

Nocturnal Enuresis

Arni, Tri Budiati, Mahamah, Hafiz Abubakar, Rafita Ramayati and Rusdi Djas

(Department of Child Health, Medical School University of North Sumatera -
Dr. Pirngadi Hospital, Medan)

ABSTRACT From November 1, 1992, to February 1, 1993, a cross-sectional study was conducted on patients with nocturnal enuresis who attended to the Child Clinic of Dr. Pirngadi Hospital, Medan, with the age ranging from 4 to 15 years. All patients were interviewed by using questionnaires, and the physical and laboratory examinations were done. Enuresis is defined as an involuntary urination and occurring repeatedly in children of > 4 years, with the minimum of 2 times/month and no indicators of organic disturbances. Of the 168 patients with the age of 4 to 15 years, 70 (41.6%) were found with nocturnal enuresis; 38 (54.2%) were males and 32 (45.8%) females. Most of the patients 33 patients (47.1%) were found in the age group of 4-5 years. All parents of the patients suggested that their children had enuresis without familial complaints because they believe that it would stop gradually with the increases in age. No significant difference was found in the socio-economic status between the enuretic and non-enuretic children. The two groups showed no significant differences in growth and urinary tract infection was not noted. [Paediatr Indones 1995; 35:200-204]

Introduction

Enuresis is a problem often discussed and there are various opinions in its incidence and management. Various disciplines of science are involved in the management, depending on what point it is viewed from, either psychosocial, urologic, or educational view points.¹ In

general population, especially in mothers, enuresis often results in confusion and restlessness among the parents and their children; because if enuresis becomes permanent to the adult life, it will cause neurosis.² However, there are still many parents of mothers who let this condition without trying to have a consultation with a physician, for example; the main reasons are in general that enuresis will stop by itself with the increase in age of the child.²⁻⁴

Enuresis is rooted from a Greek language, *enourein*, meaning "to void urine"

Accepted for publication: May 16, 1995. Author's address: Arni, MD, Department of Child Health, Medical School, North Sumatra University, Medan, Indonesia.

It is not easy to make a real appropriate definition of enuresis.^{1,2} Enuresis is an involuntary urination occurring repeatedly in the age group of more than 5 years with a minimal frequency of 2 times/month without organic abnormalities.^{2,5} The range of age which is estimated for enuresis in general is 4-5 years as it is associated with the organic maturity of urinary tract.^{2,4,6,7}

Based on the incidence, enuresis is defined primary when the child never experiences bed-drying because nocturnal enuresis always occurs. Enuresis is defined secondary when the child still has nocturnal enuresis in the age of > 5 years and the child had previously no enuresis for 6-12 months.^{2,5,8,9-12} Based on the time of occurrence, enuresis is defined diurnal when it occurs in the day time, and nocturnal when in the night.^{1,6}

The successful management of enuresis is, in addition to the use of instruments and drugs, determined by the attitudes of the child, parents and the doctor.^{1,5,13}

Enuresis tend to be more frequent in sons than in daughters. In the low socio-economic group, the incidence is higher than that in the good social-economic group.^{1,3,5,9,10} The prevalence of enuresis is estimated to be variable between one and the other countries where are incidence is higher in the developing countries than that in the developed countries.¹

It is generally accepted that nocturnal enuresis occurs in 15% to 20% of 5-year old children, 5% in 10 years, and 1% in 15 years. Spontaneous remission of enuresis is estimated for 15% every year of increase in the child's age.^{6,9,10,14}

This study was designed to asses the prevalence of nocturnal enuresis and the relationship to social-economic status, suspected urinary tract infections, growth disturbance and whether the parents regard that enuresis is a problem, conducted in the Sick Child Clinic of Department of Child Health, Dr. Pirngadi Hospital, Medan.

