



ELSEVIER

Infrequent enuresis, the uninvestigated majority comparisons between children with enuresis of varying severity



Maria Cederblad^a, Anna Sarkadi^a, Gunn Engvall^{a,b}, Tryggve Nevéus^a

^aDepartment of Women's and Children's Health, Uppsala University, Uppsala, Sweden

^bDepartment of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden

Correspondence to:
M. Cederblad, Department of Women's and Children's Health, Uppsala University, SHS vårdcentrum, Box 609, SE-751 25 Uppsala, Sweden.

maria.cederblad@kbh.uu.se
(M. Cederblad)

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Summary

Objective

The main objective was to compare children with frequent enuresis (FE) and children with infrequent enuresis (IE) using anamnestic data and variables related to bladder and kidney function. A secondary aim was to look at the group of children who wet their beds every single night, a phenomenon we chose to call constant enuresis (CE).

Subjects and methods

The parents recorded the number of wet and dry nights for a period of 14 days, and measured the voided volumes as well as nocturnal urine production for 48 h. History data relevant to bladder and bowel function was also recorded.

Results

The children could be grouped as follows: IE, $n = 14$; FE, $n = 18$; and CE, $n = 22$. The children with IE were slightly older than the other groups, IE mean 7.57; FE mean 6.22; CE, mean 6.56 ($p = 0.004$). When comparing the groups in terms of the measured parameters, only one significant difference was found: the FE group had larger average daytime voided volumes, but only when the first morning void was included. The only significantly differing anamnestic variable was previous daytime incontinence, which was more common among the children in the IE group.

Conclusions

When comparing children with varying enuresis severity, no major differences regarding bladder function and urine production were found. Furthermore, children with infrequent enuresis tend to be slightly older when they seek medical help.

Introduction

Nocturnal enuresis (NE) is a common condition among children and adolescents, afflicting approximately 10% of all 6-year-olds and 5% of all 10-year-olds [1–3]. The condition can be both socially and psychologically burdensome for the child, as well as demanding for the parents [4,5].

NE has three main underlying causes, each with a varying degree of influence. The factor most bed-wetting children share is that they are difficult to wake up and therefore sleep through the signals from the bladder [2,6]. The reason the child does not wake up by the expanding or contracting bladder could be a disturbance in the area around locus coeruleus in the upper pons, affecting arousal mechanisms [7–9]. Other factors common to many children with enuresis are that they exhibit nocturnal polyuria [10,11] or suffer from nocturnal detrusor overactivity [11]. This means that the bladder either becomes full before morning or tends to contract before it is full. What distinguishes enuretic children with detrusor overactivity is that they often, but not always, have daytime symptoms, such as urgency or daytime incontinence, in addition to their enuresis. Detrusor overactivity can be isolated or associated with constipation [12]. Not all children become dry by the recommended first-line therapies, that is the enuresis alarm and desmopressin [13].

According to the updated guidelines on current lower urinary tract terminology by the International Children's Continence Society (ICCS) (14) enuresis is defined as frequent (FE) if the number of wet nights per week is ≥ 4 . Fewer than four enuretic episodes per week thus means that the enuresis is infrequent (IE). This update is important, since the lack of an agreed definition has delayed the examination of the large group of children with IE. So far, only very few studies have explicitly examined these children [15–17].

In an extensive survey ($N = 14,000$) by Butler et al. [18], the conclusions were that more than 80% of bedwetting children around 7.5 years of age had the infrequent type and that the long-term prognosis was generally better among these children. In clinical practice, parents of children with IE often report that whether the child has a wet night or not can sometimes be influenced by an external factor – for example that the child “never wets the bed when sleeping over at grandmas house”. To have IE can be as disturbing for the child and the parents as it is for those who wet their bed every night. The irregularity can create insecurity and frustration about not knowing whether a wet night is to be expected or not. During dry periods many children and parents believe that the enuresis is gone for good, and can then get very disappointed when the wet nights return.

In addition, there is a third subgroup of interest, namely those who never experience dry nights: even less is known about these children [15].

During the recruitment process of a treatment study, which will be published separately, it was found that many children wet their beds less than 50% of the nights – that is, they had IE – when asked to complete a voiding chart, even though the parents reported that the children usually wet their beds most nights prior to the recruitment into the

study. This gave the impetus for us to look specifically at these children.

Thus, the primary purpose of this study was to compare children with FE and children with IE using anamnestic data and variables related to bladder and kidney function. The hypothesis was that children with IE, as a group, have a less overactive bladder and/or less nocturnal polyuria than those with FE. Furthermore, we intended to look at the group of children who wet their beds every single night, a phenomenon we chose to call constant enuresis (CE).

Methods

Participants

Children were recruited from paediatric outpatient clinics and through newspaper advertising. The children were 6 years of age or older, with enuresis but no daytime incontinence. They did not have any concurrent disorders or handicaps and had not been previously treated with the enuresis alarm or second-line antienuresis therapies, such as anticholinergics or antidepressants.

Procedure

The parents were interviewed about their child's enuresis. Every child went through a physical examination in order to exclude significant comorbidities. If constipation was present, it was treated, using mini-enemas followed by bulk laxatives. Non-invasive urodynamic investigations, in the form of flowmetry and residual urine volume measurements, were performed. The child, together with his/her parents, recorded the number of wet and dry nights in a bladder diary during a period of 14 days. During 48 h the child was asked to measure the voided volumes during the days, and the family assessed nocturnal urine production by weighing the sheet covers or the diapers in the evening and the subsequent morning (Table 1). Children who recorded seven wet nights or fewer in 2 weeks were assigned to the infrequent enuresis (IE), and children who had between eight and 13 wet nights over 14 days were sorted into the frequent enuresis (FE) group. In a further subdivision, children with no dry nights formed the constant enuresis group (CE).

Data analysis

The data was analysed using SPSS (Statistical Package for the Social Sciences) version 19. To determine whether there were any significant differences between the three groups (IE, FE, CE), chi-square and the Fisher exact tests were used for the categorical variables and ANOVA – with Bonferroni corrections for multiple comparisons – for the scale variables. The significance level was set to 95% ($p < 0.05$).

Ethical aspects

The study was conducted according to the principles of the Declaration of Helsinki and was approved by the Ethical

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