



Case Report

The effectiveness of moxibustion on dysphagia after stroke; A Case Series

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SUMMARY

This study was aimed to evaluate the effectiveness of moxibustion on dysphagia after stroke. We conducted his study in the Department of Cardiovascular and Neurologic Diseases (Stroke Center), Hospital of Oriental Medicine, Kyung Hee Medical Center, from May 1, 2005 to August 1, 2006. After recruiting dysphagia patients after stroke, we applied the Direct Moxibustion (1.2 × 1.4 cm) to the *Chon-Jung* acupoint 5 times, and assessed its effect on swallowing reflex by Swallowing Provocation Test (SPT) before and 30 min after treatment. Effectiveness of the swallowing reflex was assessed by the Latency Time of Swallowing Reflex (LTSR) which was checked from test starting to the onset of swallowing reflex. Thirty four subjects with dysphagia were treated with moxibustion. The mean of the latency time in swallowing reflex was shortened from 2.2 ± 0.9 to 1.5 ± 0.5 seconds after moxibustion, which had statistical significance ($P < 0.001$). We suggest that moxibustion at *Chon-Jung* could be useful for dysphagia after stroke. Further study with a randomized controlled trial compared to placebo is needed to confirm this suggestion.

Key words: Moxibustion; Dysphagia; Stroke

INTRODUCTION

Dysphagia, swallowing dysfunction, is one of the most common symptoms following stroke. It affects the rehabilitation of stroke patients by increasing the risk of nutritional deficits and aspiration pneumonia (Axelsson *et al.*, 1989).

There are some evidences reporting that oriental medical treatments are helpful for cough or swallowing reflex in post stroke patients (Seki *et al.*,

1992; Iwasaki *et al.*, 2002). In the traditional oriental medical book, named “*Zhen-Jiu-Da-Cheng*”, moxibustion at *T'an-Chung* (CV17) could be helpful for swallowing difficulty (Yang, 1992).

Therefore, we were to assess the clinical effect of moxibustion at *T'an-Chung* (CV17) in patient with dysphagia after stroke by swallowing provocation test.

METHODS

Subjects

The study population was composed of 34 dysphagic stroke patients hospitalized in stroke center at Kyung Hee Medical Center, from May 1,

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2005 to August 1, 2006. The presence of dysphagia was screened by Dysphagia Screening Test, and stroke was confirmed by brain CT or MRI. Diagnosis of hypertension, diabetes mellitus, and hyperlipidemia was assigned for subjects already receiving treatment or when the World Health Organization diagnostic criteria (<http://www.who.int/classifications/en/>) were fulfilled at the time of enrollment. Informed consensus was obtained from the study subjects after a full explanation of this study.

Intervention

We applied moxibustion to the *Chon-Jung* acupoint (CV17) located in the center between the nipples (Fig. 1). The moxa we used in this study was made of dried *Artemisia princeps var. orientalis* and a right circular cone with a flat base (diameter 1.2 cm) in the shape of a circle, and a curved upper surface that tapers to a fixed point (height 1.4 cm). We put the moxa on the CV17 and set fire to the top of it with a burning incense. When the patient felt strong warmth in the chest, we removed the moxa immediately to prevent burn damage. And then we put a new moxa on the same point. These procedures were repeated 5 times and it took about 20 min.



Fig. 1. Moxibustion on *Chon-Jung* acupoint located in the center between both nipples. The material was removed before getting burned. This process was repeated 5 times.

Measurement

We assessed the effect of moxibustion on swallowing reflex by Swallowing Provocation Test (SPT). SPT is a method for evaluating the degree of dysphagia. Patient is halfly sited (45°) and a 4 mm internal diameter catheter was inserted from nares to epipharynx, and through this catheter, 2 cc of normal saline was injected abruptly without patient's knowledge. Swallowing responses were identified with observation of thyroid cartilage movement by another observer. Efficiency of the swallowing reflex was assessed by the Latency Time of Swallowing Reflex (LTSR) which was checked from test starting to the onset of swallowing reflex (Seki *et al.*, 2003). This procedure was done twice (before and 30 min after treatment). During the treatment, the nasal catheter was not inserted. To estimate the statistical significance of the change of LTSR, we used paired t-test using SPSS for Windows, version 10.0 (SPSS Inc., Chicago, Illinois, USA).

