



Case Report

Clinical Review of Pharmacopuncture Therapy Based on the Progression of Bell's Palsy



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ABSTRACT

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There were 26 Bell's palsy cases at the Jecheon Hospital of Korean medicine, Semyung University from February 1, 2019, to February 28, 2021 reviewed. One group (A group) was treated with Bamboo salt pharmacopuncture and cervi cornu parvum pharmacopuncture (CC) pharmacopuncture in the paralyzed side of the face, and the other (B group) group was treated with Soyum pharmacopuncture, and hominis placenta (HP) pharmacopuncture. Amid a paucity of studies that have used bamboo salt and CC pharmacopuncture to treat Bell's palsy, this study aimed to demonstrate possibility of treatment effect on Bell's palsy. In addition, this study was to see if the effect of determine a change in pharmacopuncture was changed according to the progress of Bell's palsy symptoms was effective.

Bell's palsy was improved in each group. Although there were no significant differences in improvement between two groups, Bamboo salt pharmacopuncture and CC pharmacopuncture could be expected to be effective on the paralyzed face. Furthermore, it is effective to switch pharmacopuncture according to the progress of Bell's palsy.

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Introduction

Bell's palsy, the most common type of facial palsy, is reported to affect 20-30 individuals per 100,000 population [1]. The symptoms progress through the following stages: prodromal stage, paralytic stage, aggravating stage, parallel stage, and recovery stage [2].

Western medical treatment for Bell's palsy includes conservative, and surgical treatment. Conservative treatment involves the administration of steroids and antiviral agents for the 1st week to 10 days from the onset of symptoms, and surgical treatment is usually facial nerve decompression [1].

In Korean medicine, the treatments include acupuncture, moxibustion, electropuncture, thread embedding acupuncture, cupping therapy, and pharmacopuncture. Studies of

pharmacopuncture using hominis placenta (HP), soyum, hwangryunhaedoktang, sweet bee venom (SBV), hwangryun, neutral eoheol, and *Calculus Bovis · Fel Ursi · Moschus* (BUM) have been reported [3-6]. In addition, pharmacopuncture with neutral eoheol has been compared with SBV, soyum, and BUM [3-6].

Soyum pharmacopuncture is used for its anti-inflammatory, analgesic, antipyretic, and detoxifying to alleviate the postauricular pain which occurs in the early stages of Bell's palsy. In addition, HP pharmacopuncture has been reported to be effective in nourishing qi and the blood in the later stages of Bell's palsy (the parallel and recovery stages) [7,8].

There is a paucity of studies regarding the effects of bamboo salt pharmacopuncture for postauricular pain in the early stages

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of Bell's palsy (before the parallel and recovery stages) and cervi cornu parvum (CC) pharmacopuncture for muscle strengthening in the later stages (parallel and recovery stages). Moreover, studies investigating the type of pharmacopuncture depending on the stage of progression of Bell's palsy are also lacking. According to previous studies, the soyum pharmacopuncture at the early stage of Bell's palsy and the HP pharmacopuncture at the latter stage are effective [7,8]. Bamboo salt pharmacopuncture was used in this case for early postauricular pain, and CC pharmacopuncture was used in the later stages of the disease, for strengthening the muscle. It was intended to see the possibility of effectiveness of the early bamboo salt pharmacopuncture and the cc pharmacopuncture in the later period of Bell's palsy. Also, we compared the therapeutic effects of CC pharmacopuncture used after improvement in the postauricular pain with bamboo salt pharmacopuncture to that of HP pharmacopuncture used after postauricular pain was improved with soyum pharmacopuncture.

Case Report

Patients

46 patients with peripheral facial palsy at the Department of Acupuncture Medicine Jecheon Hospital of Korean medicine, Semyung University between February 1, 2019, and February 28, 2021, were reviewed against the inclusion and exclusion criteria. 26 patients were selected, 16 patients (Group A) and 10 cases (Group B), and their data were retrospectively reviewed. A group was treated Bamboo salt pharmacopuncture and cervi cornu parvum pharmacopuncture (CC) in the paralyzed face and B group was treated Soyum pharmacopuncture, hominis placenta pharmacopuncture (HP).

Inclusion criteria

- (1) Individuals aged 15-90 years.
- (2) Diagnosis of Bell's palsy within 14 days of onset.
- (3) Length of hospitalization \geq 14 days.

