J Acupunct Res 2018;35(4):187-192

Journal of Acupuncture Research

Journal homepage: http://www.e-jar.org

Original Article

# A Comparative Study on the Effect of Cupping Therapy Combined with Korean Medicine Treatment in Peripheral Facial Paralysis

Chul-Hoon Choi [1], Deok-Hyun Kim [1, 2], Ho-Sueb Song [1, 2, *]

*1 Department of Acupuncture & Moxibustion Medicine, College of Korean Medicine, Gachon University, Seongnam, Korea*
*2 Department of Acupuncture & Moxibustion Medicine, Gil Korean Medical Hospital of Gachon University, Incheon, Korea*

***Article history:***
Submitted: July 25, 2018
Revised: August 9, 2018
Accepted: September 11, 2018

***Keywords:***
Bell's palsy,
Korean traditional medicine,
peripheral facial paralysis, therapy

https://doi.org/10.13045/jar.2018.00185
**pISSN 2586-288X eISSN 2586-2898**

**ABSTRACT**

**Background:** The aim of this study was to compare the effects of different cupping therapy methods combined with Korean medicine treatments for peripheral facial paralysis.
**Methods:** 105 patients treated for peripheral facial paralysis with cupping therapy and other Korean medicine treatment at Gil Korean medicine hospital, Gachon University between May 19, 2014 and June 30, 2018 were selected and their medical charts retrospectively analyzed. 48 patients who met the inclusion criteria were divided into 2 groups: wet cupping (WC) therapy, or dry cupping (DC) therapy combined with Korean medicine treatment. The duration of treatment ranged from 2 weeks for inpatient treatment to 2 months for outpatient treatment. Both WC and DC therapy were performed on TE13, 3 times per week during the treatment period. The effect of cupping therapy was evaluated by using the Gross Grading System of the House-Brackmann (HB score) and the Yanagihara's Unweighted Grading System (Y score).
**Results:** For both WC and DC treatment of symptoms related to peripheral facial paralysis, HB scores showed a significant decrease and Y scores showed a significant increase from baseline to end of treatment, indicating a beneficial improvement in patient symptoms for both WC and DC.
**Conclusion:** In this study, both DC and WC treatment had significant improvements on peripheral facial paralysis symptoms, with WC having significantly greater beneficial effects than DC.



## Introduction

Cupping therapy restores the health of the human body by applying negative pressure to acupuncture points to clean the blood. It is used to treat inflammation and pain, and to improve blood circulation by influencing the purification of blood and tissue fluids, and the acid/base equilibrium of body fluids. It is a method of physical therapy that is commonly used in Korean medical institutions [1]. Cupping therapy can be categorized as herb-based, needle-based, wet cupping (WC), or dry cupping (DC) depending on the method of use. Of these, WC is mainly used for first-aid purposes, whilst DC is used for preventing or treating diseases by removing the gas accumulated in the muscles by the physical action generated by attaching the cup to cleanse the blood [2].

Peripheral facial nerve palsy is a common and easily accessible disease, and there have been clinical studies of various treatments including cupping therapy as well as electroacupuncture [3-5], pharmacopuncture [6,7], bee-venom acupuncture [8,9], moxibustion therapy [10], Master Tung's acupuncture [11], scalp acupuncture [12], miso facial rejuvenation acupuncture [13] and collateral vessel pricking therapy [14]. Among the cupping therapies, there are also treatments using flash cupping to obtain effective clinical results [15], and reports of hematologic changes after WC and DC treatment [16]. However, there has been no direct comparison between WC and DC treatment in patients with peripheral facial nerve palsy. Therefore, the following study was designed to compare the therapeutic effect of WC and DC to determine the basis of treatment of peripheral facial nerve palsy.

*Corresponding author.
Department of Acupuncture & Moxibustion Medicine, College of Korean Medicine, Gachon University, Incheon, Korea
E-mail: hssong70@gachon.ac.kr

## Materials and Methods

### *Patients*

The charts of patients with peripheral facial paralysis who had visited Gil Korean medicine hospital, Gachon university between May 19, 2014 and June 30, 2018 were reviewed retrospectively. Of the 105 patients who received more than 2 weeks of inpatient treatment and more than 2 months of outpatient treatment, 65 patients were divided into either the WC group or DC group, according to the inclusion and exclusion criteria. In the WC group, 10 out of 32 patients were excluded and the final 22 were selected. In the DC group, 7 out of 33 patients were excluded and the final 26 were selected. A total of 48 patients were enrolled in this study (Fig. 1).

