Effects of Manual Therapy on Bowel Function of Patients with Spinal Cord Injury

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Abstract. [Purpose] The purpose of this study was to observe the effects of manual therapy on bowel function of patients with spinal cord injury. [Subjects] The participants were 20 patients with spinal cord injury. [Methods] Manual therapy was applied to the intestine and along the colon ascendens, transverse colon, colon descendens and colon sigmoidem on the surface of abdomen. The results before and after 60 sessions (5 times/week, continued for 12 weeks) of manual therapy were compared. [Results] It was found that there were significant effects both on shortening of bowel time and decreasing dosage of glycerine enema every time patients needed to excrete. [Conclusion] Manual therapy had significant effects on bowel function of patients with spinal cord injury.

Key words: Manual therapy, Bowel function, Spinal cord injury

INTRODUCTION

Voiding dysfunctions are commonly encountered in patients who are referred for rehabilitation. These voiding problems may result from medication, cognitive changes, physical impairments, or neurological etiologies. Patients with spinal cord injury in the thoracic region were selected for this study, and we monitored changes in their bowel function after performing manual therapy along the colon. At the early stage of injury, the internal layer of the rectum and the anal sphincter muscle are in a stage of complete incontinence. The reflex of the voiding function is restored by recovery of the central lumbar-sacral spinal cord after the acute stage. Peristalsis of the intestine and right side colon are maintained by innervation from the vagus nerve so that feces are transported to the large intestine. After spinal cord injury, patients suffer from many kinds of problems such as decreased muscle power and sensation, and impairment of the respiratory system and other functions. Especially, spinal cord injury causes paralysis and high spasticity of the anal sphincter, or results in problems of voiding dysfunction. In this study, we selected patients with thoracic and lumbar spinal cord injury for treatment with manual therapy, as an intervention for defecation function. Our objective was to improve and enhance bowel function, to achieve the goal of patients’ independence in activity of daily living (ADL).

SUBJECTS AND METHODS

Twenty in-patients with spinal cord injury were selected at a hospital. There were 13 males and 7 females (mean age 39.70 ± 5.25). Table 1 shows the basic characteristics of the participants.

The content of therapy included exercise therapy, setting up the habit of defecation (i.e. have a bowel movement at a regular time every day), maintaining a stable psychological status of patients, drinking a certain quantity of water, having food fiber, mechanical stimulation and combination medication. Manual therapy was applied to the patients’ abdomen to modulate tension and improve peristalsis of the colon. A secondary goal was to exercise the pelvic floor muscles to help the patients to excrete. Each patient was positioned in supine lying, with the hip and knee flexed at 90 degrees, with both legs on the therapist’s thigh to completely relax the patient’s abdomen. Then, the therapist pressed down and pushed along the colon ascendens, transverse colon, colon descendens and colon sigmoidem on the surface of the abdomen. This massage was performed to improve the peristalsis of the large intestine. Vibration stimulus was applied to the small intestine through the abdomen. If tension or spasm appeared in the abdomen, the therapist inhibited two key points, one point being 2 fingers above the patient’s umbilicus, and the other point being to the right and below, 1/3 of the distance between the umbilicus and anterior superior iliac spine (ASIS). The fingers were pressed down on two points until the tension or spasm in the abdomen was released. The duration of the treatment was 3 months. During this period, the dietary habit did not change and the amounts of food and water taken were the same as before. The paired t-test was used to compare excretion timing and dosages of glycerine enema before and after treatment. A value of p<0.05 was considered statistically significant. The software package SPSS 17.0 was used for statistical analyses.

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RESULTS

All the subjects enrolled in the study receiving manual therapy 5 times a week for 12 weeks. All the subjects in this study were included in the data analysis. All the subjects seemed to be very comfortable after manual therapy for the abdomen after 2 days to 1 week. Some patients reported their feces could be excreted in 2 hours after manual therapy was implemented. The statistical analyses found significant differences in both timing of bowel movement and dosage of glycerine enema. A statistically significant improvement was found in the mean time of bowel movement; it decreased from 94.00 ± 16.35 minutes to 60.50 ± 10.50 minutes after receiving manual therapy for 3 months. The dosage of glycerine enema was decreased from 68.05 ± 10.50 minutes after manual therapy for 3 months. The best timing for evacuation is after breakfast, it can stimulate gastro-intestinal reflex hyperthyroid activities to make evacuation easy. Moreover, a training plan for defecation should be set according to the lifestyle habits of the patient and implementation of the plan for defecation management.

Several kinds of ability for defecation free of joint motion, residual muscle power and sensation (patient can look from mirror if no sensation around anus), sitting balance, hand function (ability to use auxiliary device) and transfer ability, are needed for spinal cord injury patients. If patients need to succeed at defecation independently, they must make flexible use of the abilities mentioned above, as well as exercise rolling and taking off and putting on clothes. In addition, patients should be trained to look in a mirror and insert a turunda into the anus with an auxiliary device while lying on their sides. If patients need to transfer to a sitting toilet, they must have the ability to take off their trousers and transfer on the toilet pedestal within five minutes of inserting a turunda into the anus. After the training process for the above, patients can achieve this independence goal gradually, and they can check their bowel movements themselves as well as cleaning the anus with an auxiliary device after a bowel movement.

REFERENCE


Table 1. The data of subjects

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<tr>
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<th>Mean ± SD</th>
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<tr>
<td>Age (Y)</td>
<td>39.7±2.25</td>
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<tr>
<td>Height (cm)</td>
<td>168.8±7.2</td>
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<tr>
<td>Weight (kg)</td>
<td>66.1±9.01</td>
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Table 2. Before and after of treatment comparison in of glycerine enema volume

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<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>Glycerine Enema (ml)</td>
<td>68.1±8.9</td>
<td>31.5±11.8**</td>
</tr>
<tr>
<td>Time of bowel (minutes)</td>
<td>94.0±16.4</td>
<td>60.5±10.5**</td>
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**p<0.01