

The efficacy of an enuresis alarm in monosymptomatic nocturnal enuresis

Özgür B C, Özgür S, Doğan V, Örün U A

ABSTRACT

Introduction: Monosymptomatic nocturnal enuresis (MNE) is a frequent problem in children older than five years of age. Of the various treatment options, the enuresis alarm has been widely advocated for treating nocturnal enuresis. This study was designed to evaluate the success rates of the enuretic alarm device in patients with MNE.

Methods: 40 patients who had significant MNE (three or more wet nights per week) were included. They used an enuretic alarm for 12 weeks initially. If a relapse was observed, reusage of the device was provided. A success criterion was defined as “14 consecutive dry nights” and a relapse criterion was “more than one wet night a week”.

Results: The patients’ mean age was 8.1 (range 6–16) years and the mean follow-up time was 10.2 (range 6–19) months. 27 patients became dry at night at the end of three months. In the follow-up period, a relapse was observed in 66.7 percent of the initial responders. For recovery, 14 patients started to reuse the device, and seven of them responded positively. At the end of the treatment, a total of 13 of the patients had benefited from the enuretic alarm.

Conclusion: During the follow-up, the enuretic alarm device provided acceptable initial and long-term complete dryness in patients with primary nocturnal enuresis. Without the need for expensive pharmacological intervention, the alarm treatment is an effective choice for children with nocturnal enuresis.

Keywords: enuresis alarm, monosymptomatic nocturnal enuresis, nocturnal enuresis, primary nocturnal enuresis

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INTRODUCTION

Monosymptomatic nocturnal enuresis (MNE) is a very

common clinical problem that affects up to 20% of children at five years of age, and nearly up to 2% of young adults. It can be defined as the involuntary voiding during sleep beyond the age of five years when night-time bladder control is expected. This very common clinical problem may be frustrating to the affected children and their parents.⁽¹⁾ The literature reports a variety of potential treatments (e.g. enuresis alarms, imipramine, desmopressin, oxybutinin, and complex regimens such as dry-bed training). The present study was conducted to evaluate the success rates of alarm therapy on nocturnal enuresis.

METHODS

The trial was conducted in healthy children aged 6–16 years, referred to the urology or paediatric clinics of two different centres, for significant MNE (defined as three or more wet nights per week). The female/male ratio was 1:2. After detailed history-taking and careful physical examination, patients with obvious growth retardation, positive urinalysis and positive urine cultures were excluded. Both the parent and child were given an explanation of the treatment rationale and a demonstration of the alarm system being used. The device consists of a battery-operated detector which is activated by urine. Fluid intake was not restricted. The children were then asked to use the same type of enuresis alarm every night until they had completed a maximum trial period of 12 weeks. Our criterion of initial success was 14 consecutive dry nights before the conditioning therapy was stopped. According to the number of wet nights after 12 weeks of treatment, the patients were defined as responders or non-responders. A relapse was defined as the reappearance of > 1 wet night per week for responders. Further follow-up data was maintained by hospital visits or via telephone. The results were assessed statistically using routine statistics and expressed as mean \pm standard deviation.

RESULTS

The mean age of the patients was 8.1 (range 6–16) years and the mean follow-up time was 10.2 (range 6–19) months. At the end of treatment at 12 weeks, all patients were seen in the clinic, and it was noted that 27 patients had benefited from the enuretic alarm. In the follow-up period at three months, a relapse was observed in 66.7% (18/27) of these

Urology Department,
Ankara Gazi Hospital,
Gazi Mahallesi
Silahtar Street,
Yenimahalle 06330,
Ankara,
Turkey

Özgür BC, MD
Urologist

Department of
Pediatrics,
Dr Sami Ulus
Children’s Hospital,
Babur Street,
Altındağ 06080,
Ankara,
Turkey