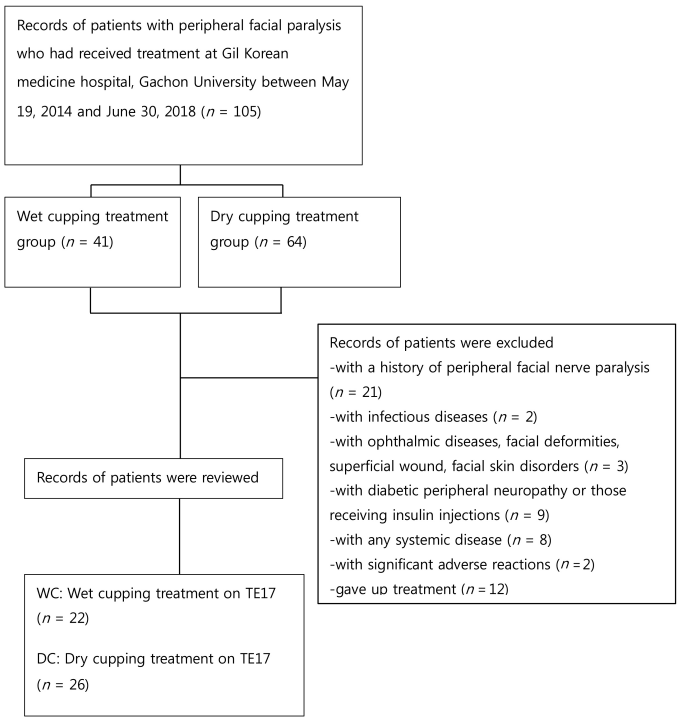


Fig. 1. Process for selecting the charts of patients with peripheral facial nerve paralysis.

Inclusion criteria and group classification

The patients who came to Gil Korean Hospital for treatment of peripheral facial nerve palsy were identified. In the present study, 48 patients were included who had facial nerve palsy symptoms according to House-Brackmann grading scores of Grade Ⅱ or Ⅲ, with onset within 30 days, and treatment duration more than 3 weeks but less than 4 weeks. There were 22 patients who underwent WC on TE17 (Yifeng), and 26 patients who underwent DC on TE17 (Yifeng) with more than 10 treatments.

Symptoms of Bell's palsy generally begin to resolve within 2 to 3 weeks after onset [17], so patients are aware of the improvements in their progress.

Exclusion criteria

Patients were excluded from the analysis if they had a history of peripheral facial nerve paralysis, infectious diseases such as herpes, brain disease, heart disease, ophthalmic disease, facial deformity, superficial wounds, facial skin disorders, diabetic peripheral neuropathy, or those receiving insulin injections, systemic disease, significant adverse reactions during hospital stay, or treatment withdrawal before peripheral facial nerve palsy was resolved.

Ethics statement

This study was a retrospective study approved by the Institutional Review Board (IRB) of Gil Korean Hospital of Gachon University and adhered to research ethics. In order to protect the patient's personal information, the patient's medical record was obtained from the IRB of the Gil Korean Medicine Hospital. (IRB No.: GIRB-18-111)

Acupuncture treatment

Acupuncture was performed with stainless steel needles (0.25 × 30 mm) and hand needles (0.18 × 8 mm; Dongbang Inc., Korea), and each acupuncture treatment was performed once for 20 minutes, for 3 times per week. Acupoints used were unilateral EX-HN3 (Yintang), BL2 (Cuanzhu), EX-HN3 (Yuyao), TE23 (Sizhukong), GB14 (Yangbai), LI20 (Yingxiang), ST4 (Dicang), ST6 (Jiache), ST7 (Xiaguan), SI18 (Quanliao) points and contralateral LI4 (Hegu), SI3 (Houxi), ST36 (Zusanli), ST41 (Jiexi), LR3 (Taichong) points. Acupuncture treatment was performed with electrical stimulation for 15 minutes (mixed 3 Hz, within tolerable strength) using an electro-stimulator (STN-330; StraTek Inc., Korea).

