



Research Trend in Korean Medicine Treatment for Hemifacial Spasm

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This study reviewed clinical papers reported on hemifacial spasm (HFS). Six online databases were searched for clinical papers published between January 2000 and December 2022. This study reviewed 14 studies, including 13 case reports and 1 combination of case reports and randomized controlled trials (RCTs). The most frequently used acupoints were ST7 and TE17, and the stomach meridian was the most frequently selected. Herbal medicine, pharmacopuncture, thread embedding acupuncture, cupping, moxibustion, and physical therapy were combined with acupuncture. The most frequently used evaluation method is Scott's scale. Out of 95 cases, 82 reported improved HFS symptoms after treatment. Our findings indicated the effectiveness of Korean Medicine treatment in treating HFS. However, evidence of efficacy and safety remains insufficient. Large-scale and well-designed investigations will be required in the future to corroborate these results. We believe that this paper will serve as the foundation for future RCTs.

Keywords: Acupuncture; Hemifacial spasm; Research

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INTRODUCTION

Hemifacial spasm (HFS) is a rare disease characterized by involuntary, sudden twitching in the hemifacial region [1]. HFS is believed to be associated with vascular compression of the facial nerve at the root exit zone although its pathology has not been identified [2-4]. Only the orbicular oculi may be affected in mild cases, but clonic spasms may spread across the same side of the face innervated by the facial nerve as the HFS progresses [4,5]. Spasms are irregular, intermittent, one-sided, and painless [2]. Treatment included massage, drugs, such as carbamazepine and botulinum injection, and microvascular decompression (MVD) [2,3].

Many patients want to treat HFS with Korean medicine treatment in the clinic. Over 20 years, various clinical studies on Korean medicine treatments, including acupuncture, herbal medicine, and Melonis Calyx vomiting therapy [6], have been reported. However, most of the published clinical studies were case reports. Conducting a systematic review based on them was difficult. High-quality randomized controlled trials (RCTs) to demonstrate the safety and efficacy of Korean medicine treatments for HFS have not been reported. Therefore, this study aimed to analyze the frequently used treatments, evaluation methods, and effective rates in case reports for a large-scale RCT study.

MATERIALS AND METHODS

1. Data search strategy

The published papers were retrieved from Oriental Medicine Advanced Searching Integrated System, Research Information Sharing Service, PubMed, The Cochrane Library, Japan Science and Technology Information Aggregator, Electronic, and China National Knowledge Infrastructure on December 20, 2022. Additionally, references in the literature were reviewed. The search words were combinations of medical subject headings (MeSH), “hemifacial spasm,” “acupuncture,” “thread embedding therapy (TEA),” and “pharmacopuncture.”

One researcher searched and then removed duplicate papers. Then, the researcher screened the titles and abstracts based on the exclusion criteria. Finally, the researcher examined the full text of retrieved papers and made a selection.

The characteristics of the papers and patients (publication year and country, study design, HFS region, pa-

tient’s sex and age, duration, and diagnosis), treatment (acupuncture, herbal medicine, and other interventions), evaluation, and adverse effects were analyzed.

2. Eligibility criteria

The inclusion criteria were (1) clinical papers, (2) papers published in English, Korean, and Japanese, (3) papers published from January 1, 2000, to December 31, 2022, and (4) papers that treat HFS with Korean Medicine and other additional interventions.

The exclusion criteria were (1) animal studies, review studies, and conference posters, (2) papers unavailable for full-text access, (3) papers unrelated to HFS, and (4) papers in which acupuncture was not the main intervention.

RESULTS

1. Study search results

Initially, 99 papers were retrieved. Then, 14 papers were removed in duplicate, thus the first screening included 85 papers. After the title and abstract screening, 69 papers were eliminated. Out of the remaining 16 papers, 2 papers were excluded because acupuncture was not the main treatment modality and the intervention was unclear, respectively. Finally, our analysis included 14 papers (Fig. 1) [7-20].

2. Publication years and country

Two papers each were published in 2000 and 2003, 1 paper each was published in 2009, 2010, and 2011, 2 papers were published in 2013, and 1 paper each was published in 2014, 2015, 2017, 2019, and 2020. Based on the country of publication, 11 papers were published in Korea and 1 paper each was published in Japan, Indonesia, and China (Table 1).

3. Study design

The 14 clinical papers included 1 RCT mixed with case reports (7%) and 13 case reports (93%).

4. Hemifacial spasm regions

The left side of the face was affected in 59 (62%) cases, while the right side was affected in 36 (38%) cases. The eye, mouth, and cheek were affected in 38 (40%), 13 (13.7%), and 8 (8.4%) cases, respectively. However, the affected area was not specified in 12 cases (Table 2).

