enuresis		P
	Primary (n=102)	Secondary (n=48)	
Adenoids	13	3	0.27
Bronchial asthma	10	3	0.55
Constipation	8	3	1
Allergic rhinitis	4	0	0.306
Generalized anxiety disorders	3	12	< 0.001*
Social anxiety disorder (SAD)	8	5	0.75
ADHD	7	0	0.097
Dysthymia	2	3	0.33
OCD	2	0	1
Learning disabilities	10	1	0.175

*: significant; ADHD: Attention deficit hyperactivity disorder, OCD: Obsessive Compulsive Disorder

Table (2): Number of bed wets per week among patients with medical and psychiatric disorders associated with enuresis

Variable		Bed wets per week (mean±SD)	P
Adenoids	Yes No	4.31±1.49 3.57±1.36	0.047*
Bronchial asthma	Yes No	3.54±1.13 3.66±1.42	0.97
Constipation	Yes No	3.64±1.75 3.65±1.37	0.66
Allergic rhinitis	Yes No	4.5±1 3.63±1.39	0.13
Generalized anxiety disorders	Yes No	4.4±1.68 3.57±1.34	0.044*
Social anxiety disorder (SAD)	Yes No	3.15±1.35 3.7±1.39	0.124
ADHD	Yes No	2.86±0.38 3.69±1.41	0.127
Dysthymia	Yes No	3.8±2.49 3.65±1.35	0.655
OCD	Yes No	4.5±0.7 3.64±1.39	0.234
Learning disabilities	Yes No	3.45±1.29 3.67±1.4	0.702

4. Discussion:

Our results show that as regard to medical disorders among studied cases, the majority of cases (70.7%) had no medical diseases, while the most frequent disorder was adenoids (10.7%) followed by bronchial asthma (8.7%), constipation (7.3%), allergic rhinitis (2.7%).

Upper airway obstruction (UAO) is estimated to be seen at 27% of pediatric population. Nasal and/or oropharyngeal pathologies may be the reason of UAO. The most common cause is adenotonsillar hypertrophy **(Ozler and Ozler, 2014).** NE is reported in 8–47% of children with UAO and the improvement rate of enuresis after surgery in these patients is up to 76% **(Brooks et al., 2003; Nevéus et al., 2006).**

Pediatric enuresis appears to be strongly associated with ADHD, as described by **Baeyens *et al., (2005)*** These authors reported a prevalence of 15% of combined ADHD (inattentive/hyperactive) in a population of children with enuresis and 22.5% of

predominantly inattentive ADHD, while in the general pediatric population the prevalence of ADHD ranged between 3-5% **(American Psychiatric Association, 2013).**

In a British population-based study of 8242 children aged 7 years, those with enuresis also suffered from ADHD (17.6%), ODD (8.8%), conduct disorders (CDs) (8.5%), specific phobia (14.1%), generalized anxiety (10.5%), depression (14.2%), separation anxiety (8.0%), and social anxiety **(Joinson et al., 2007).** ADHD was especially associated with enuresis (odds ratio 2.88) **(Shreeram et al., 2009).**

In our study, the most frequent factor associated with enuresis among studied children was the presence of family stress (52%); the most frequent family stress was the presence of physical or verbal punishment (38%), new baby (7.3%), death of family member (4%) and divorced parents (2.6%).

The analysis of the present study focused on the presence of family troubles of NE cases as an effective social and psychological issue affecting the epidemiology of nocturnal enuresis. Among our families 52% suffer from family troubles. The same was also reported by **Carman et al. 2008; Al-Zaben et al., 2015 and Van Herzeele et al., 2015**, who mentioned that there is a close relationship between disturbed family environment and the frequency of enuresis, and this prevalence is 49.4% among disturbed families. On the other hand, these results are not in agreement with another study in Assiut city, Egypt **(Hammad Emad et al., 2005);** where there was no significant difference between the enuretics and non-enuretics as regards family troubles (parents are living together or not).

Conclusion and Recommendations:

Enuresis is a pediatric public health problem that is associated with smaller age, family history of enuresis, history of urinary tract infection and respiratory troubles in addition to a lot of emotional and psychological problems. It leads to low self-esteem, some secondary psychological problems and low school success. So it is recommended that children should be evaluated for psychological disorder as a differential diagnosis.

Children with enuresis are in greater need for mental health care. The impact of these dysfunctions also appears to affect parents with significant levels of stress.

Programs for raising parent awareness regarding nocturnal enuresis.

Routine medical examination and laboratory investigations of children for early evaluation of the problem and proper treatment of such cases.

Upper respiratory tract evaluation should be in mind during management of a child with NE.

Parent's reaction toward the child should be supportive and encouraging him to pass this state.

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