Methods

This study was conducted cross-sectionally in the 4 to 5 year old children who presented with nocturnal enuresis in the Sick Children Clinic of Dr. Pirngadi Hospital, Medan, from November 1, 1992, to February 1, 1993. Data were collected using questionnaires where the secondary data needed were obtained from the parents or family members who took the patients to the hospital. Definitions and protocols used in this study are as follows:

Enuresis is the involuntary or unnecessary urination occurring repeatedly at the age of 4 years, without organic disturbance or urinary abnormality, with the minimal frequency 2 times monthly. The exclusion of organic disturbance or urinary abnormality is defined by history and physical examination as well as urinalysis. Nocturnal enuresis is defined as enuresis occurring in the night. Diurnal enuresis is defined as enuresis occurring in the day time. Normal children are defined by their daily activities, with nutritional standard defined by the Department of Health, Republic of Indonesia. The abnormality of growth is defined if the body weight (kg) divided by height

(cm) x 100% is more than the standard for nutrition defined by the Department of Health, Republic of Indonesia.¹⁵ Body weight is measured using detecto-medic instrument with the sensitivity of 0.1 kg and the body length is measured using the same instrument. The physical examination is done as usual.

Urine Examination It is done using Dipstick Multistick of Armens. Suspected urinary tract infection (UTI) is defined as nitrite and leukocyte-esterase in the patient's fresh urine and clinical symptoms of urinary tract infection are present. The socio-economic status is valued indirectly using questionnaires with the scoring modified by Bistok Saing, namely: Low socio-economic status (score 8-14), moderate (scores 15-19), high (>19).

Data were tabulated, and were analyzed Chi-square test. Value of $p < 0.05$ is considered to be significant.

Results

During the study, November 1, 1992 to February 1, 1993, there were 168 cases of children complying with the criteria of subjects in this study. Of the 168 children studied, 70 children (41.6%) had enuresis and 98 (58.4%) did not (see Table 1).

There age groups with the high percentage in this study included 63 children (90%), and the highest was found in the group of 4-5 years (47.1%). There age-groups with low percentage in this study included 7 children (10%), and the lowest was found in the group of 14-15 years (Table 2). The highest incidence of enuresis was found in the age group of 4-5

years, consisted of 18 sons (25.7%) and 15 daughters (21.4%), and in the age group of 14-15 years, no patient with enuresis was found.

Table 1. Database of the patients

Patient	N	Male	Female	96
Enuresis	70	38	32	41.6
Non enuresis	98	43	55	58.4
Total	168	81	87	100

Table 2. Percentage of enuresis based on age groups

Age (year)	N	96
4 - 5	33	47.1
6 - 7	18	25.8
8 - 9	12	17.1
10 - 11	4	5.7
12 - 13	3	4.3
14 - 15	0	0
Total	70	100

Table 3. Distribution of enuresis with socio-economic class

Patient	Socioeconomic Class				Total
	Low		Moderate / High		
	N	%	N	%	
Enuresis	16	22.8	54	77.2	70
Non enuresis	11	11.2	87	88.8	98
Total	27	16.1	141	83.9	168

The socioeconomic status of 70 children with enuresis were low in 16 children (22.8%); moderate to high in 54

(77.2%). No significant difference in social-economic states between the enuretic and non-enuretic groups. Growth abnormality was found in 27 children (38.5%) while the remaining 43 children (61.5%) did not have any growth disturbance. No significant difference in growth disturbance between the enuresis and non enuresis groups was found and no urinary tract infection was found in the enuresis or non-enuresis group so that no statistical analysis was available. The relationship between enuresis and parental care could not be evaluated statistically.

Table 4. Distribution of enuresis with socio-economic class

Patient	Socio-economic Class				Total
	Low		Moderate / High		
	Yes	%	No	%	
Enuresis	27	38.5	43	61.5	70
Non enuresis	34	34.6	64	65.4	98
Total	61	36.3	107	63.7	168

Discussion

In this study, the number of patients with enuresis was found higher in three age-groups, and the highest was in the age of 4-5 years for 33 (47.1%) patients (Table 2). This figure is higher than that of Rushton et al⁹ who reported that the prevalence of enuresis in the age group of 5 years was 15-20%; while Meadow reported that the prevalence of enuresis in the age group of 5 years was 10-15%.⁶

In the literature, that increase in age

may decrease the incidence of enuresis but not all cases recovered from the condition. Those who have no recovery, when they remain having their enuresis conditions until adult life, neurosis will develop,² and appropriate management will therefore be necessary. The lowest prevalence of enuresis among these age-groups was found in the age group of 14-15 years (Table 2). This study shows the presence of decreased prevalence of enuresis with the increase in age. This is in accordance with the literature that the prevalence of enuresis in the age group of 10 years is decreased to 5%; while in the older patients it is about 1%.

