

The effectiveness of transcutaneous electrical neural stimulation therapy in patients with urinary incontinence resistant to initial medical treatment or biofeedback.

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Abstract

OBJECTIVE: While there are many options for children with treatment refractory urinary incontinence, there is no single accepted method. This study's aim was to prospectively evaluate the effect of transcutaneous electrical nerve stimulation in children with urinary incontinence resistant to standard medical, urological therapy and/or biofeedback.

PATIENTS & METHODS: This study was performed at a university hospital. For inclusion, patients >5 years of age first underwent evaluation with urinary ultrasonography, uroflow-electromyogram and voiding diaries. Treatment with biofeedback, alpha adrenergic blockers, anticholinergics and/or urotherapy was commenced according to uroflow-EMG and voiding diary findings. Patients with partial or no response to this standard therapy were then included in this study, performed between April 2012 and February 2014. Patients with anatomical or neurological causes for urinary incontinence were excluded. TENS was performed on S3 dermatome, every day for 3 months. Each session lasted 20 min with a frequency of 10 Hz and generated pulse of 350 μ s. Intensity was determined by the child's sensitivity threshold. Medical treatment and urological therapy was continued during TENS. Uroflow parameters (voiding volume as percentage of expected bladder capacity, Qmax, Qave, flow and voiding time, postvoiding residual urine) and urinary system symptoms (presence of urinary tract infection, frequency, urge incontinence, fractionated voiding and constipation) were compared immediately before commencement and immediately after the completion of 3 months of TENS.

RESULTS: Twenty-seven patients were included in this study (4 males, 23 females). Patients' average age was 7.2 years, 11 had overactive bladder and 16 had dysfunctional voiding. Comparison of urinary system symptoms and uroflow parameters before and after TENS are shown in Table. After 3 months of TENS; a statistically significant decrease was observed in the number of patients with frequency, urge incontinence, urinary tract infections and constipation. There was a decrease in the number of patients with fractionated voiding, although this change was not statistically significant. Similarly, for uroflow-EMG parameters; bladder capacity, Qmax, Qave and flow time increased while voiding time and PVR decreased. Changes seen in bladder capacity, Qmax and PVR were statically significant, while other changes were not. Patients' response rates after 3 months of TENS were; complete response in 70.4%, partial response in 22.2% and no response in 7.4%.

CONCLUSION: This study has shown that transcutaneous electrical nerve stimulation is a promising treatment option for standard-treatment refractory children with urinary incontinence.

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KEYWORDS: Refractory; Transcutaneous electrical nerve stimulation; Urinary incontinence