Exclusion criteria

- (1) Patients refused to undergo evaluation or did not clearly indicate their preference.
- (2) Patients with traumatic, congenital, oncologic, granulomatous, or metabolic facial palsy or facial palsy caused by an adverse drug reaction or Herpes zoster.
- (3) Patients with a history of peripheral facial palsy.
- (4) Patients requested discontinuation.
- (5) Patients deemed inappropriate to participate in clinical trial.

Ethics statement

In order to protect patients' information, medical records were accessed following approval from the Institutional Review Board of Department of Acupuncture Medicine Jecheon Hospital of Korean medicine, Semyung University (IRB no.: SMJOH-EX-2021-03).

Treatments

Acupuncture treatment

Sterile stainless needles 0.20 × 30 mm, (Dong Bang Acupuncture Co. Seoul, Korea) were used for acupuncture treatment which was performed twice per day. The needles were positioned at Yepung (TE17), Sajukgong (TE23), Yangbaek (GB14), Cheonggung (SI19), Jichang (ST4), Hyeopgeo (ST6), Sabaek (ST2), Georyo (ST3), and Daeyeong (ST5) on the affected side of the face and retained for 15 minutes (Table 1).

Electroacupuncture

An electro stimulator set at a frequency of 3 Hz (Hanil TM, Seoul, Korea) was applied to the needles at Sajukgong (TE23), Yangbaek (GB14), Jichang (ST4), Hyeopgeo (ST6), Sabaek (ST2), and Georyo (ST3).

Pharmacopuncture

Bamboo salt (Kirin Korean medicine), CC, soyum, and HP (AJ medication) were used for pharmacopuncture. Before inserting the needles, 0.5 cc of bamboo salt and soyum solution was injected with 0.2 cc into TE17, and 0.1 cc into the tender points around TE17 using a 1.0-cc disposable insulin syringe (needle 29-gauge, Shina Corporation, Korea) to treat postauricular pain. For CC and HP pharmacopuncture, 0.6 cc of each solution was injected into the Sajukgong (TE23), Yangbaek (GB14), Jichang (ST4), Hyeopgeo (ST6), Sabaek (ST2), and Georyo (ST3) of the affected side with 0.1 cc of each solution for each acupuncture point.

Herbal medicine

Depending on the symptoms, egigeopungsan and ugakseungmatang were used before the parallel and recovery stages, and bogigeopungsan was used in the parallel and recovery stages. The patients took 120 cc of the medication 3 times a day.

Indirect moxibustion

Moxibustion was performed once a day for 15 minutes.

Physiotherapy

Low-frequency therapy such as silver spike point (SSP) was performed once a day.

Evaluation

Visual analog scale (VAS)

The patients were instructed to indicate pain on a scale of 0 (no symptoms) to 10 (most severe pain) every morning. The pre-hospitalization VAS for postauricular pain was assigned T1, and the VAS after 3 sessions of inpatient pharmacopuncture was assigned T2. The VAS, after 6 sessions of pharmacopuncture, was assigned T3.

Yanagihara's unweighted grading system (Y score) [9]

The Y-score is the sum of scores for the degree of palsy, and the highest possible score is 40. Each item is rated as: 4-normal, 3-slight paresis, 2-moderate paresis, 1-severe paresis, 0-complete paresis. The assessment was performed twice. The pre-treatment assessment was performed on the day of admission, and post-treatment assessment was performed on the day of discharge. All assessments were performed by the practitioner.

The House-Brackmann grade (H-B grade) [10]

The H-B grade is a system to assess facial palsy and any other secondary symptoms. The symptoms are based on a 5-grade system. The H-B grade was performed on the same days that the Y-score and facial disability index (FDI) was graded (Table 2).

FDI [11]

The FDI is a questionnaire comprising 10 items rated on a 5-point scale based on the functional questionnaire. Five items rate the facial functional impairment, and 5 items assess the consequent difficulties. The score for each domain is converted to a 100-point score, with a total score of 200.

