

Original Articles

A Clinical Study of Electroacupuncture on an Overactive Bladder

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Objective : Electroacupuncture is one of the primary remedies in oriental medicine. Electroacupuncture was applied on a nocturia patient. Improvement of the symptoms was experienced. This case is reported in order to derive further studies evaluating the effectiveness of this treatment.

Methods : Electroacupuncture on the Ciliao acupoint(BL32) was performed twice daily for 1 week.

Results : After about 1 week of electroacupuncture on the Ciliao acupoint(BL32), there was a remarkable decrease of nocturia frequency.

Conclusion : We present the case of a man with an overactive bladder who had several strokes as well as hypertension. Electroacupuncture treatment performed on the Ciliao acupoint(BL32) remarkably improved nocturia.

Key Words: electroacupuncture, Ciliao(BL32), overactive bladder, nocturia

Introduction

Nocturia and incontinence are major problems in the older population. Urge incontinence and frequency /urgency symptoms have recently been classified as subsets of overactive bladder (OAB) syndrome by the International Continence Society¹⁾. OAB is defined as 'urgency, with or without urge incontinence, usually with frequency and nocturia in the absence of local or

metabolic factors explaining these symptoms'¹⁾. OAB is characterized by symptoms of frequency, urgency, and urge incontinence, substantially affecting the quality of life of millions of people throughout the world. The symptoms are significantly associated with social, psychological, occupational, domestic, physical, and sexual problems.

OAB is managed commonly with conservative treatments, such as medications, dietary modifications, and behavioral therapy. Antimuscarinic therapy, including oxybutynin and tolterodine, has been the mainstay of the treatment options. Although its efficacy can be satisfactory, a significant subset of the patients have to discontinue the therapy due to compliance-limiting side effects, particularly dry mouth²⁾. Between the medical and surgical realms, electrical stimulation to

Received 7 November 2004; Received in Revised from 17 November 2004; Accepted 22 November 2004
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the pelvic floor and sacral nerve roots has provided a useful alternative, with overall success rates of approximately 50-90%⁴⁻⁶⁾. Recently, clinical and experimental investigations have demonstrated the usefulness of sacral nerve stimulation via an implanted device for refractory OAB⁷⁻¹⁰⁾. Sacral nerve stimulation is often referred to as neuromodulation, and is a promising alternative that is rapidly gaining popularity in some industrialized countries.

Few results searched in Pubmed with the key word-overactive bladder AND electroacupuncture, electroacupuncture is one of the primary remedies in oriental medicine. Thus, in order to derive further studies evaluating the effectiveness of electroacupuncture on OAB patients, we present this case of a man with nocturia who received electroacupuncture treatment on the Ciliao acupoint(BL32). This patient experienced remarkable improvement of nocturia.

Report of the case

1. Name and Age

Jang o o (male, 68)

2. Chief Complaint

1) General weakness, 2)Urinary frequency

3. Onset

1) March 31, 2003, 2)about 20 years ago

4. Family History

Unremarkable

5. Past History

- 1) Medication with seizure after 1993
- 2) Hypertension
- 3) 1st Cerebral Vascular Attack(CVA), 10 years ago
- 4) 2nd CVA, 10 years ago
- 5) 3rd CVA, 8 years ago
- 6) 4th CVA, 6-7 years ago
- 7) 5th CVA, 5 years ago

6. Present Illness

The symptoms of this patient were fever, dyspnea, and general weakness which started on 31 March, 2003. He visited Kangneung ASAN Hospital and was diagnosed as Pneumoniae. After 2 weeks of hospitalization the symptoms showed improvement. After resting at home for a while, he came to Kyung-Hee Medical Center, Oriental Medical Hospital on 21 April 2003, wanting to receive oriental medical treatment. He was hospitalized the same day.