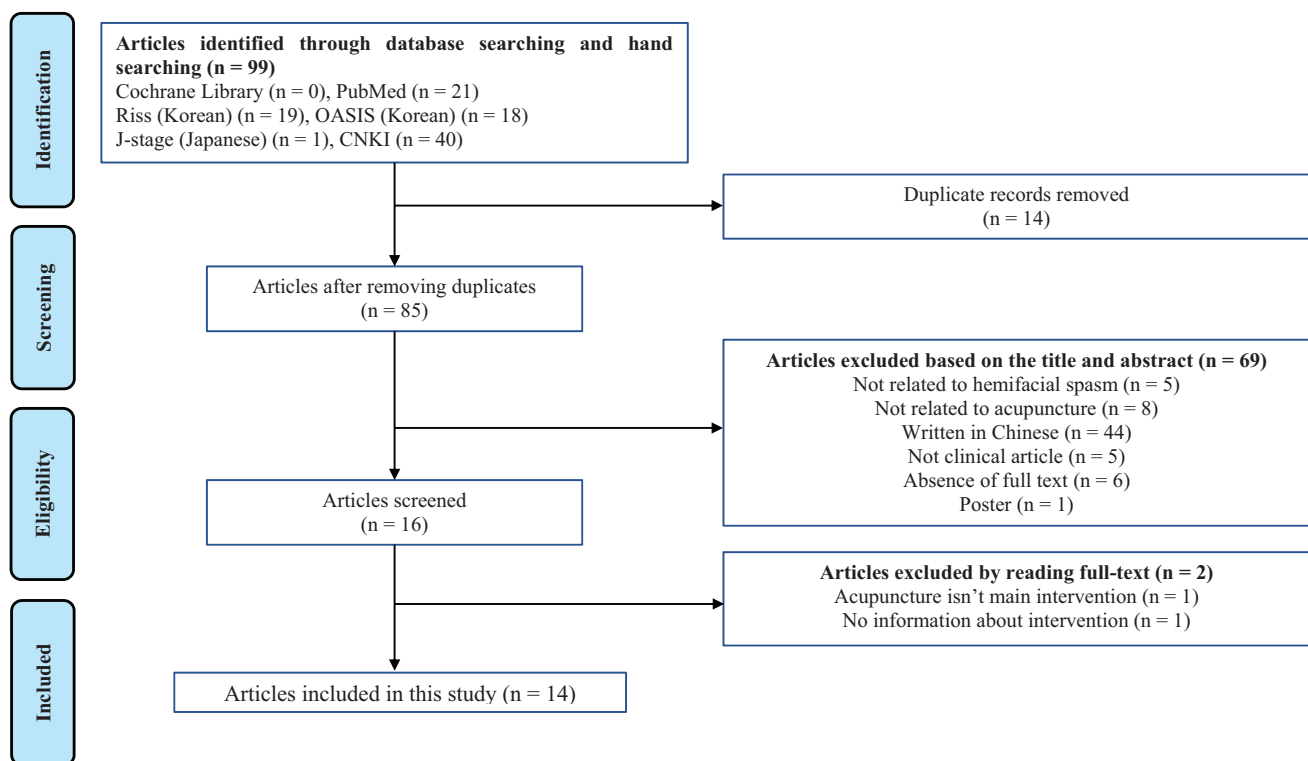


Fig. 1. Papers selection flow chart.

5. Characteristics of the patients

The case reports included 95 patients: 32 male and 63 female (Table 1). The exact ages of the patients were reported in 11 but not in 3 papers. The age distribution was 11 (12%), 22 (23%), 32 (33%), 19 (20%), and 11 (12%) cases in their 20s, 30s, 40s, 50s, and 60s or older, respectively.

6. Hemifacial spasm duration

The duration varied from 20 days to 6 years (Table 1).

7. Diagnosis of hemifacial spasm

Ninety-two cases were idiopathic. One case was caused by the sequelae of Bell's palsy and 2 cases by vascular compression. HFS was diagnosed based on clinical symptoms. Radiology images, such as brain magnetic resonance imaging (MRI) and computed tomography (CT), were confirmed in only 7 (7.3%) cases (Table 1).

8. Acupuncture treatment

Among the 14 papers, 2 described the muscles in which the acupuncture needles were inserted, and 12 specified accurate acupoints. The most popular acupoints were TE17 and ST7, used 7 times (Table 3). Most of the acupoints used belonged to the stomach meridian.

Three papers used distal acupoints, Kim et al. [17] used Cheuk-Samni and Cheuck-ha-Samni for treatment, and Jang [16] used liver tonification. Wen [10] compared the therapeutic effects of local acupoints and wrist-ankle points in an RCT.

Two papers did not specify the acupuncture needle size. The needle sizes varied among the 12 papers: 0.20 × 15 mm, 0.20 × 30 mm, 0.25 × 40 mm, 0.30 × 15 mm, 0.30 × 30 mm, 0.30 × 40 mm, 0.35 × 30 mm, and 0.35 × 40 mm (Table 4).

Four papers did not describe the insertion depth. The insertion depth varied among the 10 papers: 5–10 mm, 5–15 mm, 5–20 mm, 10–20 mm, 37 mm, 0.5–1.0 inch, and 0.5–1.0 chon (a unit of Korean medicine) (Table 4).

Two papers did not describe the retention time, and 1 paper did not retain acupuncture. The retention time among the 11 papers varied from 15 to 30 minutes. The most popular retention time was 15–20 minutes. Three papers did not specify the treatment duration. The treatment duration among the 11 papers varied from 4 days to 14 months. Two papers did not specify the number of treatment sessions. The number of treatment sessions among the 12 papers varied from 2 to 60. The most popular number of treatment sessions was 7 and 8 (Table 4).

Additionally, electroacupuncture was used in 2 papers.