Table 1. Revised Standard for Reporting Interventions in Clinical Trials of Acupuncture

Item	Detail	Details
1. Acupuncture rationale	1a) Style of acupuncture	Traditional Korean acupuncture
	1b) Reasoning for treatment provided	Historical context, literature sources and expert's opinion
2. Details of needling	2a) No. of needle insertions per subject per session	20-30
	2b) Name of points used	TE17, TE23, GB14, SI19, ST4, ST6, ST2, ST3, ST5
	2c) Depth of insertion	15-25 mm
	2d) Response sought	De qi response
	2e) Needle stimulation	Manual
	2f) Needle retention time	0/15 min
	2g) Needle type	0.25 (diameter) × 30 (length) mm Dongbang stainless steel disposable acupuncture needle
3. Treatment regimen	3a) No. of treatment sessions	Group A*: 26.19 ± 6.16 (mean) Group B†: 28.30 ± 9.11 (mean)
	3b) Frequency and duration of treatment sessions	Group A*: Twice daily for 26.19 ± 6.16 d (mean d) Group B†: Twice daily for 28.30 ± 9.11 d (mean d)
4 Other components of treatment	4a) Details of other interventions administered to the acupuncture group	Pharmacopuncture, herbal decoction, IR, Indirect moxibustion, SSP, physiotherapy, Western medicine treatment
5. Practitioner background	5a) Description of participating acupuncturists (qualification of professional affiliation, years in acupuncture practice, other relevant experience)	1) Resident of department of Acupuncture and Moxibustion with > 3 y experience
6. Control of comparator interventions	6a) Not applicable	Not applicable

* Group A: bamboo salt pharmacopuncture and CC pharmacopuncture.

† Group B: soyum pharmacopuncture, HP pharmacopuncture.

IR, infrared; SSP, silver spike point.

Table 2. Patient Characteristics.

Characteristics		Group A [‡] (n = 16)	Group B [§] (n = 10)	P
Sex	Total (male/female)	16 (11/5)	10 (4/6)	
Age (y)	Mean ± SD	53.94 ± 18.91	59.60 ± 13.44	0.419*
Left/Right	n	9/7	7/3	
Period of onset to 1 st hospital visit (d)	Mean ± SD	5.56 ± 3.03	4.80 ± 3.77	0.336*
Hospitalization period (d)	Mean ± SD	26.19 ± 6.16	28.30 ± 9.11	0.698*
Steroid-intake	n	5	5	0.425 [†]
DM	n	4	2	1.000 [†]

* Compared between groups: analyzed by Mann-Whitney test.

† Compared between groups: analyzed by Fisher's exact test.

[‡] Group A: bamboo salt pharmacopuncture and CC pharmacopuncture.

[§] Group B: soyum pharmacopuncture, HP pharmacopuncture.

DM, diabetes mellitus.

Data analysis

The results were analyzed by SPSS Version 23.0 (SPSS Inc, USA). Homogeneity between the 2 groups was tested using Fisher's exact test or Mann-Whitney U test. Changes after the treatment were analyzed using the paired t test or Wilcoxon signed-rank test depending on the normality of the data. All measurements are presented as mean ± SD, and statistical significance was set at *p* < 0.05.

General characteristics

There were 26 patients included in the study population that comprised 15 men and 11 women. Group A (*n* = 16) consisted of 11 men and 5 women, whilst Group B (*n* = 10) consisted of 4 men and 6 women. The mean age was 53.94 ± 18.91 (31-87) years in Group A and 59.60 ± 13.44 (40-69) years in Group B. Facial palsy was on the left in 9 patients and on the right in 7 patients in Group A, whilst it was on the left in 7 patients and on the right in 3 patients in Group B. Time of hospitalization was 5.56 ± 3.03 (3-13) days in Group A and 4.80 ± 3.77 (1-10) days in Group B. The length of stay was 26.19 ± 6.16 (17-38) days in Group A and 28.30 ± 9.11 (15-45) days in Group B. There were 5 patients administered steroids in Group A, and 5 patients in Group B. A medical history of DM was present in 4 patients in Group A and 2 in Group B. There were no significant differences in the general characteristics between the 2 groups (Table 2).

Assessments

Changes after treatment in Group A

The Y-score increased from 7.47 ± 3.50 before treatment to 29.50 ± 4.60 after treatment. The H-B grade decreased from 3.31 ± 0.60 to 2.12 ± 0.34. The FDI increased from 88.56 ± 18.52 to 140.13 ± 19.12. Group A showed statistically significant changes in all assessment parameters after treatment (*p* < 0.05; Table 3).

