

Acupuncture Therapy in the Management of Persistent Primary Nocturnal Enuresis

Preliminary Results

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Objective: This study aimed to assess the comparative therapeutic efficacy of traditional Chinese acupuncture. **Material and Methods:** During the period from January 1997 to April 1999, 50 children (23 boys, 17 girls) suffering from primary persistent nocturnal enuresis, aged 9–18 years, were included in the study. The response rate was monitored at 2 and 4 weeks, and then every 3 months by recording dry nights on a calendar. **Results:** The efficacy of treatment, which was expressed as a percentage of dry nights, was high. Within 6 months, 43 (86%) patients were completely dry and 2 (10%) patients were dry on at least 80% of nights. **Conclusions:** Treatment using acupuncture in patients with persistent enuresis nocturna appeared to be most efficacious both in terms of the percentage of dry nights at the end of treatment and in relation to the stability of results, even after the end of the study.

Key words: acupuncture therapy, persistent nocturnal enuresis.

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Primary nocturnal enuresis is a common disorder: epidemiological studies report that 15–20% of 5-year-olds, 5% of 10-year-olds and 2–3% of all adolescents wet the bed at least once per month (1–3). Although enuresis has a spontaneous resolution rate of 15% per year and thus most children outgrow the condition (4), bedwetting causes significant psychosocial stress, especially as children grow older (5, 6). Recent investigations into nocturnal enuresis suggest that genetic factors appear to be important in the aetiology of this disorder (7).

The treatment of primary nocturnal enuresis can be divided into behavioural and pharmacological therapy methods, the latter involving the use of various medications such as desmopressin, tricyclic antidepressants or oxybutynin. Traditional Chinese acupuncture treatment has been used successfully in the management of primary nocturnal enuresis. The results of treatment with acupuncture have shown an efficacy ranging from 76 to 98% (8, 9). Acupuncture treatment exerts a strong antienuretic effect in patients with primary nocturnal enuresis. Honjo et al. (10) reported that the average maximum cystometric bladder capacity increased significantly by acupuncture treatment in patients with chronic spinal cord injury. Experimental research has shown that acupuncture induces the

formation of opioid-like peptides (OLPs) in animals (11), which may lead to decrease sensorial afferent impulses in the cerebrospinal fluid and to an increase in functional bladder capacity.

The aim of the present study was to identify patients who had no success with pharmacological therapy, to determine their response to acupuncture treatment in the management of primary nocturnal enuresis and to evaluate the treatment rate in older children with primary persistent nocturnal enuresis.

PATIENTS AND METHODS

The study comprised 50 primary nocturnal enuretic outpatients (33 boys, 17 girls) referred from January 1997 to April 1999. Patients who had documented persistent primary nocturnal enuresis and no success with any other pharmacological treatments (desmopressin, imipramine or oxybutynin) were selected for study. Their mean age was 10.3 years (range 9–18 years) and they had nocturnal enuresis of ≥ 3 nights per week during 2 weeks of observation. Patients with a history of urinary tract infections, bladder dysfunction or other medical problems were excluded from the study. Patients selected for acupuncture therapy underwent thorough counselling with a research assistant.

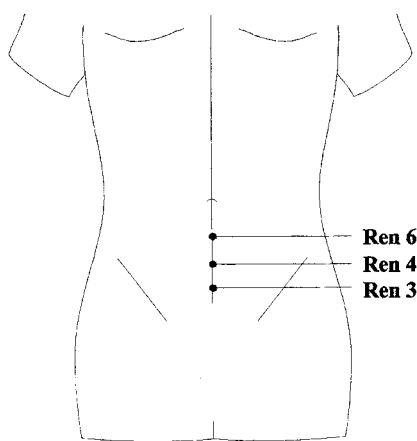
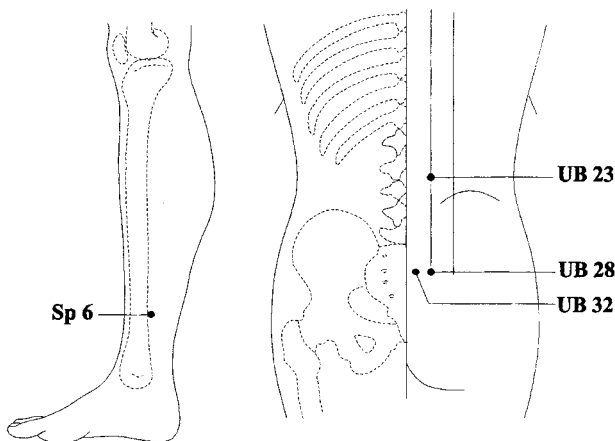


Fig. 1. Local acupuncture points related to nocturnal enuresis. Sp = spleen; UB = urinary bladder; Ren = renal.