Table 1. Basic characteristics

| Author (y) | Nationality | Study design | HFS region | Sex/age | Duration | Diagnosis |
|----------------------------------|-------------|--|---------------------------------|---|--|---|
| Septriana and Perdana (2020) [7] | Indonesia | Case report | Lt. | M/69 | 6 mo | Clinical symptoms (normal brain MRI) |
| Jung et al. (2019) [8] | Korea | Case report | Lt. (n = 7) Rt. (n = 17) | M (n = 8); F (n = 16)/ 20-60s | < 1 mo (n = 15), 1-2 mo (n = 6), > 3 mo (n = 3) | Clinical symptoms |
| Kim et al. (2017) [9] | Korea | Case report | Lt. Lt. | F/56 F/40 | 6 mo 2 y | Clinical symptoms (normal brain MRI) Clinical symptoms (normal brain MRI) |
| Wen (2015) [10] | China | Case report Randomized controlled trial | Rt. NR | M/42 Obs: M (n = 17); F (n = 23)/ 43 ± 13 (20-68 y) Control: M (n = 19); F (n = 21)/ 45.0 ± 11.0 (25-62 y) | 6 mo Obs: 9.2 ± 1.0 mo (20 d-3 y) Control: 10.2 ± 1.2 mo (32 d-4 y) | Clinical symptoms Clinical symptoms |
| Ji et al. (2014) [11] | Korea | Case report | Lt. Rt. | F/59 F/41 | 4 y 7 mo | Clinical symptoms (normal brain MRI, EMG) Clinical symptoms |
| Hur and Song (2013) [12] | Korea | Case report | Rt. Rt. | F/64 F/41 | 3 mo 2-3 mo | Clinical symptoms Clinical symptoms |
| Jo et al. (2013) [13] | Korea | Case report | Lt. (n = 24) Rt. (n = 8) | M (n = 11); F (n = 21)/20-60s | < 1 mo (n = 18), 1-3 mo (n = 8), > 3 mo (n = 6) | Clinical symptoms |
| Lee et al. (2011) [14] | Korea | Case report | Lt. | M/29 | 3 y | Clinical symptoms (after facial palsy) |
| Heo et al. (2010) [15] | Korea | Case report | Lt. (n = 5) Rt. (n = 5) | M (n = 2); F (n = 8)/ 30-60s | < 1 mo (n = 2), 1-3 mo (n = 3), 4-6 mo (n = 2), 7-12 mo (n = 2), > 13 mo (n = 1) | Clinical symptoms |
| Jang (2009) [16] | Korea | Case report | Lt. Lt. Lt. | F/41 F/36 F/45 | Case 1: 1 mo Case 2: 1 mo Case 3: 1 y | Clinical symptoms Clinical symptoms Clinical symptoms |
| Kim et al. (2003) [17] | Korea | Case report | Rt. Lt. Lt. | M/28 M/30 F/58 | Case 1: 2 y Case 2: 2 y Case 3: 1 y | Clinical symptoms (other hospital, vessel compression) Clinical symptoms Clinical symptoms (normal brain CT) |
| Park and Kim (2003) [18] | Korea | Case report | Lt. Lt. Lt. | M/43 F/44 M/39 | 1 y 2 mo 3 mo | Clinical symptoms Clinical symptoms Clinical symptoms |
| Cho et al. (2000) [19] | Korea | Case report | Lt. Lt. Lt. Rt. Rt. | F/58 F/67 F/67 M/37 M/35 | 3 yo 6 yo 1 yo 3 yo 2 yo | Clinical symptoms (MRI, vessel compression) Clinical symptoms Clinical symptoms Clinical symptoms (normal brain CT) Clinical symptoms |
| Tsukayama et al. (2000) [20] | Japan | Case report | Lt. Lt. Lt. Lt. Lt. | F/37 F/43 F/56 M/46 M/37 F/57 | 3 y 10 mo 2 y 2 y 2 y 2 y | Clinical symptoms Clinical symptoms Clinical symptoms Clinical symptoms Clinical symptoms Clinical symptoms |

HFS, hemifacial spasm; Rt., right; Lt., left; M, male; F, female; MRI, magnetic resonance imaging; EMG, electromyography; CT, computed tomography; NR, not reported.

Table 2. Distribution of locations affected by hemifacial spasm

| Location | Left | Right | Total |
|---------------|------|-------|-------|
| Eyes | 24 | 17 | 38 |
| Cheek | 4 | 4 | 8 |
| Mouth | 10 | 3 | 13 |
| Mandibular | 1 | 0 | 1 |
| Eyes + cheek | 4 | 4 | 7 |
| Cheek + mouth | 3 | 3 | 6 |
| Eyes + mouth | 2 | 1 | 2 |
| All lesions | 2 | 1 | 2 |
| Unspecified | 9 | 3 | 12 |
| Total | 59 | 36 | 95 |

Values are presented as number only.

Kim et al. [9] used 3 Hz for ST4 and ST6. Tsukayama et al. [20] used 1–50 Hz but did not specify the acupoints (Table 4).

9. Pharmacopuncture

Among the 4 papers that used pharmacopuncture, 3 used Hominis placental pharmacopuncture and 1 used Soyeom pharmacopuncture.

ST6 was used 3 times, ST2, ST3, ST4, ST5, ST7, TE17, TE23, and BL2 were used twice, while ST1, ST3, ST5, SI4, SI18, BL1, BG1, and BL3 were used once. 3 papers injected pharmacopuncture at multiple acupoints. Heo et al. [15] injected 1 mL of Soyeom pharmacopuncture at GB20. 3 papers injected < 1 mL of the pharmacopuncture dosage while Jo et al. [13] injected 1–2 mL (Table 5).

10. Thread embedding therapy

Two papers that used TEA specified the material and number of threads. Both papers embedded a thread targeting the muscle that suffered spasm, but 1 paper did not specify the muscle in which the thread was embedded but described the area as near the eye and mouth (Table 6). The number of threads used and the treatment frequency were all different.

11. Herbal medicine

Among the 6 papers that used herbal medicine, 3 powder-type and 13 decoction-type prescriptions were used. Identical prescriptions were not noted except for Gamigwibitang, which was used twice. One paper specified the frequency of herbal medicine administration, while 5 did not (Table 7). Only 4 (25%) prescription compositions and dosages were specified (Table 8).

