

Japanese Acupuncture - Current Research

Acupuncture Treatment for Peripheral Facial Paralysis

Hiroyuki Tsuru

Department of Clinical Acupuncture and Moxibustion
Meiji University of Integrative Medicine

1. Introduction

The causes of facial nerve palsy may either be central or peripheral, but in this manuscript I will focus on the peripheral type of facial nerve palsy, for which comparatively numerous reports have been published in Japan and discuss the effects of the acupuncture and moxibustion treatment for this condition.

Bell's palsy and Ramsay Hunt syndrome are frequently observed among patients with peripheral facial nerve palsy, these two conditions being responsible for about 70% of all cases of facial nerve palsy in Japan^{1,2}. Accordingly, research reports (or case reports) about the relevant acupuncture and moxibustion treatment in Japan also concentrate mostly on these two diseases³⁻⁹. The incidence of Bell's palsy ranges from 25 to 32 persons per 100,000 population, while that of Hunt syndrome has been reported² to be 2-3. Etiologic details for Bell's palsy remain obscure, but ischemia or virus infections have been pointed out as possible causes. In recent years reactivation of herpes simplex virus type 1 within the geniculate ganglion has been postulated as an important factor. On the other hand, Hunt syndrome is said to be caused by latent infection within the geniculate ganglion by varicella-zoster virus (VZV). The inflammation of the facial nerve results in any case in the development of edema and a resulting compression within the facial nerve canal then causes the development of ischemia, which in turn aggravates the edema and thus leads to a progressive affection of the facial nerve that then finally leads to the development of paralysis.

In the "Facial Nerve Palsy Treatment Guidelines²⁾ prepared by the Japan Society of Facial Nerve Research treatment with steroids or antiviral drugs or also facial nerve decompression is recommended depending on the severity of the paralysis during the acute phase of facial nerve palsy. In particular the recommendation for oral administration of steroids is ranked "A", meaning that it is strongly recommended and thus represents the most recommended form of treatment. Steroid monotherapy has been classified as recommendability A for the treatment during the acute phase, while the recommendability B was assigned only to massive dose steroid therapy for severe Bell's palsy. In this paper²⁾ I "could not verify the effectiveness of at the present moment" of the acupuncture and moxibustion treatment administered during the acute phase and therefore judged it to be of recommendability C2 (cannot be recommended due to a lack of scientific proof). Low frequency electrical stimulation could lead in case of ENoG (Electroneuronography) values of less than 40% to the development of synkinesis and as such has been classified as recommendability D (it is recommend not to administer this treatment). On the other hand, there are no treatment forms classified as recommendability A or B for the chronic phase and acupuncture and moxibustion treatment for chronic peripheral facial nerve palsy has not been mentioned. While there have been reports in Japan about the effectiveness of acupuncture and moxibustion treatment for Bell's palsy or Hunt syndrome its classification as C2 is truly regrettable, but this is probably the inevitable result of the importance in recent years attached to research results obtained through RCT (randomized control led trials), today considered to be the mainstream research tool.

2. Reports on acupuncture and moxibustion treatment for peripheral facial nerve palsy in Japan

While there have been no reports in Japan about the effectiveness of acupuncture and moxibustion treatment for Bell's palsy or Hunt syndrome^{3,4,6-9} describing effects promoting the recovery from the palsy, there have also been no reports⁵ about any adverse effects delaying the recovery.

Ando et al.³ reported about their performance of more than 5 acupuncture and moxibustion treatment sessions in 28 patients (20 patients with Bell's palsy ; 8 patients with Ramsay Hunt syndrome), who had received within 6 months following the onset of peripheral facial nerve palsy steroids, brain metabolic stimulants, peripheral vasodilators, stellate blocks or vitamin complexes. As acupuncture treatment low frequency electrical acupuncture was applied to GB14, Taiyang, ST2, ST3, ST4, ST6, ST7, ST18, TE17 and LI4 on the hand of the affected side with maximal intensity that did not cause any pain (Fig. 1). Once or twice weekly was chosen as frequency for the acupuncture treatment and the severity of the palsy was assessed using the 40-point paralysis score described by Japan Society of Facial Nerve Research. The results showed, that when acupuncture treatment was started later than 30 days after the onset for patients in whom recovery after the onset had been slow, led to improvements in the palsy and the recovery trend reportedly continued over a duration of more than 6 months, while there were no side effects or complications associated with the acupuncture treatment.

Ebiko et al.⁴ reported the results of acupuncture treatments for a total of 29 patients with refractory Bell's palsy (n=14) and Hunt syndrome (n=15) presenting with a minimal

ENoG value of 0% and in whom the test instrument scaled out during the nerve excitability test (NET). This treatise⁴ describes that the initial treatment administered in the department of otolaryngology was basically a tapered administration of 30 mg of predonine, ATP preparations, vitamins, antiviral drugs etc. The average age of the patients was 44.3±12.8 years (mean±S.D.), duration of the morbidity 43.2±23.9 days, paralysis score 10.2±2.7 points, the acupuncture treatment (Fig. 1) consisted of retaining the needles (n=17) for 15 minutes on the affected site at GB3, GB14, GB2, ST2, ST6, ST4, above the angle of the mouth, below the angle of the mouth and LI4 as well as electroacupuncture applied to the point pairs GB3-GB14, GB2-ST2, ST6-ST4, above-below the angle of the mouth for 20 minutes with an intensity that did not cause the patients any discomfort (n=12). For the evaluation the 40-point paralysis score described by Yanagihara, presence of synkinesis or crocodile tears, facial spasm, or else the sequel score for the evaluation of facial stiffness (modified method of sequel assessment developed by Nishimoto and Murata et al.) were used.