The counselling involved a review of the therapy and its administration, a review of the calendar system, and a discussion of the treatment plan and its goals. Patients and their parents were also instructed to continue the follow-up at every 3 months after starting the therapy. The principle of traditional Chinese acupuncture is based on dermal stimulation on local acupuncture points (12), which are shown in Fig. 1. The treatment was applied with disposable acupuncture needles (Fig. 2) on 10 consecutive days in a month, and each therapy period lasted for 30 min. The progress of the therapy was monitored objectively using a calendar completed each morning by the parents and the child. All children began by bedwetting on at least 3 nights per week; the goal of the therapy was achieve completely dry nights over a period of 6 months. Patients had a follow-up visit every 3 months and were re-evaluated by a research assistant. After 6 months of dry nights, the patients were asked about their waking patterns. If the patients awoke spontaneously and had completely dry

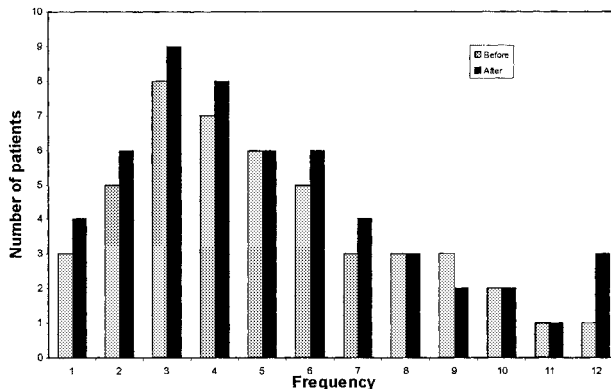


Fig. 2. Urinary frequency distribution before and after treatment in all patients.

nights after 4 weeks, the frequency of acupuncture treatment was reduced, initially by 2 days monthly and, after each additional 4 dry weeks, by a further 2 days. If nocturnal enuresis returned during the tapering of the therapy, the acupuncture treatment was started again at the level at which the child had achieved total dryness.

RESULTS

Within 6 months, 43 (86%) patients were completely dry and 2 (4%) were dry on at least 80% of nights. Five (10%) patients relapsed during tapering and therapy was reapplied at the intensity that had provided a satisfactory response. The mean daily urinary frequency increased slightly from 3.9 to 4.5 after the treatment (Fig. 3).

At the time of writing, 40 (80%) patients, who were followed up for a mean of 13 months (range 8–17 months), are off the treatment. Of these, 35 wake up to go to the toilet during the night (i.e. developed nocturia) (Fig. 3). Seven patients still continue their acupuncture treatment on 2 days a month and are dry on at least 80% of nights. Three patients showed no

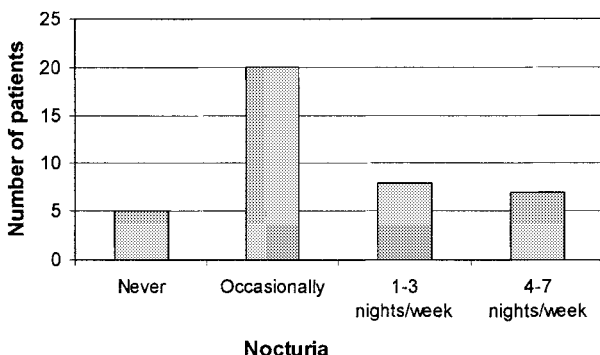


Fig. 3. Results of the questionnaire detailing nocturia in the respondents.

success with this therapy and have received different treatments. No side-effects were reported during the treatment.

DISCUSSION

Increasing attention is being paid to the treatment of nocturnal enuresis. In the past, the treatment of primary nocturnal enuresis was based on few objective studies. Recently, with increased knowledge of the psychosocial reasons related to enuresis, a more thorough approach to the evaluation and management of patients with enuresis has emerged. However, the pathophysiology of nocturnal enuresis has not been completely elucidated and the therapeutic approach to enuresis is still based on empirical data (4).