Table 3. Frequency of the acupoints

| Frequency | Acupoints |
|-----------|--|
| 7 | TE17 and ST7 |
| 6 | GB20, TE23, ST4, ST6, ST2, and BL2 |
| 5 | LI4 |
| 4 | LR3, ST1, and LI20 |
| 3 | GB12, GB14, ST36, EX-HN5, and LR2 |
| 2 | GB21, ST8, ST10, ST11, ST40, GV20, LI18, and SI18 |
| 1 | GB16, LR8, LR4, TE10, TE15, ST37, LI14, LI6, LI17, GV16, GV26, CV14, CV22, CV24, BL10, BL43, KI10, LU8, PC6, SI4, EX-HN4, Cheuk-Samni, and Cheuck-ha-Samni |

12. Other interventions

Among the 14 papers, 10 used various interventions, including moxibustion (n = 2), cupping therapy (n = 2), physical therapy (n = 4), ear acupressure (n = 1), and ear acupuncture (n = 1). CV4, CV6, and CV12, which are acupoints on the conception vessel located in the abdomen, were used for moxibustion. Ji et al. [11] used electric moxibustion and Jang [16] used indirect moxibustion. Heo et al. [15] did not specify the cupping points, whereas Park and Kim [18] used wet cupping at TE17 and GB20 and trigger points at the nuchal area 3–5 times. Physical therapy, such as infrared rays, interferential current therapy (ICT), silver spike point, Carbone, and hot packs, was used. All physical therapy was applied to the facial region except for the hot pack and ICT (Table 7). Interventions, including moxibustion, cupping therapy, and physical therapy, were treated before, after, or during acupuncture.

13. Evaluation

Fourteen papers used various evaluation methods 1 paper did not use any evaluation method, 10 papers used Scott's scale, 3 papers used the visual analog scale (VAS), 1 paper used the frequency of spasms, 1 paper used the criteria of therapeutic efficacy, and 1 paper used clinical severity grade. For additional satisfaction surveys, 3 papers used improved results, 3 papers used patient satisfaction, and 2 papers used therapeutic satisfaction (Table 9).

Among the 10 papers that used Scott's grade, Cho et al. [19] evaluated the patient before treatment, immediately after treatment, and follow up after 3 months. Other papers evaluated the patient before and immediately after treatment. Out of 86 cases evaluated by Scott's scale after treatment, 7 demonstrated no difference, 47 improved by 1 grade, 22 improved by 2 grades, 8 improved by 3 grades, and 2 improved by 4 grades.

Ji et al. [11] reported no initial VAS but reported that

Table 4. Characteristics of the acupuncture

| Author (y) | Needle size | Depth | Acupoints | Retention time × treatment frequency for treatment duration (total sessions) |
|----------------------------------|---|--------------------------------|---|--|
| Septriana and Perdana (2020) [7] | NR | 0.5–1.0 inch | GB20, PC6, and LR3 | 20 min × 3/wk for 5 wk (15 sessions) |
| Jung et al. (2019) [8] | 0.30 × 40 mm | 5–15 mm | TE17, GB21, GB20, and pain areas | 15 min × 1/wk for NR (2–8 sessions) |
| Kim et al. (2017) [9] | 0.30 × 40 mm | 10–20 mm | ST1, ST4, ST6, ST7, LI20, GV26, CV24, BL2, TE17, TE23, LI4, and ST36 (EA, ST4 and ST6 for 3 Hz) | Case 1: 15 min × 1–2/wk for 2 mo (9 sessions) Case 2: 15 min × 1–2/wk for 6 mo (41 sessions) |
| Wen (2015) [10] | Ashi point: 0.30 × 15 mm Wrist: 0.30 × 40 mm | Ashi point: NR Wrist: 37 mm | 1. Ashi points, wrist–ankle points upper 1, 2, and 3 2. Intervention: Ashi points, wrist–ankle points upper 1, 2, and 3 Control: Ashi points, BL2, GB14, TE23, LI20, ST2, ST3, ST4, ST6, ST7, and SI18 | 1. 30 min × 1/d for 7d (7 sessions) 2. 30 min × 1/d for 27 d (21 sessions) |
| Ji et al. (2014) [11] | 0.20 × 30 mm | 5–20 mm | GB14, ST1, ST2, BL2, TE23, TE17, LI20, ST4, ST6, ST7, ST8, EX-HN5, and EX-HN4 (distal acupoints) LI4, ST36, and LR3 | Case 1: 20 min × 2/d for 3 d (6 sessions) (inpatients), 20 min × 1 d for 1 d (1 session) (outpatients) Case 2: 20 min × 2/d for 3 d (6 sessions) (inpatients), 20 min × 1 d for 1 mo (2 sessions) (outpatients) |
| Hur and Song (2013) [12] | 0.30 × 30 mm | NR | GB20, TE17, GB12, LI18, ST10, TE10, ST11, and SCM TP | Case 1: NR × 2–3/wk for 2 mo (20 sessions) Case 2: NR × NR for 8 mo (10 sessions) |
| Jo et al. (2013) [13] | 0.30 × 40 mm | 5–10 mm | ST2, ST1, SI18, BL2, TE23, ST7, ST6, ST4, SI4, TE17, neck & shoulder TP (distal acupoints) LI4, LR2, LR3, ST40 | 15 min × 3/wk for NR (< 4 sessions [n = 14], 4–8 sessions [n = 13], > 8 sessions [n = 5]) |
| Lee et al. (2011) [14] | 0.20 × 30 mm 0.20 × 15 mm | NR | Sternoceidomastoid m., auricular m., temporal m., masseter m., orbicularis oris m., orbicularis oculi m., frontalis m., horizontal buttress, depressor labii inferioris m., depressor anguli oris, risorius m., zygomaticus major and minor m., levator labii superiouris m., and levator labii superioris alaeque m. | No retention or 15 min × 1/wk for 3 mo (13 sessions) |
| Heo et al. (2010) [15] | 0.20 × 30 mm | 0.5–1.0 chon | ST2, EX-HN5, ST6, ST4, ST7, GV20, GB20, GB16, GB12, LI4, LR3, LR2, LI6, and ST40 | 30 min × 3/wk for NR (< 8 sessions [n = 1], 8–12 sessions [n = 2], 13–24 sessions [n = 4], > 25 sessions [n = 3]) |
| Jang (2009) [16] | 0.20 × 15 mm | NR | KI10, LR8, LU8, and LR4 | Case 1: 20 min × NR for 9 d (8 sessions) Case 2: 20 min × NR for 4 d (4 sessions) Case 3: 20 min × NR for 29 d (7 sessions) |
| Kim et al. (2003) [17] | 0.35 × 40 mm | 0.5–1.0 chon | Cases 1 and 3: Cheuk-Samni, Cheuck-ha-Samni Case 2: Cheuk-Samni, Cheuck-ha-Samni, TE17, ST7, GB14, BL2, TE23, ST1, ST2, and ST6 | Case 1: 30 min × 1/1–2 d for 3 wk (15 sessions) Case 2: 30 min × 2/d for 1 mo (60 sessions) (inpatients) Case 3: 30 min × 1/1–2 d for 2 mo (NR) |
| Park and Kim (2003) [18] | 0.25 × 40 mm | NR | GB21, CV14, TE15, BL43, BL10, GB20, GB12, ST10, ST36, ST37, LI4, LR3, GV16, LI18, LI17, ST11, and CV22 | Case 1: No retention × NR for 21 d (14 sessions) Case 2: No retention × NR for 13 d (8 sessions) Case 3: No retention × NR for 21 d (4 sessions) |