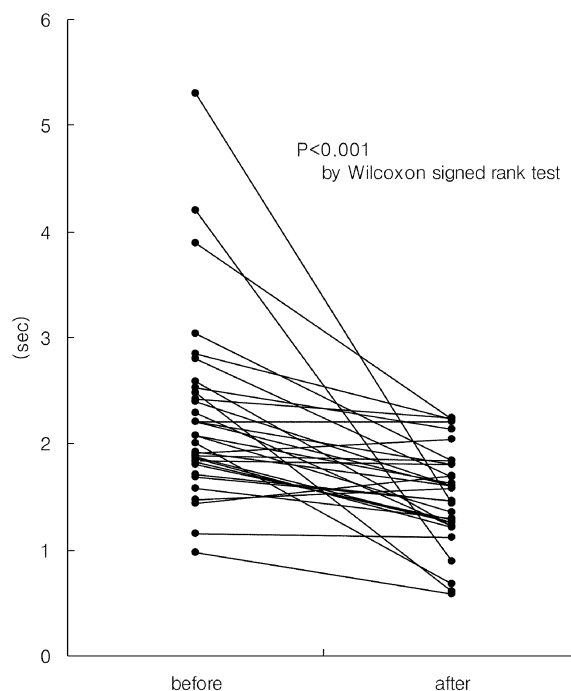


Fig. 2. Latency time in swallowing reflex in stroke patients with dysphagia at baseline and 30 min after moxibustion.

Table 1. Subjects' demographic data

Variables	Values
No. of subjects	34
Sex (male : female)	16 : 18
Age, yr	67.4 ± 11.1
Medical history (%)	
Hypertension	26 (76.5)
Diabetes mellitus	9 (26.5)
Atrial fibrillation	3 (8.8)
Brain lesion (%)	
Cerebral cortex	4 (11.8)
Basal ganglia	16 (47.1)
MCA territory	6 (17.6)
Cerebellar	4 (11.8)
Pontine	4 (11.8)
NIH Stroke Scale	12.9 ± 6.7
Modified Barthel Index	14.4 ± 22.6

RESULTS

There were 34 subjects with dysphagia after stroke. The mean of the latency time in swallowing reflex was shortened from 2.2 ± 0.9 to 1.5 ± 0.5 sec after moxibustion ($P < 0.001$ by Wilcoxon signed rank test), which had statistical significance (Fig. 2).

DISCUSSION

Dysphagia, swallowing dysfunction, is a commonplace event in stroke patients (Mann *et al.*, 1999; Ramsey *et al.*, 2003; Paciaroni *et al.*, 2004), because swallowing process can be carried out successfully when the multi regions of the brain are cooperated well: brainstem, bilateral inferior precentral gyrus, right anterior insula/clastrum, left cerebellum, thalamus, putamen, and several cortical areas (Zald and Pardo, 1999).

Despite the proliferation of oral motor therapies (Lin *et al.*, 2003), much controversy exists regarding the application and benefit of neuromuscular treatments such as strength training for alleviating dysphagia (Clark, 2003).

Recently, there have been some efforts to find

out the alternative therapeutic methods from Traditional Chinese Medicine (TCM). One of the famous herbal formulations, *BANXIA HOUPO TANG* was reported to improve swallowing reflex and increase salivary substance P level, which is known to regulate swallowing reflex, in patients with dysphagia after stroke (Iwasaki *et al.*, 2002). A very similar study to ours was Seki *et al.* (2003) work. They reported electro-acupuncture on *Zusanli, Taixi* acupoints was effective on shortening the latency time in swallowing reflex, but not on substance P level after treatment.

In our study, we confess that we can hardly draw a concrete conclusion because there exists a bias from the way we identified latency time (observation of cartilage movement) and this is not a randomized controlled trial. However, we could observe that the latency time in swallowing reflex in stroke patients with dysphagia was significantly shortened by moxibustion on *T'an-Chung* (CV17) which belongs to the Conception Vessel (Co) and is known to regulate *Qi* in the view of TCM. These results showed that the treatment, which had been introduced in an ancient oriental medical book, could be effective in clinical field. However, unfortunately, we can not fully understand how moxibustion worked. We can just speculate the mechanism might be related with its promoting effect on cortical cerebral blood flow (Uchida *et al.*, 2003), and its stimulating effect on central nervous system (Yano *et al.*, 2004).

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