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A Study on the Effects of Silver Spike Point on Functional Constipation Improvement

The purpose of this study was to investigate the effects of the Silver Spike Point (SSP) on functional constipation. The subjects were 14 female students who attended a university located in Gyeonggi province and consent to participate in this study. The inclusion criteria were the fulfillment of two or more diagnostic criteria of Rome III or scoring four or more points in Constipation Assessment Scale (CAS). The CAS score was significantly decreased in the experimental group (from 14.29±1.38 to 6.86±2.91) ($p<.05$), however, there was no significant change in the control group (from 14.29±1.49 to 14.14±1.21). The present study suggests that SSP intervention is effective in mitigating constipation.

Key words: *SSP, Constipation, CAS*

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INTRODUCTION

The workers in this century are increasingly more vulnerable to risks of constipation and obesity due to decreased workload and calories consumed as a result of stress and busy works [1]. Constipation, a intestinal symptoms common in both adults and children, the prevalence of which ranges from 2 to 28%, and has various etiologies, symptoms, and pathophysiologies [2]. It was suggested that even the subjective perception of symptoms prompts early diagnoses and management, although the fact that the constipation is manifested in various symptoms prohibits the objective definition of this condition, however it tends to become chronic because of lack of proper intervention [3]. The domestic prevalence of domestic constipation was reported as 16.5% [4] and It was found that one inten woman experiences this condition and that the untreated constipation may causes stool impaction, diarrhea, and intestinal obstruction, leading to significant inconvenience in daily life [5].

The restoration of autonomic nervous system, a strategy to mange constipation, revives the smooth peristalsis, maintains electrolyte in large intestine, and supply sufficient serous fluid. As a method to mitigate the slow transit constipation, Park et al. [6] recommended consumption of dietary fiber, intake 1.5-2L of water, abdominal massage, and exercise, and Schaefer & Cheskin [7] recommended consumption of dietary fiber and water and regular exercise. The studies on mitigation of constipation focused on the effects of exercise on the constipation of inpatients [8], constipation management with physiotherapy [9], the effects of Chunchu(ST25) moxa therapy on constipation of patients with stroke [10], and the effects of gym ball exercise and water intake on mitigation of constipation [11]. The treatments of functional constipation include dietary control, exercise, physical treatment such as alleviator and enema, botulinum toxin, mechanical dilation of anal, and biofeedback therapy and, in case of being from causative disease, surgical intervention [4]. Silver spike point (SSP) therapy is

similar to acupuncture therapy and is commonly used in physical therapy settings. It is a noninvasive, needless treatment in which low frequency current stimulates the surfaces of acupuncture points. It is not known to cause any side-effects or complications [12] .The relationship among intestinal movement disorder, colonic transit time, and various symptoms of functional constipation has not been establish, though reported occasionally. Further, the studies on the application of physiotherapy in managing functional constipation, a intestinal movement disorder, are almost rare. The purpose of this study was, accordingly, to investigate the effects of the Silver Spike Point (SSP) therapy, a noninvasive physiotherapy intervention, on the functional constipation caused by intestinal movement disorder by using the Constipation Assessment Scale (CAS).

METHODS

Subjects

The subjects were 14 female students who attended to a university located in Gyeonggi province and consent to participate in this study. The inclusion criteria were fulfillment of two or more diagnostic criteria of Rome III or scoring four or more points in CAS. The subjects were randomly assigned to study group (n=7) who received SSP therapy for four weeks with three times a week and control group (n=7) who received none. Table 1 shows the general characteristics of the participants.

Measurements Method

The pre- and post-test were performed before and after intervention, respectively to measure the differences. The CAS developed by McMillan and Williams [13] was used for test and consists of eight items on abdominal dilation due to constipation, amounts of gas, frequency of defecation, pattern of defecation, inconvenience, sense of heaviness of rectum, amounts of stool, and easiness of defecation. The subjects rated each item on three-point scale where 0 = not at all, 1 = slightly, and 2 = considerably. The total scores ranged from 0 to 16 and higher scores indicate more serious constipation. McMillan and Williams [12] reported the reliability of CAS as r=.98. The SSP was applied to acupuncture points (ST25, BL24, BL25, and BL26) known as effective to constipation by using WSP 101 WSP 101(SUN KWANG, Korea), a current stimulator equipped with octupolar electrodes. The current applied for 20 minutes in a session was manipulated to have no change in amplitude, 1 Hz of frequency, 50μs of phase duration, 200 mmHg of vacuum, and consistent electrics with bidirectional symmetrical wave. Data from the subject groups' pre and post treatment measurements were then compared using paired t-tests. Finally, Independent sample t-test were used to analyze changes in pre and post treatment measurements each individual group. The statistical significance level was set at α= .05.

RESULTS

Change in CAS Score Intra-Group

The analysis of the changes in CAS scores showed that it statistically significantly decreased, in study group, from 14.29±1.38 point before intervention to 6.86±2.91 point after intervention while, in control

Table 1. General characteristics of the subjects

	SSP (n=7)	Control (n=7)	p
Age (years)	23.57±.976	24.14±.900	.872
Height (cm)	157.71±.073	162.29±.050	.515
Weight (kg)	53.00±3.60	50.86±2.34	.070
Gender (Female)	7	7	

Table 2. Change in CAS Score Intra-Group

	pre	post	t	p
SSP	14.29±1.38	6.89±2.91	7.281	.000*
Control	14.29±1.49	14.14±1.21	.548	.604

*p<.05, SSP: Silver Spike Point

group, the values were 14.29±1.49 and 14.14±1.21 points, showing insignificant change (p<.05).

Change in CAS Score Inter-Group

The differences between before and after intervention were 7.43±2.69 point in study group and 0.14±0.69 in control group, indicating statistically significant difference between two groups (p<.05).

Table 3. Change in CAS Score Inter-Group

	SSP	Control	t	p
CAS score	7.43±2.70	.14±.69	6.919	.000*

*p<.05, SSP: Silver Spike Point, CAS: Constipation Assessment Scale

DISCUSSION

The comparison between study group where the SSP was applied and control group showed that the application of SSP decreased CAP scores significantly (p<.05) and the difference in the change between two groups was statistically significant (p<.05).

In a similar studies, the transcutaneous nerve interferential electrical stimulation decreased the colonic transit time significantly in the pediatric patients with slow transit constipation [14] and the application of the transcutaneous interferential electrical stimulation for four weeks decreased transit time significantly in the patients with slow transit constipation [15].

In a study where the application of needle acupuncture and electro-acupuncture were applied on two acupoints, ST25 and ST37, it was reported that this intervention, in normal population, had no effect on left and right colonic transit time however had various effects on colorectal transit time and the application of needle acupuncture and electro-acupuncture shortened the colorectal transit time especially in patients with chronic constipation [16].

It was reported that the application of non-invasive electro-stimulation therapy on skin segment over sacral nerve decreased colonic transit time and colo-(s shape)-rectal transit time statistically significantly in patients with slow transit constipation [17], and Joo [18] found that the acupoint digital compression was more effective in mitigating intestinal movement and sense of inconvenience in abdomen compared to those in control group.

In summary, these results seems to support the theoretical rationale that SSP is effective in mitigating constipation by promoting intestinal movement through stimulating acupoint, improving circulation of endocrine gland, and promoting metabolism [19], and it is considered that the SST stimulating acupoints promotes the control of physiological function.

CONCLUSION

There was a statistically significant result the group with SSP was before the intervention reduced after the intervention.

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