Özgür S, MD
Pediatrician

Doğan V, MD
Pediatrician

Örün UA, MD
Pediatrician

Correspondence to:
Dr Berat Cem Özgür
Tel: (90) 312 417 8421
Fax: (90) 312 212 6675
Email: bcemozgur@
hotmail.com

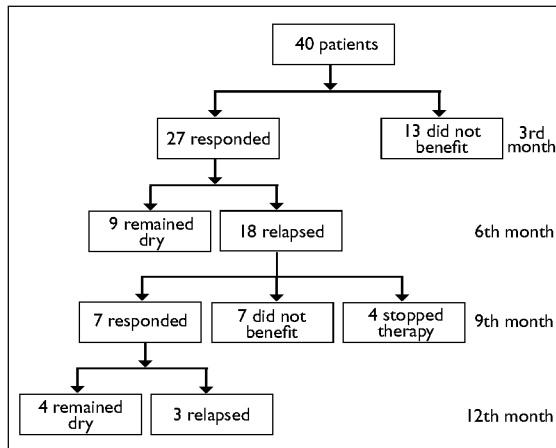


Fig. 1 Timeline chart shows the distribution of the patients by relapse and response.

patients. 14 patients reused the enuretic alarm device for another three months after the relapse and seven (50%) patients responded. Although a re-relapse was observed in three of them three months later, four patients had a full response. In total, 32.5% (13/40) of the patients maintained a full response after the enuretic alarm treatment in the long-term follow-up. The results are summarised in Fig. 1.

DISCUSSION

As MNE is a disease that often results in many psychological problems both for the parents and the child, it is important for the condition to be treated. Enuresis alarms have played a very easy and effective role in the treatment of bed-wetting in children over the past five decades, and they undoubtedly effect a cure in a high proportion of enuretic children. With moisture-detecting fasteners that attach to the child's underwear, one or two drops of moisture will set off the alarm before the bed gets wet. A matchbox-sized light (nearly 40 g) portable alarm device is used like a watch by the patient. The alarm is connected to a very small moisture-sensitive plate. The plate is placed inside an absorbent disposable towel and attached to the child's underwear. The plate has no contact with the skin. With the onset of urination, the sensor and the buzzer activate in order to awake the child. With repetition, an unconscious reflex is usually developed. Primarily, nocturnal enuretic children with supportive parents have a better prognosis.

Our study was based on a success criterion of 14 consecutive dry nights. In our series, an initial arrest of bed-wetting in 40 children was 67.5%, compared to other trials which have reported an initial success rate of 30%–70%.⁽²⁻⁴⁾ The relapse criterion was defined as more than one wet night per week after dryness was achieved. Our long-term data showed that relapse is the main problem of this therapy.

Due to the variable length of the treatment period for both child and parents, the possibility of a family disruption is an important detail which should not be overlooked. It is also crucial for both parents and child to actively take part in the treatment.⁽⁵⁾ Unfortunately, treatment with bed-wetting alarms has a dropout rate of 10%–30% because of familial factors like the family situation, behavior deviance in the child and the educational level of the parents.⁽⁶⁾

In our study, at the end of the third month, 13 patients were in the non-responders group and most did not complete the treatment period because of the above-mentioned reasons. While deciding the optimal treatment for a child with nocturnal enuresis, the family's motivation, financial status and home situation must be kept in mind. In our study, at the end of a one-year period, 32% (13/40) patients achieved complete dryness. In consideration of its acceptable success and relapse rates, an alarm system can easily be the first-line treatment for many children. It should however be noted that MNE could be the cause of multiple factors like nocturnal polyuria or a small bladder capacity, unless complete dryness exists.⁽⁷⁻⁸⁾ Treatment can also be combined with medical therapy to create an individual treatment in cases of refractory monotherapy or to increase the success rates.⁽⁹⁾ Pharmacotherapy can provide the dryness early, while a behavioural intervention leads to long-term benefits. The patients would also be encouraged after achieving early onset success with pharmacotherapy.

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