(Continued on next page)

Table 4. Continued

| Author (y) | Needle size | Depth | Acupoints | Retention time × treatment frequency for treatment duration (total sessions) |
|------------------------------|------------------------|--------------------|---|---|
| Cho et al. (2000) [19] | 0.35 × 30 mm | 5–10 mm | TE17, LI20, ST4, ST8, ST7, BL2, TE23, ST2, EX-HN5, LI4, LR2, GB20, and GV20 | Case 1: 15 min × 1/2 d for 9 mo (54 sessions) Case 2: 15 min × 1/2 d for 1 mo (16 sessions) Case 3: 15 min × 1/2 d for 3 mo (42 sessions) Case 4: 15 min × 2/wk for 14 mo (17 sessions) Case 5: 15 min × 2/wk for 1 wk (2 sessions) |
| Tsukayama et al. (2000) [20] | 50 mm × NR, 40 mm × NR | Until touch muscle | Orbicularis oris m., orbicularis oculi m. (EA, NR for 1–50 Hz) | Case 1: NR × NR for 7.5 mo (NR) Case 2: NR × NR for 5 mo (NR) Case 3: NR × NR for 1 y (NR) Case 4: NR × NR for 1.5 mo (NR) Case 5: NR × NR for 1 mo (NR) Case 6: NR × NR for 1 mo (NR) |

NR, not reported; EA, electroacupuncture; SCM, sternocleidomastoid; TP, trigger points; m, muscle.

Table 5. Characteristics of the pharmacopuncture studies

| Author (y) | Syringe type | Type of pharmacopuncture | Volume (points) |
|--------------------------|--|--------------------------|--|
| Hur and Song (2013) [12] | 1 mL syringe 29 gauges × 1/2 needle | Hominis placenta | Total 0.5–1.0 mL (TE17 and SCM trigger points) |
| Jo et al. (2013) [13] | 2 mL syringe 30 gauges × NR | Hominis placenta | Each 0.1–0.2 mL (ST1, ST2, ST4, ST6, ST7, SI4, SI18, TE23, TE17, and BL2) |
| Heo et al. (2010) [15] | NR | Soyeom | 1 mL (GB20) |
| Jang (2009) [16] | 1 mL syringe 29 gauges × 1/2 needle | Hominis placenta | Case 1: Total 0.5–1.0 mL (ST3, ST4, ST5, and ST6) Case 2: Total 0.5–1.0 mL (BL1, BL2, BL3, ST2, TE23, and BG1) Case 3: Total 0.5–1.0 mL (ST3, ST5, ST6, and ST7) |

SCM, sternocleidomastoid; NR, not reported.

Table 6. Characteristics of the TEA studies

| Author (y) | Thread length/needle size | Material | Points | Number of threads | Treatment frequency (total sessions) |
|------------------------|-------------------------------|----------------|--|---|--------------------------------------|
| Jung et al. (2019) [8] | 3 cm/29 gauges × NR | Medical thread | Orbicularis oculi m., levator labii superioris m., zygomatic major m., zygomatic minor m., risorius m., buccinator m., and orbicularis oris m. | 2–4 threads/each muscle | 1/wk (2–8 sessions) |
| Ji et al. (2014) [11] | 5 cm/27 gauges × 38-mm needle | Polydioxanone | Case 1: Left. eyelid, oral region Case 2: Right. eyelid, buccinators, oral, sternocleidomastoid region | Case 1: 10 (first session), 5 (second session) Case 2: 20 (first session), 11 (second session) | NR (2 sessions) |

TEA, thread embedding acupuncture; NR, not reported; m, muscle.

each case improved by 2–3 and 0–1. Kim et al. [9] reported improvement in each case, from 8 to 5 and 10 to 4. Lee et al. [14] reported an improvement from 10 to 0. Overall, all papers reported improvements in the patient’s condition.

Wen [10] used the criteria of therapeutic effect to compare the results of the control and experimental

groups in an RCT. They reported a significant difference in the experimental group compared to the control group using the total effective rate.