7. Lab finding

- 1) Urinary analysis & microscopy
- 2) Urine culture
 - Less than 1,000 CFU/ml
- 3) Prostate Specific Antigen(PSA), free PSA(May 02, 2003)
 - PSA/Free PSA: 1.4/0.2
- 4) Simple abdomen(April 21, 2003)
 - Impression: R/O left renal stones, Spondylosis of

	Occult	Bilirubin	Urobilirubin	Ketone	Protein	Nitrite	Glucose	pH	Specific-Gravity	Red Blood Cell	White Blood Cell
4/21	+++	-	0.1	-	30	-	-	5.0	1.025	10-29	5-9
5/06	-	-	0.1	-	-	-	-	5.0	1.015	0-1	0-1
5/09	-	-	0.1	-	-	-	-	5.0	1.025	0-1	0-1

Table 1. Nocturia Frequency after 1 week of Electroacupuncture on the BL32

Day	4/23	24	25	26	27~5/6	7	8	9	10	11	12	13	14	15	16	17
Electroacupuncture	15:00								○	○	○	○	○	○	○	○
Application Time	20:00							○	○	○	○	○	○	○	○	○
Nocturia Frequency (23:00-05:30)	10	Foley Catheter State														
	9															
	8															
	7															
	6															
	5															
	4															
	3															
	2															
1																

L-spine.

5) Urodynamic study(May 27, 2003)

- Impression: Bladder outlet obstruction. Neurogenic bladder(hyperreflexic type)

6) Transtrectal Ultrasonography(May 13, 2003)

- Prostate volume: 32 ml, Inner gland enlargement volume: 13 ml

- Impression: Benign prostatic hyperplasia (BPH)

8. Method of Electroacupuncture Treatment

Electroacupuncture on the Ciliao acupoint(BL32) was performed twice(15:00, 20:00) daily for 1 week. Continuous impulse at 2Hz was applied for 20min each session. The stimulation was maintained below pain threshold. The evaluation of treatment effect was made based on nocturia frequency from 23:00 to 05:30.

9. Progress

After 1 week of electroacupuncture treatment on the Ciliao acupoint(BL32), the nocturia frequency decreased from 9 times to 5 times(Table 1).

Discussion

Urge incontinence and frequency/urgency symptoms have recently been classified as subsets of overactive bladder (OAB) syndrome by the International Continence Society¹⁾. OAB is defined as 'urgency, with or without urge incontinence, usually with frequency and nocturia in the absence of local or metabolic factors explaining these symptoms'¹⁾.

A recent survey has found that the vast majority of people with chronic, bothersome symptoms of bladder overactivity complained of frequency and urgency, while only a third complained of urge incontinence. The survey found that the total prevalence of OAB within the general population aged 40 years and over ranged from 12% to 22% in a sample of some 17000 people in 6 European countries. It demonstrated that the risk of developing OAB increases with age. In the group of people 75 years and older, the prevalence ranged between 30% and 40%²⁾.

Identifying patients with lower urinary tract symptoms caused by an OAB, and differentiating between OAB and other types of urinary incontinence

(i.e. stress incontinence, etc) is paramount to selecting appropriate treatment for the individual patient. National and international urological societies recommend that the initial evaluation should include, at a minimum (1) an assessment of the patient's symptoms; (2) physical examination; and (3) urinalysis².

Since the time Caldwell initially reported its efficacy in 1963, electrical stimulation for the treatment of urinary incontinence and frequency/urgency symptoms has evolved over the 40 years¹². The mechanism of electrical stimulation for OAB is the reflex inhibition of pelvic efferents or activation of hypogastric efferents through stimulation of the afferent input in the pudendal and sacral roots, which results in reflex activation of the hypogastric efferents and central inhibition of the pelvic efferents¹³. Electrical currents can also stimulate contraction of pelvic floor muscles to increase awareness of the periurethral pressure, subsequently inhibiting detrusor contraction. It is also thought that electrical stimulation may recondition muscle and facilitate sprouting of surviving motor axons following denervation injury, such as occurs in vaginal childbirth¹⁴.