Cupping therapy

Cupping therapy was performed once for 3 minutes, 3 times per week using disposable cups (No. 5) with an inner diameter of 23 mm and a height of 65 mm (Dongbang Inc., Korea). Among the acupoints that have a "dispel wind and dissipate cold" and "move qi and activate blood" effect on patients with facial nerve palsy it was likely to be a "pattern of wind assailing the exterior" and "dual stasis of qi and blood" acupoints belonging to yang brightness meridian and acupoints mentioned in "Chimgugapeulgyung" [8]. Specifically, in "Chimgugapeulgyung, Soo-jok-yang-myung-maek-dong-bal-gu-chi-byeong," it is suggested that the acupoints such as ST5 (Daying), TE17 (Yifeng) and LU9 (Taiyuan) are selected [18]. The facial nerve divides the sensory nerve fibers in the auditory canal and the auditory nerve fibers, and branches the motor nerve fibers in the posterior and posterior gyrus muscles. In addition, the anterior facial branch and the gauze facial branch are branched in the parotid gland and divided into facial muscles in the facial and neck regions [19]. In this study, cupping therapy was selected as the site of TE17 (Yifeng), and WC and DC treatments were performed 3 times per week.

In the case of the WC treatment group, pathogens from the body surface were removed at the puncture operation site (TE17) [2], and the cup was attached for 3 minutes at a pressure of 30-40 cm/Hg In adults, the amount of bleeding at one time of operation was controlled so that it did not exceed 30 mL.

The DC group was also treated with the same site and pressure as the WC treatment group according to Lim and Lee [2].

Herbal Medicine Treatment

Herbal medicine was used according to the patient's condition, "*Boikyangwui*"-decoction, which mainly had the effect of "tonifying the spleen and invigorate the stomach" (Table 1).

Treatments with infrared light therapy and others

Transcutaneous infrared irradiation was performed with acupuncture treatment. Facial muscle exercise and facial massage were used in combination.

Table 1. Prescription Contents of Boikyangwui-decoction.

| Scientific name | Dose (g) |
|---|---|
| *Astragalus mongholicus Bunge* | 30 |
| *Zingiber officinale Rosc.* | 30 |
| *Zizyphus jujuba Mill.* | 30 |
| *Atractylodes ovata* | 20 |
| *Dioscorea japonica Thunb.* | 20 |
| *Amomum xanthioides Wall* | 20 |
| *Crataegus pinnatifida Bge* | 20 |
| *Glycyrrhiza glabra L.* | 20 |
| *Cyperus rotundus L.* | 15 |
| *Magnolia officinalis Rehder et Wilson* | 15 |
| *Citrus reticulata Blanco* | 15 |
| *Pinellia pedatisecta Schott* | 15 |
| *Amomum cardamomum L.* | 15 |
| *Poria cocos (Schw.) Wolf* | 15 |
| *Triticum aestivum L.* | 15 |
| *Hordeum vulgare L.* | 15 |
| *Alpinia oxyphylla Miq.* | 10 |
| *Vladimiria souliei Ling* | 10 |
| *Panax japonicus C. A. Meyer* | 10 |
| Total | 340 |

Table 2. Gross Grading System of House-Brackmann.

| Grade | Description | |
|---|---|---|
| I | Normal | Normal facial function all areas |
| II | Mild dysfunction | Gross: slight weakness is noted on close inspection may have a slight synkinesis<br>At rest: normal symmetry and tone is noted<br>Motion<br>Forehead: motion is moderate to good function<br>Eye: complete closure with minimal effort<br>Mouth: slight asymmetry |
| III | Moderate dysfunction | Gross: obvious but not disfiguring difference between both the sides, noticeable but not severe synkinesis, contracture, or hemifacial spasm<br>At rest: normal symmetry and tone<br>Motion<br>Forehead: slight to moderate movement<br>Eye: complete closure with effort<br>Mouth: slightly weak with maximum effort |
| IV | Moderately severe dysfunction | Gross: obvious weakness and/or disfiguring asymmetry<br>At rest: normal symmetry and tone<br>Motion<br>Forehead: none<br>Eye: incomplete closure<br>Mouth: asymmetric with maximum effort |
| V | Severe dysfunction | Gross only barely perceptible<br>At rest asymmetry<br>Motion<br>Forehead: none<br>Eye: incomplete closure<br>Mouth: slight movement |
| VI | Total paralysis | No movement |

Table 3. Yanagihara's Unweighted Grading System.