14. Adverse effects

Out of the 14 papers, 6 did not mention any adverse effects, 5 reported the absence of adverse effects, and 3

Table 7. Other interventions

| Author (y) | Herbal medicine | Moxibustion | Cupping | Physiotherapy | Etc. |
|----------------------------------|--|--------------------------------------|--|--|---|
| Septriana and Perdana (2020) [7] | | | | | Ear acupressure (LR3 and TF4) |
| Jung et al. (2019) [8] | | | | Infrared ray at face for 15 min Hot pack, interferential current therapy at the nuchal region for 15 min | |
| Kim et al. (2017) [9] | | | | | |
| Wen (2015) [10] | | | | | |
| Ji et al. (2014) [11] | | Electric moxibustion at CV4 and CV6 | | Silver spike point, Carbone at the face, and sternocleidomastoid m. for NR Hot pack at the nuchal region for NR | |
| Hur and Song (2013) [12] | | | | | |
| Jo et al. (2013) [13] | | | | Infrared ray, silver spike point at face for NR Hot pack at neck and shoulder for NR | |
| Lee et al. (2011) [14] | Dangguisoosan (ex), tid for 2 d | | | | |
| Heo et al. (2010) [15] | Igigyeonjeongsan NR for NR Jingyeongsikpungtang NR for NR Gyejigayonggolmoryeotang NR for NR | | Cupping at NR for NR | Silver spike point Carbone at face for NR | |
| Jang (2009) [16] | Ikgibohyeoltang NR for NR Chongsimyonjatang NR for NR | Indirect moxibustion at CV4 and CV12 | | | |
| Kim et al. (2003) [17] | Pyeongganjigyeongtang 1 jae for NR Gamiongwitang NR for NR Gamiondamtang (ex) NR for NR | | | | |
| Park and Kim (2003) [18] | Ssanghwatanghaplgigepungsangagam 2 jae for NR Hyangsapyeongwisan (ex) NR for NR Palmijihwangtanggaam NR for NR | | Wet cupping at TE17-GB20 TP for each 5, 4, and 3 times | | |
| Cho et al. (2000) [19] | Gamigwibitang NR for NR Yukultang & Gamigwibitang NR for NR Gamisoyosan NR for NR Soyosanhapsogantang NR for NR | | | | Auricular acupuncture for 3 days rotation (mouth, subcortex, brainstem, liver, spleen, shenmen, occiput, and cheek) |
| Tsukayama et al. (2000) [20] | | | | | |

ex, extract; NR, not reported; TP, trigger points.

Table 8. Composition of herbal medicine

| Herbal medicine | Ingredients and dosage |
|-----------------------------------|--|
| Danguisoosan (ex) | Compositions NR 3 g |
| Igigyeonjeongsan | NR |
| Jingyeongsikpungtang | NR |
| Gyejigayonggolmoryeotang | NR |
| Ikgibohyeoltang | Cyperus Rhizoma 8 g, Ginseng Radix 8 g, Longan Arillus 6 g, Atractylodis Rhizoma Alba 6 g, Astragali Radix 6 g, Zingiberis Rhizoma Recens 4 g, Crataegi Fructus 4 g, Massa Medicata Fermentata 4 g, Hordei Fructus Germinatus 4 g, Glycyrrhizae Radix et Rhizoma 4 g, Cinnamomi Ramulus 4 g, Angelicae Gigantis Radix 3 g, Poria Sclertum Cum Pini Radix 3 g, Paeoniae Radix 3 g, Magnoliae Cortex 3 g, Amomi Fructus 3 g, Aconiti Lateralis Radix Preparata 2 g, Zizyphi Fructus 2 g, Aucklandiae Radix 2 g |
| Chongsimyonjatang | Nelumbinis Semen 8 g, Dioscoreae Rhizoma 8 g, Raphani Semen 4 g, Thujae Semen 4 g, Acori Graminei Rhizoma 4 g, Longan Arillus 4 g, Polygalae Radix 4 g, Asparagi Tuber 4 g, Scutellariae Radix 4 g, Liriopis seu Ophiopogonis Tuber 4 g, Salviae Miltiorrhizae Radix 4 g, Amomi Fructus 4 g, Zizyphi Semen 4 g, Chrysanthemi Indici Flos 2 g |
| Pyeongganjigyeongtang | Paeoniae Radix, Angelicae Gigantis Radix, Liriopis seu Ophiopogonis Tuber, Dendrobii Caulis, Polygalae Radix, Batryticatus Bombyx, Tribuli Fructus, Uncariae Ramulus cum Uncus, Polygoni Multiflori Caulis, Luffae Fructus Retinervus, Gardeniae Fructus, Forsythiae Fructus, Glycyrrhizae Radix et Rhizoma, Dioscoreae Rhizoma, Hordei Fructus Germinatus, Amomi Fructus |
| Gamiongwitang | Cyperi Rhizoma, Pinelliae Tuber, Citri Unshius Pericarpium, Poria Sclerotium, Ponciri Fructus Immaturus, Phyllostachyos Caulis in Taeniam, Angelicae Gigantis Radix, Longan Arillus, Zizyphi Semen, Polygalae Radix, Astragali Radix, Atractylodis Rhizoma Alba, Poria Sclertum Cum Pini Radix, Bupleuri Radix, Gardeniae Fructus, Aucklandiae Radix, Glycyrrhizae Radix et Rhizoma |
| Gamiondamtang (ex) | NR |
| Ssanghwatang-hapligjepungsangagam | Paeoniae Radix 10 g, Angelicae Gigantis Radix 4 g, Cnidii Rhizoma 4 g, Astragali Radix 4 g, Rehmanniae Radix Preparata 4 g, Schizonepetae Spica 3 g, Saposchnikoviae Radix 3 g, Osterici seu Notopterygii Radix et Rhizoma 3 g, Araliae Continentalis Radix 3 g, Aurantii Fructus Immaturus 3 g, Angelicae Dahuricae Radix 3 g, Linderiae Radix 3 g, Batryticatus Bombyx 3 g, Aconiti Koreani Tuber 3 g, Cinnamomi Cortex 2 g, Glycyrrhizae Radix et Rhizoma 2 g |
| Hyangsapyeongwisan (ex) | NR |
| Palmijihwangtangaam | Rehmanniae Radix Preparata 8 g, Zingiberis Rhizoma Recens 8 g, Dioscoreae Rhizoma 6 g, Corni Fructus 6 g, Atractylodis Rhizoma Alba 6 g, Alismatis Rhizoma 4 g, Poria Sclerotium 4 g, Moutan Radicis Cortex 4 g, Magnoliae Cortex 4 g, Citri Unshius Pericarpium 4 g, Aurantii Fructus Immaturus 4 g, Eucommiae Cortex 4 g, Puerariae Radix 3 g, Platycodonis Radix 3 g, Angelicae Dahuricae Radix 3 g |
| Gamigwibitang (twice) | NR |
| Yukultang | NR |
| Gamisoyosan | NR |
| Soyosanhapsogantang | NR |

ex, extract; NR, not reported.

reported bruising, edema, and pain as adverse effects that disappeared within 1–2 weeks. However, 2 of these studies used both TEA and acupuncture (Table 9).

