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IS TRANSDERMAL ELECTRICAL STIMULATION A THERAPEUTIC OPTION WHEN PHARMACOTHERAPY IS INEFFECTIVE IN CHILDREN WITH NOCTURNAL ENURESIS IN ASSOCIATION WITH DAY TIME INCONTINENCE?

Aims of Study

Overactive bladder in children is the most common cause of nighttimes wetting in association with daytime urinary symptoms such as frequency, urgency and incontinence (1). Bladder training and drug therapy with anticholinergics have been indicated for overactive bladder but some cases are refractory to these therapies. The use of transcutaneous electrical nerve stimulation (TENS) to inhibit detrusor activity in adults is common, and appears to modulate excitatory and inhibitory components of bladder control (2). The aim of this study was to evaluate the result of TENS in nocturnal enuresis in association with daytime incontinence while the other therapies are not curative for enuretic children.

Methods

Included in our study were 10 girls and 2 boys with a mean age of 9.4 years. All patients had detrusor activity and incontinence refractory anticholinergics. Voiding/incontinence diaries and video-urodynamic studies were applied before the treatment and one month after the last stimulation session. The device for TENS consists of the pulse generator with amplifier and electrodes. One channel of the stimulator was used and 2 electrodes were placed bilaterally over the perianal region (S2-S3 dermatomes). Stimulation of 50 Hz. frequencies and 200-microsecond pulse width is applied for 90 minutes every day during 4±1 weeks. The wilcoxon signed rank test was used for comparison and a p value <.05 was considered significant.

Results

Before the treatment, all of the children had daytime and night time incontinence. Video-urodynamic studies showed detrusor overactivity in all cases and low-grade vesicoureteral reflux in two patients. 3 of 12 were completely dry after TENS treatment. No improvement was obtained in one of the patients with the treatment. The rest of 8 cases did not report daytime incontinence and their night time incontinence decreased more than 50% (wet in every night versus not more than wet a week). The mean number of voiding/24 hours decreased from 8±3.6 (4-17) to 5.8±1.8 (3-9)($p<0.001$) while the mean voided volume/24 hours increased from 118.6±44 (66-191) ml. to 146.3±53.7 (86.5-241) ml ($p<0.005$) in voiding-chart. Bladder overactivity disappeared in 6 patients urodynamically and improved in 5 cases (mean 53±42 versus 16.45±26.9 cmH20 ($p>0.005$). No change was observed in mean micturition pressure at peak flow. Vesicoureteral reflux resolved completely a month later with TENS treatment.

Conclusions

The side effects of anticholinergics or therapy resistance in children have caused to seek other treatment modalities for incontinence due to overactive detrusor. TENS is an attractive treatment due to its noninvasiveness and improvement of symptoms of detrusor overactivity in children. However, further studies are imperative for definitive proof.

References

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