| | Scale of rating | Scale of 3 rating |
|---|---|---|
| 1. At rest | 0 1 2 3 4 | 0 2 4 |
| 2. Wrinkle forehead | 0 1 2 3 4 | 0 2 4 |
| 3. Blink | 0 1 2 3 4 | 0 2 4 |
| 4. Closure of eye lightly | 0 1 2 3 4 | 0 2 4 |
| 5. Closure of eye tightly | 0 1 2 3 4 | 0 2 4 |
| 6. Closure of eye on involved side only | 0 1 2 3 4 | 0 2 4 |
| 7. Wrinkle nose | 0 1 2 3 4 | 0 2 4 |
| 8. Whistle | 0 1 2 3 4 | 0 2 4 |
| 9. Grin | 0 1 2 3 4 | 0 2 4 |
| 10. Depress lower lip | 0 1 2 3 4 | 0 2 4 |

Assessment methods

House-Brackmann (H-B grade, Table 2) was used, for evaluating facial paralysis and secondary symptoms at the same time. Yanagihara's Unweighted Grading System Score (Y-system) was also used to record paralysis. Total paralysis is 0, severe- 1, moderate- 2, slight paresis- 3 and normal- 4 (Table 3) [20,21]. The evaluation method was defined as before treatment (HBs, YGs) and after treatment (HBf, YGf).

### *Data analysis method*

The results were statistically analyzed using SPSS® 18.0 for windows program (SPSS Inc., Chicago, IL, USA). Results were expressed as means ± standard deviations. To test the homogeneity of categorical data for WC and DC, Fisher's exact test was used to test whether the data followed a normal distribution. Mann–Whitney U test was used to test for continuous data that were not normally distributed. Wilcoxon signed rank test was used to test the significance of each group during the treatment period. The level of statistical significance was set at $p < 0.05$.

## Results

### *General characteristics of the subject*

There were no significant differences in demographic characteristics and facial palsy measurements between the WC and DC groups (Table 4). Of the 48 cases in the study, there were 22 patients in the WC treatment group consisting of 11 males and 11 females, with 13 cases of paralysis on the left and 9 cases on the right side. The average age of the patients was 47.09 ± 14.20 years. The average number of days after the longitudinal onset visit was 7.45 ± 6.86 days. The average treatment period was 44.50 ± 24.90 days. The DC treatment group had 26 patients, consisting

Table 4. General Demographics and Facial Palsy Characteristics.

| | WC group ($n$ = 22) | DC group ($n$ = 26) | $p$ |
|---|---|---|---|
| Age | 47.09 ± 14.20* | 48.04 ± 16.94* | 0.852§ |
| Gender (Male/Female) | 11/11 | 15/11 | 0.772† |
| Left/Right | 13/9 | 17/9 | 0.788† |
| Period of disease | 7.45 ± 6.86* | 6.85 ± 7.29* | 0.306§ |
| Period of treatment | 44.50 ± 24.90* | 64.69 ± 43.96* | 0.279§ |
| H-B grade | 4.14 ± 0.99* | 4.04 ± 0.66* | 0.481§ |
| Y-system | 19.50 ± 4.86* | 20.00 ± 4.07* | 0.378§ |

*Mean ± SD. †Fischer's exact test. §Mann-Whitney U test.
DC, dry cupping; WC, wet cupping.

Table 5. Improvement in Symptoms Related to Peripheral Facial Paralysis in the WC Treatment Group According to Period of Treatment.

| | HBs-HBf | YGs-YGf |
|---|---|---|
| Z | -3.995 | -4.110 |
| $p$ | 0.01* | 0.01* |

*Wilcoxon signed rank test $p < 0.01$.
HBf, H-B grade at final; HBs, H-B grade at baseline; YGf, Y-system at final; YGs, Y-system at baseline.

Table 6. Improvement in Symptoms Related to Peripheral Facial Paralysis in the DC Treatment Group According to Period of Treatment (HBs-HBf, YGs-YGf).

| | HBs-HBf | YGs-YGf |
|---|---|---|
| Z | -4.427 | -4.462 |
| $p$ | 0.01* | 0.01* |

*Wilcoxon signed rank test $p < 0.01$.
HBs:, H-B grade at baseline; HBf, H-B grade at final; YGs, Y-system at baseline; YGf, Y-system at final.

