

Enuresis: Much ado About Bedwetting

PREETI SINGH AND ANJU SETH*

Department of Pediatrics, Lady Hardinge Medical College and Kalawati Saran Children's Hospital, Delhi, India.

*anjuseth.peds@gmail.com

The May 1968 issue of Indian Pediatrics comprised of 54 pages, including six original research papers, two case records, a synopsis of current literature and notes/news. Amongst these, we selected the article entitled 'Enuresis – A comparative study of imipramine and tranquillisers in its management' to review the current perspective and changes in the management of enuresis over last 50 years.

THE PAST

The study by Ingle and Panase [1] was carried out in children (age 5-12 y) with enuresis attending the pediatric outpatient department in the Medical College Hospital, Aurangabad, with the objective of assessing the efficacy of imipramine in comparison to tranquillisers. Among 25 children with enuresis, alternate subjects were prescribed Schedule A (tranquillisers) or Schedule B (Imipramine) for a period of 6 weeks. The children in both the groups were comparable with respect to age, sex and frequency of bedwetting. None of the subjects had epilepsy, mental retardation, or any organic cause for enuresis. During the trial, the patients were not advised regarding fluid restriction or timed voiding at night. The incidence of enuresis was recorded a week before, during therapy and a week after the drug was discontinued. After the initial period, the children in group A received Imipramine and the results were compared with the earlier intervention.

Among 12 subjects on Imipramine (group B), five showed complete cessation of enuresis, six had partial response (50% reduction in bedwetting) while one did not respond. In group A (tranquillisers), only two children showed some response. However, on switching subjects in Group A to imipramine, five became dry and six showed some response, one continued to be refractory and two children who earlier responded to tranquillisers

did not show further improvement. One patient each from Group A and B (non-responders) failed to respond to even higher doses of imipramine. Among responders, nearly 60% relapsed on discontinuation of therapy and again responded on reinstatement of the drug. The authors concluded that imipramine was more beneficial than tranquillisers in treatment of enuresis. This was attributed to imipramine's anticholinergic property (allowing the bladder to hold urine) and stimulant activity particularly in heavy sleepers rendering them responsive to full bladder.

Historical background and past knowledge: The term enuresis has literally originated from a Greek word (enourein) that signifies "to void

urine." Its existence has been known for more than two hundred years. The basis of bedwetting was foremost illustrated in the landmark paper on the normal physiology of micturition published in Brain [2]. The earliest treatise on the historical account of enuresis was given by Glicklich [3]. Though several hypotheses were proposed by various researchers, its etiopathogenesis largely remained nebulous and uncertainties existed regarding its management. In the 18th and 19th centuries, unpleasant physical manoeuvres were advocated as treatment strategies for enuresis. In 1938, Mowrer and Mowrer [4] devised an alarm buzzer, which used to set-off by discharge of urine onto a detector circuit placed under the sleeping child. Before the advent of imipramine in 1960, various pharmacotherapies like belladonna, amphetamines, ephedrine and tranquillisers were tried for the management of bedwetting with equivocal results.

THE PRESENT

Enuresis continues to be a common pediatric problem and about 10% children at 7 years of age, 3.1% at 11-12 years, and 0.5-1.7% at 16-17 years continue to have



bedwetting [5]. International Children's Continence Society (ICCS) defines enuresis as repeated leaking of urine into clothes during night with or without day time symptoms in a child who is chronologically and developmentally older than 5 years [6]. The episodes must occur at least twice per week for 3 months or cause significant distress or impairment. Enuresis is divided into primary (no period longer than 6 months of being dry at night, no daytime symptoms) or secondary (night-time wetness after a dry period of 6 months or more). It may be monosymptomatic (MNE) or nonmonosymptomatic nocturnal enuresis (NMNE). Children with NMNE have lower urinary tract symptoms (LUTS) or daytime symptoms, while they are absent in MNE. Any child who is incontinent both during night and day is designated as having both nocturnal enuresis and daytime incontinence. Around 30% of children with nocturnal enuresis have NMNE and in a proportion of these day time incontinence exists.

Though the annual rate of spontaneous resolution of nocturnal enuresis is 10-15%, but it is not possible to predict it. The decision to treat depends upon the type of enuresis, co-morbidities, degree of the distress to the child/family, and practical issues in applying the interventions based on the abilities and motivation of the child and the family. In cases with both nocturnal enuresis and daytime incontinence, constipation is foremost treated, followed by management of daytime symptoms *i.e.*, features of LUTS, and finally nocturnal enuresis is addressed. Nonpharmacological therapy is the first line treatment in both subtypes of patients (MNE or NMNE) with enuresis. This encompasses family- and child-education about the disease and demystification, lifestyle interventions like regulated fluid intake, maintaining a bladder diary, and constant support and regular encouragement to the child and the family. Cases of NMNE with LUTS are managed as per the standardized recommendations by ICCS [7]. Both alarm therapy and desmopressin have similar success rates in treatment for MNE but on discontinuation, the relapse rate is higher with the latter [8]. Alternative pharmacological agents like some tricyclic antidepressants (imipramine,

reboxetine), anticholinergic (propiverine or oxybutynin) or their combination are useful in some individual cases of NMNE or refractory MNE [9]. A recent Cochrane review of alternative therapy, including hypnosis and acupuncture, had insufficient data to recommend their use in children with MNE [10].

REFERENCES

1. Ingle VN, Panase V. Enuresis – A comparative study of Imipramine and Tranquilisers in its management. *Indian Pediatr.* 1968;5:222-25.
2. Denny-Brown D, Robertson EG. On the physiology of micturition. *Brain.* 1933;56: 149-90.
3. Glicklich LB. An historical account of enuresis. *Pediatrics.* 1951;5:259-69.
4. Mowrer OH, Mowrer WA. Enuresis: A method for its study and treatment. *Am J Orthopsychiatr.* 1958;8:436-47.
5. Buckley BS, Lapitan MC. Epidemiology Committee of the Fourth International Consultation on Incontinence, Paris 2008. Prevalence of urinary incontinence in men, women, and children—current evidence: findings of the Fourth International Consultation on Incontinence. *Urology.* 2010;76:265-70.
6. Nevéus T, Von Gontard A, Hoebeke P, Hjälmås K, Bauer S, Bower W, *et al.* The standardization of terminology of lower urinary tract function in children and adolescents: report from the standardization committee of the International Children's Continence Society. *J Urol.* 2006;76:314-24.
7. Chang SJ, Van Laecke E, Bauer SB, Von Gontard A, Bagli D, Bower WF, *et al.* Treatment of daytime urinary incontinence standardization document from the International Children's Continence Society. *Neurourol Urodyn.* 2017;36:43-50.
8. Kwak KW, Lee YS, Park KH, Baek M. Efficacy of desmopressin and enuresis alarm as first and second line treatment for primary monosymptomatic nocturnal enuresis: prospective randomized crossover study. *J Urol.* 2010;184:2521-6.
9. Caldwell PHY, Sureshkumar P, Wong WCF. Tricyclic and related drugs for nocturnal enuresis in children. *Cochrane Database Syst Rev.* 2016;1:CD002117.
10. Glazener CM, Evans JH, Cheuk DK. Complementary and miscellaneous interventions for nocturnal enuresis in children. *Cochrane Database Syst Rev.* 2005;2: CD005230.