DISCUSSION

Patients with HFS do not experience severe pain, but they often encounter difficulties during social activities, and the spasms can be exacerbated by emotional stress or fatigue [2]. The cause of HFS was associated with demyelination caused by vascular pressure near the facial nerve at the root exit zone. Alternatively, HFS can be

caused by Bell's palsy, tumors, infections, or multiple sclerosis [3,21]. Few studies have investigated the prevalence of HFS, but its incidence is estimated to be 0.78 per 100,000 people [22]. HFS is frequently observed between the ages of 40 and 60 years and is most prevalent in patients in their 40s. Additionally, the incidence rate for female is 2.5 times higher than for male [4], and Asians have a higher incidence rate than whites or other races [23]. Medications, such as carbamazepine, clonazepam, baclofen, and felbamate, can be used for treatment, but the reported efficacy is unsatisfactory [3,24]. Local botulinum toxin injections can be performed to target the muscles associated with spasms, but the effect lasts

Table 9. Treatment results

| Author (y) | Evaluation | Result | Adverse effects |
|----------------------------------|--|---|---------------------------|
| Septriana and Perdana (2020) [7] | NR | Improved (symptoms are decreased) | NR |
| Jung et al. (2019) [8] | 1. Scott's scale 2. Improved results 3. Patient satisfaction | 1. Scott's scale: 1 (n = 16) → 0 (n = 15), 1 (n = 1)/2 (n = 5) → 0 (n = 4), 1 (n = 1)/3 (n = 3) → 0 (n = 1), 1 (n = 1), 2 (n = 1) 2. Improved result: Excellent (n = 20), improved (n = 3), mildly improved (n = 1) 3. Patient satisfaction: Very satisfied (n = 15), satisfied (n = 7), normal (n = 2) | Bruise, pain, edema (27%) |
| Kim et al. (2017) [9] | 1. Scott's scale 2. VAS 3. Patient satisfaction | 1. Scott's scale: 3 → 1, 4 → 2 2. VAS: 8 → 5, 10 → 4 3. Patient satisfaction: Satisfied (n = 2) | None |
| Wen (2015) [10] | Criteria of therapeutic efficacy 1. Criteria of therapeutic efficacy 2. Total effective rate | Recovery 1. Criteria of therapeutic efficacy (intervention/control): Recovery (n = 23/n = 15), effective (n = 16/n = 19), invalid (n = 1/n = 6) 2. Total effective rate (intervention/control): 97.5%/85.0% | None None |
| Ji et al. (2014) [11] | 1. Scott's scale 2. VAS 3. Patient satisfaction | 1. Scott's scale: 4 → 2, 4 → 1 2. VAS: NR → 2-3, NR → 0-1 3. Patient satisfaction: Satisfied (n = 2) | Bruise, edema |
| Hur and Song (2013) [12] | 1. Scott's scale 2. Therapeutic satisfaction | 1. Scott's scale: 3 → 1, 3 → 0 2. Patient satisfaction: Excellent, good | NR |
| Jo et al. (2013) [13] | 1. Scott's scale 2. Improved results | 1. Scott's scale: 1 → 0 (n = 20)/2 (n = 7) → 0 (n = 4), 1 (n = 3), 3 (n = 5) → 0 (n = 1), 1 (n = 3), 2 (n = 1) 2. Improved results: Excellent (n = 23), improved (n = 8), mildly improved (n = 1) | NR |
| Lee et al. (2011) [14] | VAS | 10 → 0 | Bruise, edema |
| Heo et al. (2010) [15] | 1. Scott's scale 2. Improved results | 1. Scott's scale: 1 → 0 (n = 1)/2 (n = 3) → 0 (n = 1), 1 (n = 1), 2 (n = 1)/3 (n = 4) → 1 (n = 2), 2 (n = 2)/4 (n = 2) → 3 (n = 1), 4 (n = 1) 2. Improved results: Excellent (n = 3), improved (n = 4), mildly improved (n = 2), failure (n = 1) | NR |
| Jang (2009) [16] | 1. Scott's scale 2. Frequency of spasm | 1. Scott's scale: 4 → 0 (n = 2), 3 → 1 (n = 1) 2. Frequency of spasm: 5 → 0 (n = 2), 5 → 1 (n = 1) | NR |
| Kim et al. (2003) [17] | 1. Scott's scale 2. Therapeutic satisfaction | 1. Scott's scale: 3 → 0 (n = 1)/3 → 1 (n = 2) 2. Therapeutic satisfaction: Excellent (n = 1), good (n = 2) | None |
| Park and Kim (2003) [18] | Scott's scale | 3 → 0 (n = 2), 1 → 0 (n = 1) | None |
| Cho et al. (2000) [19] | Scott's scale | (Before → after → 3 months follow up) 3 → 3 → 3 (n = 2), 3 → 2 → 3 (n = 2), 3 → 0 → 0 (n = 1) | None |
| Tsukayama et al. (2000) [20] | Clinical severity grade | 3 → NR (n = 4), 4 → NR (n = 1), 2 → NR (n = 1) | NR |

NR, not reported; VAS, visual analog scale.

< 3 months and temporary muscle weakness can occur [3]. MVD demonstrated a success rate of > 95%, but adverse effects, such as hearing loss, facial nerve palsy, and cerebellar dysfunction, have been reported in approximately 15–35% of cases [1,25].