Table 7. Comparison of H-B Grade and Y-system Score Between WC and DC Treatment Groups.

| | WC ($n$ = 22) | DC ($n$ = 26) | $p$ |
|---|---|---|---|
| Before Treatment (H-B grade) | 4.14 ± 0.99 | 4.04 ± 0.66 | 0.481 |
| After final treatment (H-B grade) | 1.86 ± 0.77 | 2.38 ± 0.80 | 0.035* |
| Before Treatment (Y-system) | 19.50 ± 4.86 | 20.00 ± 4.07 | 0.378 |
| After final treatment (Y-system) | 35.18 ± 4.56 | 32.69 ± 4.85 | 0.039* |

Data are presented as mean ± SD.
*Mann Whitney U test $p < 0.05$.

of 15 males and 11 females, with 17 cases of paralysis on the left, and 9 cases on the right side. The average age of the patients was 48.04 ± 16.94 years. The average number of days after longitudinal incidence was 6.85 ± 7.29 days. The average treatment period was 64.69 ± 43.96 days.

### *Comparison of WC and DC treatment of peripheral facial paralysis symptoms*

WC treatment group

Wilcoxon signed rank test H-B grade and Z of Y-system were -3.985 and -4.110, respectively, indicating a significant decrease in symptoms ($p < 0.01$) after the end of treatment compared with pretreatment scores (Table 5).

DC treatment group

Results of Wilcoxon signed rank test H-B grade and Z of Y-system were -4.427 and -4.462, respectively, indicating a significant decrease in symptoms ($p < 0.01$) after the end of treatment compared with pretreatment (Table 6).

### *Comparison of pre- and post-treatment results between WC and DC treatment*

In the WC treatment group, the mean (± SD) H-B grade was 4.14 ± 0.99, whilst the mean (± SD) DC treatment group grade was 4.04 ± 0.66. After WC treatment, the H-B grade (1.88 ± 0.77) was significantly lower than the DC treatment group (2.38 ± 0.80; $p < 0.05$).

In the Y-system, the mean (± SD) score at pretreatment in the WC treatment group was 19.50 ± 4.86, compared with 20.00 ± 4.07 in the DC treatment group. After treatment, the WC treatment group had a significantly higher Y-system score (35.18 ± 4.56) than the DC treatment group (32.69 ± 4.85; $p < 0.05$; Table 7).

## Discussion

The facial nerve paralysis is referred to as "wabyuk" in "Essential prescriptions of the golden cabinet," "poongguwahoo" in "Treatise on the Pathogenesis and Manifestations of All Diseases," and "guanwasa" in "SanYinFang" [22] since it was referred to as "gubyuk" in "Yellow Emperor's Inner Canon. Youngchu. gyeonggeun" [23]. The causes of peripheral facial paralysis in Korean medicine are due to insufficiency of the "healthy qi," which may result in the deficiency of the meridian vessel, and the worsening of the wind and cold may invade facial circulation, resulting in a disorder of qi-blood circulation [24].

From a medical point of view, peripheral facial paralysis can be divided into nuclear paralysis and nuclear false paralysis. Nuclear paralysis is caused by vascular injuries in the brain, tumor, inflammation, joint syndrome, etc. Sometimes the obstruction to the epilepsy nerve and corticospinal tract is merged. Nuclear festival paralysis is a causative disease caused by facial neuropathy on the peripheral side of the facial nucleus, tumor, infectious disease, sarcograde syndrome, dehydration, that may induce stress and cold exposure. Patients with Bell's palsy who do not have obvious features of idiopathic facial nerve palsy, cannot make wrinkles on their foreheads, upper lips are low, and are unable to whistle. When the mouth is opened, the paralyzed side is distorted and the mouth becomes oblique oval shape, with the tongue resting towards the healthy side. Also, when the eyes are tightly closed, the eyelashes on the paralyzed side remain outside the eyelids. Usually, Bell's palsy is the most common cause of facial nerve paralysis [17,25].

These facial nerve palsies occur in 20-30 people per 100,000, with similar male to female ratios, occurring in all ages, especially in the 20-30s. In the 20 years old or younger age group, this is predominantly in women, whilst in the 40 years or older category, this is more common in men. The same incidence was observed on the left and right side, with the paralysis being mostly unilateral, with 30% of patients having incomplete paralysis, whilst 70% had

complete paralysis, with 0.3% of patients having paralysis on both sides. There were 9% of patients who had a previous history of idiopathic paralysis and 8% with a previous family history of facial paralysis [17,26].

Especially when looking at Bell's palsy, recovery generally begins 2 to 3 weeks after onset with complete recovery within 2 to 3 months, although nerve damage and degeneration does not recover naturally in 86% of cases [17,25,27]. According to Kwon et al [28], Lee et al [11], Park et al [29], Kim et al [30], Ahn et al [5] and Kim et al [9], if the appropriate Korean medical treatment and modern medical treatment are performed, the progress of recovery is shortened and effective.