In the present study, traditional Chinese acupuncture was applied to treat persistent primary nocturnal enuresis in older children (age ≥ 9 years). Realizing the spontaneous remission rate of 15% per year and the relatively low incidence (2–3%) of nocturnal enuresis in older children, it was felt that these children need help to deal with the psychosocial issues relating to bedwetting. The treatment was directed towards alleviating the symptoms of nocturnal enuresis rather than curing the condition because the exact pathophysiological mechanisms involved are unclear. Anticholinergics have been used in the treatment of enuresis and oxybutynin has been shown to increase functional bladder capacity. However, placebo-controlled double-blind studies showed that there was no significant advantage of oxybutynin or placebo in the treatment of primary nocturnal enuresis (13, 14). In addition, oxybutynin chloride has a relatively short half-life (<4 h) and thus may not be effective in treating enuresis because most enuretic patients sleep for ≥ 8 h during the night. Imipiramine has been associated with a response rate of 20–36% (15). Imipiramine treatment appears to be correlated with the serum level of imipiramine and there is a non-linear relationship between the dosage and serum level; thus, large variations in drug levels have been reported (16). Excessive consumption of this drug may cause potentially fatal cardiac dysrhythmias. Desmopressin acetate, an analogue of antidiuretic hormone, has been the pharmacological agent most studied in the treatment of primary nocturnal enuresis. This reduces the amount of urine secreted by the kidneys during the night. The urine analysis and serum electrolytes should be assessed before and during desmopressin treatment. Many children relapse after ending short-term or intermittent treatment with desmopressin (17–21). Thus, successful desmopressin therapy depends on its long-term use. Desmopressin may cause side-effects such as headache and rhinitis in long-term treatment.

Given the good overall success rate in the treatment of enuresis with traditional Chinese acupuncture, this treatment is attractive for treating patients with persistent primary enuresis, especially in the preadolescent and adolescent periods. To the authors' knowledge, this is the first study that indicates a success rate of 80% and a relapse rate of only 5% in patients with persistent primary enuresis, results that are better than the spontaneous resolution rate or outcomes with other treatments.

In conclusion, these findings suggest that traditional Chinese acupuncture is a reasonable alternative in treating patients with primary persistent enuresis, which also appears to have a high success rate and a low relapse rate and to be safe. It provides symptomatic relief but does not cure the condition. Further studies with large series in enuretic patients are needed to confirm these results and to elucidate the therapeutic mechanism of acupuncture using placebo-controlled trials and urodynamic studies.

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Editorial

The treatment of nocturnal enuresis has gained increasing interest during the past two or three decades and a number of new treatment modalities have been used. During this process the awareness of the importance of a differentiated approach to enuresis has become evident. Today we know that a fairly large number of enuretics have night-time polyuria with normal bladder capacity, whereas a smaller fraction have a normal circadian rhythm of urine production with a significantly reduced production at night. These patients have a small bladder capacity especially during night-time. The first group is well suited for treatment with the antidiuretic hormone analogue Desmopressin, whereas the second group (those with small bladders) seems to benefit more from alarm clock treatment. Furthermore, it has become increasingly evident that enuretics with small bladders have the most severe degree of enuresis.

Besides these two treatment modalities, other types of treatment are or have been employed. Tricyclic antidepressants have been used because of their modulatory activity on sleep and because of their anticholinergic action on the bladder or stimulatory effect on urethral resistance, but most cases of enuresis are not combined with measurable changes in either sleep or bladder function. However, tricyclic antidepressants may be administered to patients who have kidney function disorders related to the solute excretion.

The long-term results in terms of dryness of the three treatment modalities mentioned above are about 30% of complete dryness one year after treatment. This is in sharp contrast to the reported treatment success rates

using acupuncture. Here success rates above 80% are frequently reported. The study published in the present issue of the *Scandinavian Journal of Urology and Nephrology* is no exception. Treatment is continued until dryness is obtained, even if it takes half a year. This is a time-consuming treatment, but obviously rewarding. In this study, as in the previous studies of acupuncture, there is no distinction between the different kinds of enuresis. Therefore, it is difficult to determine the mechanisms behind the achievement of dryness. In contrast to these obviously superior results is a Scandinavian study published this year in this journal (see *Scand J Urol Nephrol* 2000, Febr. 34(1): 21–26), in which only 5 out of 23 patients responded with more than 90% dryness. This sharp contrast between results of an apparently similar treatment calls for further studies. Since the Turkish study group over the years has achieved remarkable results using acupuncture, I think this group would be the best qualified to elucidate the mechanisms behind dryness using acupuncture. Does night-time polyuria undergo change? The authors claim that they have some data on changes in bladder function, but it is obvious that their data need to be expanded in the future.

Albeit acupuncture has been advocated for enuresis treatment for almost three decades, it has only been used now and then. With the reported study, it is obvious that we have groups using acupuncture, groups that in the future may come up with important observations on the treatment mechanisms.

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