HFS treatment has not been standardized, but the preference among patients for Korean medicine treatments for safe treatment has been increasing. However, high-quality RCTs examining the efficacy and safety of

Korean medicine for HFS have yet to be reported. Therefore, we reviewed case reports on Korean medicine treatments for HFS, focusing on treatments, evaluation methods, effective rate, and safety.

This study analyzed 14 clinical studies across 99 studies published from 2000 to December 2022. Papers have been continuously published since 2000. The majority of the papers were published in Korea. All 14 selected clinical studies were case reports, but Wen [10] reported an

RCT mixed with a case report. A total of 95 cases were reported. The facial spasm was more frequently located on the left than on the right. The most common site of spasms is the eyes. The number of female is nearly twice the number of male. Most patients were in their 30s to 40s. The characteristics of the cases are similar to HFS epidemiology [4]. The HFS duration varied among papers, and the diagnosis was mainly based on clinical symptoms.

The stomach meridian is the most frequently used as analyzed based on acupoints and meridians. The stomach meridian passes through the head and face and is commonly used to treat facial and head diseases [26]. ST7 and TE17 are the most frequently used acupoints. ST7 is used to expel wind and promote circulation [26]. Meanwhile, TE17 is located at the mastoid notch, where the facial nerve exists through the stylomastoid foramen [26]. ST7 and TE17 are commonly used to treat facial conditions [26]. The insertion depth and size of needles varied among papers. The acupuncture retention time was approximately 15–20 minutes. The most frequent treatment duration was 1 month, although the average was 84 days. The most popular number of treatment sessions is 7 and 8, although the average is 17. The variance is too large to find the ultimate treatment duration.

Out of the 4 papers that used pharmacopuncture, 3 used Hominis placental pharmacopuncture and 1 paper used Soyeom pharmacopuncture. Hominis placental pharmacopuncture is extracted from the human placenta and contains various interferons, such as hepatocyte growth factor, epidermal growth factor, and nerve growth factor [27]. No studies were reported on the specific effects of Hominis placental pharmacopuncture on HFS, but its clinical efficacy has been reported in treating peripheral facial palsy [28]. Therefore, Hominis placental pharmacopuncture was used to treat similar facial nerve-related facial diseases. Soyeom pharmacopuncture is clinically used for musculoskeletal pain and facial palsy [29].

Two papers that used TEA embedded threads into the muscle where the spasm occurred. The number of threads inserted and the frequency of treatment varied based on the cases.

Six papers used 16 prescriptions for herbal medicine. No identical prescriptions were noted, except for Gamigwibitang. The composition of most prescriptions was not reported. The dose was not specified when reported. Systematizing herbal medicine is difficult because various prescriptions were used according to the patient's condition.

Other interventions, such as moxibustion, cupping therapy, physical therapy, ear acupressure, and ear acupuncture, were used. Moxibustion was performed only on the abdominal region while cupping and physical therapy were performed on the facial and nuchal regions. Most papers have insufficient descriptions of basic information, including treatment location, duration, and frequency.

Of the 14 papers, 10 used a common evaluation method named Scott's scale. Additionally, 8 out of 10 papers used others, including VAS, improved results, and frequency of spasm, in addition to Scott's scale. Out of 95 cases, 86 were evaluated using Scott's scale. Scott's scale is an evaluation method that classifies the severity of spasms into 5 stages, ranging from a normal state to a spasm state in which daily activities, such as driving or reading, are impossible. Scott's scale is a subjective assessment by patients, which lacks objectivity. Therefore, developing an objective evaluation method for HFS is required.

Out of 86 cases that used Scott's scale, 79 improved their grade after treatment. The average improvement is 1.25 grade. Further, out of the total 95 cases, 6 did not report the treatment results, and 82 reported HFS symptom improvements.

No serious adverse effects have been reported in the papers. However, future RCT should include evaluations of its safety and potential adverse effects.

This paper has several limitations. First, it was restricted by language, because only Japanese, Korean, and English papers were included. Second, among the 14 selected papers, 11 reported < 10 cases. Third, 5 papers specify no treatment durations or a total number of treatment sessions, 4 papers specify no herbal medicine composition and dosage, and 1 paper describes no evaluation method, thus providing detailed information on these aspects will be necessary. Fourth, determining the optimal number of treatment sessions and duration that can achieve the maximum efficacy of Korean medicine treatments is difficult due to the large variation among the papers. Despite limitations, this study represents the first domestic and international literature analysis on HFSs.

Out of the 14 papers reviewed, 12 reported improvements in HFSs through Korean medicine treatment. However, Korean medicine treatment remains insufficient to indicate its effectiveness for HFSs. In the future, large-scale and well-designed studies are needed to confirm these results. This paper is believed to serve as background on patients, treatment, and outcomes to conduct RCT.

CONCLUSION

This study analyzed 14 clinical papers on acupuncture treatment for facial spasms and drew the following conclusions: 1. Out of the 14 selected papers, 13 were case reports and 1 was a combination of case reports and RCTs. 2. ST7 and TE17 were the most frequently used acupoints, and the most frequently selected was the stomach meridian. 3. Herbal medicine, pharmacopuncture, TEA, cupping, moxibustion, and physical therapy were combined with acupuncture. 4. Scott's scale is the most frequently used evaluation method. Out of 95 cases, 82 reported improved HFS symptoms after treatment.

AUTHOR CONTRIBUTIONS

Conceptualization: HGL, JHL, HJL. Investigation: HGL. Methodology: HGL, JHL, HJL. Project administration: HGL, JHL, JSK, SHC, HJL. Supervision: HGL, JHL, SHW, JSK, SHC, HJL. Validation: HGL. Writing – original draft: HGL, ESH, SHW. Writing – review & editing: HGL, JHL, HJL.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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ETHICAL STATEMENT

This research did not involve any human or animal experiment.

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