OAB is managed commonly with conservative treatments, such as medications, dietary modifications, and behavioral therapy. Antimuscarinic therapy, including oxybutynin and tolterodine, has been the mainstay of the treatment options. Although its efficacy can be satisfactory, a significant subset of the patients have to discontinue the therapy due to compliance-limiting side effects, particularly dry mouth³. Between the medical and surgical realms, electrical stimulation to the pelvic floor and sacral nerve roots has provided a useful alternative, with overall success rates of approximately 50-90%⁴⁻⁶. Recently, clinical and experimental investigations have demonstrated the usefulness of sacral nerve stimulation via an implanted

device for refractory OAB⁷⁻¹⁰. Sacral nerve stimulation is often referred to as neuromodulation, and is a promising alternative that is rapidly gaining popularity in some industrialized countries.

Sacral nerve stimulation (InterStim Central Sacral Nerve Stimulation System; Medtronic Inc., Minneapolis, MN), often referred to as neuromodulation, is approved by the USA Food and Drug Administration for three indications: urinary urge incontinence, urgency/frequency syndrome and voiding difficulties (incomplete and complete retention). Siegel et al.¹⁶ recently published one of the largest studies including 184 and 220 patients with refractory urge incontinence and urgency/frequency syndrome, respectively. For urge incontinence, successful outcome, defined as dryness or greater than 50% reduction in leakage episode, was achieved in 75%, 79%, and 76% of patients at 6, 12, and 18 months postimplant, respectively. Sacral neuromodulation should always be considered before contemplating surgical procedures such as ileocystoplasty or detrusor myectomy⁸). Newer methodology, such as peripheral percutaneous sacral nerve stimulation (Stoller Afferent Nerve Stimulator, Iowa, USA) and two-stage implantation with percutaneous lead placement may significantly reduce the invasiveness and costs of the procedure^{9,17-19}.

The Ciliao point (BL32) is an acupuncture point of the Badder channel which is located over the second posterior sacral foramen. It regulates the lower jiao and facilitates urination and defecation. It also regulates menstruation, stops leucorrhea and benefits the lumbar region and legs²⁰

Sacral nerve stimulation is a prevalent method applied to OAB patients in the United States, but in Korea it is yet a pioneer method. Few results were searched in Pubmed with the key word-overactive bladder AND electroacupuncture. Electroacupuncture is

one of the primary remedies in oriental medicine. The method of electroacupuncture on the Ciliao acupoint(BL32) is similar to the sacral nerve stimulation. Thus, in order to derive further studies evaluating the effectiveness of electroacupuncture on OAB patients, This patient was the case of a man with nocturia from 20 years ago who had several strokes as well as hypertension histories. The symptoms of nocturia were progressing as he aged. The treatment for stroke and hypertension was left out of the discussion. There were no inflammatory signs in urinary analysis & microscopy observations. The results of urodynamic study(May 27, 2003) showed bladder outlet obstruction & neurogenic bladder(hyperreflexic type). Transtrectal ultrasonography(May 13, 2003) showed benign prostatic hyperplasia(prostate volume: 32ml, inner gland enlargement volume: 13ml)

Electroacupuncture on the Ciliao acupoint(BL32) was performed twice(15:00, 20:00) daily for 1 week. Continuous impulse at 2Hz was applied for 20min each session. The stimulation was maintained below pain threshold. The evaluation of treatment effect was made based on nocturia frequency from 23:00 to 05:30. After 1 week of electroacupuncture treatment on the Ciliao acupoint(BL32), the nocturia frequency decreased from 9 times to 5 times(Table 1). We suppose that the electroacupuncture performed on the Ciliao acupoint(BL32) cures this imbalance through stimulation of the afferent input in the pudendal and sacral roots, which results in reflex activation of the hypogastric efferents and central inhibition of the pelvic efferents. More cases and further studies for optimal stimulating method are needed.

Conclusion

1. We present the case of a man with nocturia who had stroke and hypertension. Electroacupuncture

treatment performed on the Ciliao acupoint(BL32) remarkably improved nocturia.

2. We suppose that the electroacupuncture performed on the Ciliao acupoint(BL32) cures this imbalance through stimulation of the afferent input in the pudendal and sacral roots, which results in reflex activation of the hypogastric efferents and central inhibition of the pelvic efferents.
3. More cases and further studies for optimal stimulating method are needed.

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