Changes after treatment in Group B

The Y-score increased from 9.10 ± 4.43 before treatment to 28.20 ± 7.51 after treatment. The H-B grade decreased from 3.50 ± 0.53

to 2.10 ± 0.10. The FDI increased from 96.70 ± 15.96 to 137.40 ± 14.00. Group B showed statistically significant changes in all assessment parameters after treatment (*p* < 0.05, Table 3).

Differences in VAS for postauricular pain between the 2 groups

The mean ± SD of VAS scores at T1 in Groups A and B was 2.19 ± 1.42 and 2.00 ± 1.25, respectively; Group A had slightly higher VAS. The mean ± SD of VAS at T2 in Groups A and B was 1.63 ± 1.26, and 2.20 ± 1.03, respectively; Group A had a slightly lower VAS. The mean ± SD of VAS scores at T3 in Groups A and B were 1.00 ± 1.10 and 1.00 ± 1.05, respectively. There were no significant differences between the 2 groups at T1, T2, and T3 (Table 4).

Differences in pre- and post-treatment facial palsy parameters between the 2 groups

The mean ± SD of Y-scores at admission in Groups A and B was 7.47 ± 3.50 and 9.10 ± 4.43; Group A had a slightly higher value. The mean ± SD of H-B grade at admission in Groups A and B was 3.31 ± 0.60 and 3.50 ± 0.53, respectively. The mean ± SD of FDI at admission in Groups A and B was 88.56 ± 18.52 and 96.70 ± 15.96, respectively. There were no significant differences between the 2 groups in these parameters.

After treatment, the mean ± SD of Y-scores in Groups A and B were 29.50 ± 4.60 and 28.20 Department of Acupuncture Medicine Jecheon Hospital of Korean medicine, Semyung University ± 7.51, respectively. The mean ± SD of H-B grades were 2.12 ± 0.34 and 2.10 ± 0.10, respectively. The mean ± SD of FDI was 140.13 ± 19.12 and 137.40 ± 14.00, for Groups A and B, respectively. There were no significant differences between the 2 groups in those parameters (Table 5).

Discussion

Bell's palsy progresses through stages: prodromal, paralytic, aggravating, parallel, and recovery stage. The prodromal stage is where pathological anomalies develop in the face, head, and neck. The paralytic stage is where paralysis begins to develop, and the aggravating stage is the stage where paralysis further worsens. The parallel stage is the stage from aggravation to immediately before

Table 3. The Changes of Scale Score Between Before Treatment and After Final Treatment in Each Group.

		Before treatment	After treatment	<i>p</i>
		Mean ± SD	Mean ± SD	
Group A [‡]	Y-score	7.47 ± 3.50	29.50 ± 4.60	< 0.001*
	H-B grade	3.31 ± 0.60	2.12 ± 0.34	0.001*
	FDI	88.56 ± 18.52	140.13 ± 19.12	< 0.001 [†]
Group B [§]	Y-score	9.10 ± 4.43	28.20 ± 7.51	0.005*
	H-B grade	3.50 ± 0.53	2.10 ± 0.10	0.004*
	FDI	96.70 ± 15.96	137.40 ± 14.00	< 0.001 [†]

* Compared within group: analyzed by Wilcoxon signed rank test.

[†] Compared within group: analyzed by paired t test.

[‡] Group A: bamboo salt pharmacopuncture and CC pharmacopuncture.

[§] Group B: soyum pharmacopuncture, HP pharmacopuncture.

FDI, facial disability index; H-B grade, House-Brackmann grade; Y-score Yanagihara's score.

Table 4. Differences in VAS for Postauricular Pain Between the 2 Groups.

	Group A*	Group B†	<i>p</i>
	Mean ± SD	Mean ± SD	
T1 [§]	2.19 ± 1.42	2.00 ± 1.25	0.517*
T2	1.63 ± 1.26	2.20 ± 1.03	0.391*
T3 [‡]	1.00 ± 1.10	1.00 ± 1.05	0.979*

* Compared between groups: analyzed by Mann-Whitney test.

† Group A: bamboo salt pharmacopuncture and CC pharmacopuncture.

‡ Group B: soyum pharmacopuncture, HP pharmacopuncture.

§ T1: pre-hospitalization VAS for postauricular pain.

|| T2: VAS after 3 sessions of pharmacopuncture therapy.

‡ T3: VAS after 6 sessions of pharmacopuncture therapy.

VAS, visual analog scale.