Kim et al [15] demonstrated that "flash cupping treatment" is effective for facial nerve palsy, focusing on the fact that peripheral facial paralysis is usually a deficiency pattern and the face is paralyzed. In addition, Lee et al [14] also demonstrated that combined therapy utilizing "Collateral vessel pricking therapy" in the treatment of peripheral facial nerve palsy accompanied by a follow-up enhances therapeutic effect and minimizes sequelae. In addition to this cupping therapy, there have been various clinical trials using electroacupuncture, pharmacopuncture, bee-venom acupuncture, moxibustion therapy, Master Tung's acupuncture, scalp acupuncture, Miso facial rejuvenation acupuncture and collateral vessel pricking therapy, with reports of effective hematologic changes after WC and DC procedures [16].

There have been no direct comparisons between WC treatment and DC treatment for peripheral facial nerve palsy. Therefore, this study was designed to compare the therapeutic effect of WC and DC to determine the basis of treatment of peripheral facial nerve palsy. In the WC and DC treatment groups, the treatment results before and after treatment showed a significant decrease or increase in the HB grade and Y-system, respectively, so that all treatments during the treatment period significantly improved the recovery.

Comparing the results of the WC group and DC group, the H-B grades of the WC group were significantly lower than those of the DC treatment group after end of treatment. In addition, in the Y-system, the WC treatment group had significantly higher scores compared with the DC treatment group, indicating that the treatment effect and prognosis of WC treatment was more effective.

The results of this study suggest that WC treatment has significantly greater treatment performance than DC treatment. However, the number of patients in this study was not high enough to provide meaningful clinical significance. Because of the large variation in treatment period, it would be necessary to further investigate using an expanded population, with a blinded, randomized control group. This study was limited because it was a retrospective study of the effects of WC and DC on peripheral facial nerve palsy. In addition, we could not compare the effect of cupping therapy with the effect of Korean medicine combination treatment. Therefore, more controlled clinical studies will be needed in the future.

## Conclusion

The treatment of peripheral facial nerve palsy using both the WC and DC method, showed significant improvements in the treatment results after the end of treatment compared with pre-treatment scores (as assessed by HB grade and Y system).

## Conflicts of Interest

The authors have no conflicts of interest to declare.

## References


[1] Lim JK, Lee CW. Oriental physiotherapy using physical principles. Seoul (Korea): Iljoongsa; 1992. p. 46-48, 73. [in Korean].

[2] Lim JD, Lee CW. A Study on the brief history and procedure of cupping therapy. J Haehwa Med 1994;4:297-318. [in Korean].

[3] Choi CH, Song HS. Effect of electroacupuncture complex therapy on peripheral facial paralysis according to the wave forms. J Korean Acupunct Moxib Soc 2010;27:43-50. [in Korean].

[4] Hwang JH, Lee DG, Lee HJ, Cho HS, Kim KH, Kim KS. Effect of combined silver spike point therapy and electroacupuncture on patients with peripheral facial paralysis. J Korean Acupunct Moxib Soc 2007;24:69-80. [in Korean].

[5] An BJ, Song HS. Effect of electroacupuncture on patients with peripheral facial paralysis. J Korean Acupunct Moxib Soc 2005;22:121-129. [in Korean].

[6] Park JH, Jang SH, Lee CH, Ku JY, Jeun DS, Ahn CB et al. The clinical research of the effectiveness of pharmacopuncture complex therapy on peripheral facial paralysis-hominis placenta pharmacopuncture therapy and sweet bee venom therapy. J Korean Acupunct Moxib Soc 2010;27:79-87. [in Korean].

[7] Lee CW, Kim HG, Heo SW, Jung KK, Ahn CB, Song CH et al. The clinical study about honilirls placenta herbal acupuncture on bell's palsy. J Pharmacopunct 2005;8:87-97. [in Korean].

[8] Yang KR, Song HS. Effect of bee venom pharmacopuncture complex therapy on peripheral facial paralysis. J Korean Acupunct Moxib Soc 2009;26:29-37. [in Korean].

[9] Kim MS, Kim HJ, Park YJ, Kim EH, Lee EY. The clinical research of the efficacy of bee venom aqua-acupuncture on peripheral facial paralysis. J Korean Acupunct Moxib Soc 2004;2:251-262. [in Korean].