Forsythe and Redmond (1974) in their study on 1129 children with enuresis found 15% decrease in annual prevalence according to each age group.¹ This study showed a difference in sexes, where 38 (54.2%) were sons and 32 (45.8%) were daughters. Baldew (1991) reported that the prevalence of enuresis was higher in males than that in females with the male-female ratio of 2 : 1. Higher prevalence of enuresis in males is due to the late ability to control the emptiness of bladder.⁵

This study showed the male-female ratio of 1.2 : 1 in children with enuresis, and this is different from that reported by the other investigators who reported the male-female ratio of 2 : 1 (Baldew) and 4 : 1 (Wagner). No significant difference in the socio-economic states between the enuretic and non-enuretic children was found in this study ($p > 0.05$).

The author finds that enuresis in the patients is not associated with the socio-economic states, and this is in accordance with the study by Onpel (1968), Rutter (1973) who suggested that the

relationship between enuresis and socio-economic states is very weak or absent.¹ However, the other author, based on the data from the Continuous Registration of Morbidities, Nijmees University, Huisartsen Institute (1971-1976), found that the prevalence of enuresis is higher in the low socio-economic group.¹

A child is defined having growth abnormality when the body weight is less than 80% of ideal body weight.¹⁵ With this criterion, this study did not show significant difference in growth between the enuretic and non enuretic children ($p > 0.005$).

Enuresis is commonly accompanied by urinary tract infection, especially in daughters.¹ This study showed no urinary tract infection in the two groups; but, Forysthe and Redmans (1974) found the urinary tract infection in less than 1%.^{1,10} Parental care for enuresis, in this study, was not evaluated statistically because almost all of the parents who visited the Sick Child Clinic were not for enuresis suffered by their children but for other disease. However, a general impression is that parents have the opinion that enuresis in children is a usual condition.

In summary, our series of 168 children with enuresis shows that enuresis was found in 47.1% in children of 4-5 years of age. There was no association between enuresis and socioeconomic status, growth retardation, or urinary tract infection. Furthermore, all parents of the enuretic children did not have specific measure to treat enuresis in their children.

References

1. Baldew IM, Scholtmeijer RJ. Enuresis. Jakarta: EGC, 1991;1-96.

2. Suropto B. Penanganan enuresis fungsional. *Maj Psikiatri* 1990; 23: 41-7.
3. Ramayati R. Nocturnal enuresis. *Paediatr Indones* 1983;23:74-84.
4. Jureidini K. Enuresis, helping the patient and parents. *J Pediatr Obst Gynaecol* 1984;19-22.
5. Malawat NAAF, Ardiningsih U. Enuresis. *Majalah Psikiatri* 1991; 24:39-53.
6. Meadow R. Childhood enuresis. *Medicine Internat* 1991: 3585-8.
7. Saffner D. Enuresis. In: Rutter M, Hersov L, eds. *Child and adolescent psychiatry; modern approaches*; 2nd ed. Oxford: Black Well Scientific Publ, 1985;465-81.
8. Foye II, Sulkes S. Development and Behavioral Pediatrics In Behrman RE, Kliegman RM, Eds. *Essential of pediatrics* WB Saunders Company, Philadelphia 1990; 34-5.
9. Rusthon HG. Nocturnal enuresis: epidemiology, evaluation and currently available treatment options. *J Pediatr* 1989; 114:619-96.
10. Gautheir, Edelman, CM Barnett HL. Enuresis and other forms of abnormal urination. In: *Nephrology and urology for the pediatrician*. Boston: Little Brown & Co. 1982; 65-72.
11. Demaso DR, Rappaport IA. Behaviour. In: Graft MD, ed. *Manual of pediatric therapeutic*; 5th ed. Little Brown & Co., Boston. 1994;541-57.
12. Forman MA, Kersch Gaum WE, Hetzrecker WH. Psychosocial problems. In: *Nelson textbook pediatrics* 14th. Philadelphia: Saunders Co., 1992;54-8.
13. Wagner W. A controlled comparison of two treatments for nocturnal enuresis. *J Pediatrics* 1982; 101 : 2 : 302 - 307.
14. Saing B. Anthropometry in new born. *Paediatr Indonesia* 1977; 17:299-304.
15. DEPKES RI. *Pedoman Ringkas Cara Pengukuran Anthropometrik dan Penentuan Keadaan Gizi*, Puslitbang Gizi, Badan Penelitian dan Pengembangan Kesehatan, Bogor 1980.