Table 5. Differences in Facial Palsy Parameters Between the 2 Groups.

	Group A [‡]	Group B [§]	<i>p</i>
	Mean ± SD	Mean ± SD	
Y-pre	7.47 ± 3.50	9.10 ± 4.43	0.452*
HB-pre [‡]	3.31 ± 0.60	3.50 ± 0.53	0.517*
FDI-pre ^{**}	88.56 ± 18.52	96.70 ± 15.96	0.263†
Y-post ^{††}	29.50 ± 4.60	28.20 ± 7.51	0.979*
HB-post ^{‡‡}	2.12 ± 0.34	2.10 ± 0.10	0.938*
FDI-post ^{‡‡}	140.13 ± 19.12	137.40 ± 14.00	0.702†

* Compared between groups: analyzed by Mann-Whitney test.

† Compared between groups: analyzed by Student t test.

‡ Group A: bamboo salt pharmacopuncture and CC pharmacopuncture.

§ Group B: soyum pharmacopuncture, HP pharmacopuncture.

|| Y-Pre: Y-score of pre-treatment.

‡ HB-Pre: H-B grade of before treatment.

** FDI-Pre: FDI of before treatment.

†† Y-Post: Y-score of after treatment.

‡‡ HB-Post: H-B grade of after treatment.

‡ FDI-Post: FDI of after treatment.

FDI, facial disability index; H-B grade, House-Brackmann grade; Y-score, Yanagihara's score.

recovery, and the recovery stage is when recovery begins [2,12].

Soyum pharmacopuncture has been reported to treat supraspinatus tendinitis and subdeltoid bursitis [13] and has been investigated for its anti-inflammatory and analgesic effects for postauricular pain in Bell's palsy [7]. Bamboo salt pharmacopuncture has been reported to suppress the formation of carrageenan, and platelet and granulomas through its anti-inflammatory action [14], and its can improve eczema nummular [15]. HP pharmacopuncture is effective in treating deficiencies, and penetrates the liver and kidney to nourish the blood and qi. CC pharmacopuncture contains CC pills, ammonium carbonate, colloid, chondrin, and hormones [16]. It is effective for renal dysfunction, impotence, lack of energy, weakness of the extremities, and diseases caused by blood or yin deficiency [17].

To date, only a handful of studies have reported the use of

bamboo salt and CC pharmacopuncture to treat Bell's palsy, and no previous study changed the pharmacopuncture based on the symptoms and compared the outcomes. According to previous studies, the soyum pharmacopuncture at the early stage of Bell's palsy and the HP pharmacopuncture at the later stage are effective [7,8]. Based on previous studies that examined the use of soyum and HP pharmacopuncture to treat Bell's palsy, we hypothesized that the anti-inflammatory bamboo salt pharmacopuncture would also be effective in improving postauricular pain that occurs in the early stages of Bell's palsy before the parallel and recovery stages [7]. Also, we hypothesized that CC pharmacopuncture, which tonifies kidney yang, provides essence, and strengthens bones, would also be effective in treating Bell's palsy that has progressed to the parallel and recovery stages [16].

Of 46 patients who were diagnosed with Bell's palsy and received

inpatient care at Jecheon Hospital of Korean medicine, Semyung University between February 1, 2019, and February 28, 2021, the electronic record of 26 patients selected based on the inclusion and exclusion criteria. These 26 cases included 16 cases treated with bamboo salt and CC pharmacopuncture (Group A) and 10 cases treated with soyum and HP pharmacopuncture (Group B). The participants were limited to patients who presented to the hospital within two weeks of onset; this was to ensure the inclusion of patients who had postauricular pain before the parallel and recovery stages of Bell's palsy. As the disease progressed through its natural course, the treatment regimen was changed to CC or HP pharmacopuncture in the parallel and recovery stages. Although there were no significant differences between the two groups, each group showed significant improvement in all facial palsy parameters (i.e. Y-score, H-B grade and FDI).

The limitations of this study are the small sample size and the inability to a double-blind study. Other limitation is the effect of pharmacopuncture on the Bell's palsy patients treated with steroids could not be analyzed due to the small sample size. However, this study suggests that possibility that use of bamboo salt and CC pharmacopuncture are effective in treating Bell's palsy. Furthermore, it can be expected that using bamboo salt pharmacopuncture for postauricular pain before the parallel and recovery stages and switching to CC pharmacopuncture in the parallel and recovery stages may be effective. Based on this, well-designed clinical studies are needed to prove these effects in the future.