[10] Choi CH, Song HS. Effect of moxibustion on peripheral facial paralysis according to selection method of acupoints. J Korean Acupunct Moxib Soc 2008;25:87-94. [in Korean].

[11] Lee CW, Park IB, Kim SW, Kim HG, Heo SW, Kim CH et al. The effect of acupuncture and dong's acupuncture about bell's palsy. J Korean Acupunct Moxib Soc 2004;21:287-300. [in Korean].

[12] Choi YJ, Yoon KJ, Kim MS, Park JY, Jeon JC, Lee TH et al. Effects of scalp acupuncture with usual acupuncture on peripheral facial palsy in comparison with usual acupuncture only. J Korean Acupunct Moxib Soc 2010;27:101-109. [in Korean].

[13] Lee SY, Ko JM, Kim JH, Kwon HJ, Chung JY, Song JH et al. Case study of miso facial rejuvenation acupuncture on intractable facial palsy. J Korean Acupunct Moxib Soc 2009;26:163-171. [in Korean].

[14] Oh MJ, Song HS. Effect of bloodletting therapeutics complex therapy on peripheral facial paralysis patients with back of the affected ear pain. J Korean Acupunct Moxib Soc 2013;30:1-8. [in Korean].

[15] Oh HJ, Song HS. Effect of cupping complex therapy on peripheral facial paralysis. J Korean Acupunct Moxib Soc 2011;28:119-125. [in Korean].

[16] Jeong IS, Song BK, Park SW, Kim JK, Kim YH, Lee SW. Clinical study on the effects of bleeding pressure therapy in patient's RBC, Hb and Hct change. J Int Korean Med 2001;22:414-419. [in Korean].

[17] Korean Acupuncture & Moxibustion Medicine Society. Acupuncture & moxibustion medicine. Paju (Korea): Jipmoondang; 2008. p. 186-187. [in Korean].

[18] Chang CG, Soe GC. Chimgugabeulgyeong. Beijing (China): Inminwisaeng publishing company; 1998. p. 1689-1691, 1870, 1882-1883. [in Chinese].

[19] Baek MG. The newest otorhinolaryngology. Seoul (Korea): Seowang Medicine; 2000. p. 200-202. [in Korean].

[20] Kwon HY, Cho TS, Son IS, Youn HM, Seo JC, Jang KJ et al. The evaluation of improvement of bell's palsy by yanagihara's system. J Korean Acupunct Moxib Soc 2002;19:118-126. [in Korean].

[21] Kim JI, Koh HK, Kim CH. A study of facial nerve grading system. J Korean Acupunct Moxib Soc 2002;18:1-17. [in Korean].

[22] Chinese Medicine Research Institute. TCM symptom differential diagnosis. Beijing (China): Inminwisaeng publishing company; 1987. p. 107-109. [in Chinese].

[23] Hong WS. Yellow emperor's inner canon-youngchu. Seoul (Korea): Oriental medicine research institute; 1995. 102 p. [in Korean].

[24] Lee DS. New acupuncture treatment. Beijing (China): Inminwisaeng publishing company; 1998. p. 155-156. [in Chinese].

[25] Lindsay KW, Bone I, Fuller G. Neurology and Neurosurgery illustrated. Seoul (Korea): Bummun education; 2006. p. 227-228. [in Korean].

[26] Korea society of otorhinolaryngology-head and neck surgery.

Otorhinolaryngology. Seoul (Korea): Ilchokak; 2002. p. 833-856. [in Korean].
[27] Baek MK. New otorhinolaryngology. Seoul (Korea): Daesungmoonhwasa; 1993. p. 122-127. [in Korean].
[28] Kwon SJ, Song HS, Kim KH. The influence of moxibustion and basic compound therapy on peripheral facial paralysis. J Korean Acupunct Moxib Soc 2000;17:160-171. [in Korean].
[29] Park IB, Kim SW, Lee CW, Kim HG, Heo SW, Youn HM et al. Comparative clinical study between oriental medicine and oriental-western medicine treatment on bell's palsy. J Korean Acupunct Moxib Soc 2004;21:191-203. [in Korean].
[30] Kim NO, Chae SJ, Son SS. Comparative clinical study between oriental medicine and oriental-western medicine treatment on bell's palsy. J Korean Acupunct Moxib Soc 2001;18:99-108. [in Korean].