Conflicts of Interest

The authors have no conflicts of interest to declare.

References

- [1] Korean Society of Otorhinolaryngology-Head and Neck Surgery. Otorhinolaryngology. Seoul (Korea): Iljogak; 2005. p. 209-211. [in Korean].
- [2] Hong KE. Prevalence and Treatment Pattern of Korean Patients with Facial Palsy. *J Acupunct Res* 2010;27:137-146. [in Korean].
- [3] Yoo HJ, Kim KJ. Analysis of Pharmacopuncture Used in Facial Nerve Palsy. *J Korean Med* 2019;32:105-115. [in Korean].
- [4] Choi YJ, Kim JH, Yoon KJ, Yeo IH, Lee CK, Lee EY et al. Comparative Study of BUM Pharmacopuncture and Soyeom Pharmacopuncture on Peripheral Facial Paralysis with Postauricular Pain. *J Acupunct Res* 2012;29:31-37. [in Korean].
- [5] Im SH, Lee MJ, Lee SM, KIM ES, Lee SH, Kang JW et al. A Comparative Study of the Effects of Jungsongouhyul Pharmacopuncture Treatment and Bee Venom Pharmacopuncture Treatment on Preipheral Facial Paralysis. *J Korean Med Ophthalmol Otolaryngol Dermatol* 2014;31:135-144. [in Korean].
- [6] Lee JH, Yang TJ, Kim SW, Jeong JY, Ma YH, Oh JS et al. Efficacy between Hwnagryunhaedok-tang Pharmacopuncture Therapy and Hominis Placenta Pharmacopuncture Therapy on Peripheral Facial Paralysis: Retrospective Comparison Study. *Korean J Acupunct* 2015;32:199-207. [in Korean].
- [7] Shin HW, Kang JH, Lee H. Efficacy of Soyeom Pharmacopuncture on Pstauricular Pain Accompanied with Peripheral Facial Paralysis. *J Acupunct Res* 2009;26:41-49. [in Korean].
- [8] Lee CW, Kim HG, Heo SW, Jung KK, Ahn CB, Song CH et al. The Clinical Study about Hominis Placenta Herbal Acupuncture on Bell's Palsy. *J Pharmacopunct* 2004;8:87-97. [in Korean].
- [9] Yanagihara N. Grading of facial palsy. In *Facial Nerve Surgery*. Amsterdam (Netherlands): Kugler Medical Publications; 1977. p. 533-535.
- [10] House JW. Facial nerve grading system. *Laryngoscope* 1983;93:1056-1069.
- [11] Van Swearingen JM, Brach JS. The facial disability index: Reliability and validity of a disability assessment instrument for disorders of the facial neuromuscular system. *Phys Ther* 1996;76:1288-1298.
- [12] The Korean Acupuncture and Moxibustion Society Textbook Publishing community. *The Text Book of Acupuncture and Moxibustion*, 2nd ed. Seoul (Korea): Jipmoondang; 2014. p. 657-658. [in Korean].
- [13] Kim SR, Hong KE. The clinical observations of 3 cases of metatarsal tendinitis treated with anti-inflammatory herbal acupuncture. *J Pharmacopunct* 2007;10:157-162. [in Korean].
- [14] Yoo TM, Lee SY, Jeong SY, Seung SA, Ryu HM, Lee EB et al. Studies on the Anti-inflammatory Effects of Natural Products. *J Appl Pharmacol* 1998;6:269-275. [in Korean].
- [15] Shin JM, Kang MS. A Clinical Study on the Case of Nummular Eczema Treat with Bamboo Salt Pharmacopuncture and Herbal Medicine. *J Acupunct Res* 2008;25:175-182. [in Korean].
- [16] *Journal of Pharmacopuncture. Pharmacopuncturology*, 2nd ed. Seoul (Korea): Hanmi Medical Book; 2011. p. 18-20. [in Korean].
- [17] Kim JE, Hoong CH. Two Clinical Case Reports on Ipsilateral Facial Palsy and Conjugate Gaze Palsy caused by Foville Syndrome & Foville-Millard-Gubler Synderome. *J Korean Med Ophthalmol Otolaryngol Dermatol* 2011; 24:129-137. [in Korean].