Moreover, according to the Japan Society of Facial Nerve Research a score of less than 10 points of the 40-point full score represents incomplete paralysis, while a score of less than 8 points is a complete paralysis and a score of more than 20 points indicates a mild case, 10-18 points a moderately severe and a score of less than 8 points a severe case. Patients reaching a score of more than 36 points and do not have any more than moderately severe conjugated movements were judged as cured² and the paralysis score described in this paper⁴ returned within 6 months to more 36 points, while no apparent after effects were observed in these cases of complete

recovery. The remaining cases were classified as incomplete recovery. In this paper⁴⁾ the paralysis score of the 29 patients at the start of the acupuncture treatment was 10.2 ± 2.7 points and had improved 6 months later to 30.5 ± 4.6 points. Among the 14 patients with Bell's palsy 4 patients reportedly recovered within these 6 months so far, that the paralysis score reached the normal range of more than 36 points and among the 15 patients with Hunt syndrome 1 patient recovered within these 6 months to achieve a more than 36 points score. The remaining 24 patients were classified as presenting incomplete recovery. There were no significant differences in the recovery process between the groups of patients with Bell's palsy and Hunt syndrome. As described above acupuncture treatment for peripheral facial nerve palsy has been reported to be effective.

Conversely, Kasuya et al.⁵⁾ reported the results of a retrospective study, where the authors determined the degree of nerve degeneration 2-3 weeks following the onset in a total of 111 patients with peripheral facial nerve palsy and used the 40-point paralysis score described by Japan Society of Facial Nerve Research to compare a group treated with acupuncture (n=61) and drugs as well as the differences in recovery between an acupuncture and pharmacologic combination therapy group as compared to a pharmacologic monotherapy group (n=50). Apart from the steroids used for the pharmacotherapy ATP preparations, administration of drugs for improving microcirculation, vitamin preparations etc. was also described. This paper⁵⁾ states, that "the recovery from paralysis was in the group of patients with an ENoG value of over 41% and treated with acupuncture only significantly inferior to that in the oral steroid treatment group", while comparison of groups with an ENoG

value of over 21% no significant differences between the oral steroid treatment group and acupuncture combination therapy group were observed. Thus, in "between a group of patients with ENoG values of 1-20% treatment with massive steroid doses and a massive steroid dose and acupuncture combination therapy group no significant differences were observed." Thus, no recovery promoting effects could be observed in the medication monotherapy group and the medication and acupuncture combination therapy group, but reportedly no effects delaying recovery were observed either. Moreover, for the acupuncture treatment (Fig. 1) apart from the application of electroacupuncture to TE17 on the affected side for 15 minutes GB14, ST1, ST2, ST4, ST7, BL10, GB20, GB21, SI14 etc. application of hot packs to the face for 10 minutes served as an additional thermotherapy. Over a period of 1-2 months after the onset the patients were treated twice weekly and after that the acupuncture treatment was administered once per week.

Again, in the form of case reports the acupuncture treatment of a 70-year old patient⁶⁾ with Bell's palsy presenting with synkinesis 10 months after onset and the acupuncture treatment of a 29-year old patient with Bell's palsy 2 years after onset were reported⁷⁾. In case of (6) electroacupuncture was applied to the affected side of the face, resulting in relief of the suffering from synkinesis and facial contracture as assessed with a VAS (visual analogue scale) and the 40-point paralysis score described by Japan Society of Facial Nerve Research as well as ENoG. Electroacupuncture (Fig. 1) was performed on the points GB14, ST2, SI18, ST4, using two different pulse generators to avoid synchronized muscle contractions from the GB14-ST2 and SI18-ST4 pairs. In the latter report⁷⁾ electroacupuncture was performed on the

affected side of the face at TE17, ST7, GB1, ST4, LI19 and GB14, using also the points Taiyang, ST2, ST3 etc. for the treatment (Fig.1). This resulted reportedly in improvements of the paralysis score and reduction of the temperature difference between the affected and healthy side of the face as measured with thermography.

Considering the contents of these reports we concluded that a combination therapy established in cooperation with an otorhinologist rather than an acupuncture monotherapy for peripheral facial nerve palsy is important. In particular during the acute phase of the peripheral facial nerve palsy steroid therapy and similar measures administered by the otorhinologist should be given priority and a combination with acupuncture later considered on the basis of the degree of recovery or severity of symptoms.

3. Application of the Koshi method of traditional acupuncture during the acupuncture treatment for peripheral facial nerve palsy

So far I have introduced reports about acupuncture treatment for peripheral facial nerve palsy in Japan, but since electroacupuncture treatment can cause synkinesia as described above, otolaryngologists currently seem to have reservations regarding stimulation on the affected side (worries about the development of conjugated movements^{8,10}).

Regarding case reports in this context the author has reported about the application of the Koshi method of traditional acupuncture to the face integrated in the acupuncture treatment for peripheral facial nerve palsy (Bell's palsy, Hunt syndrome). When symptoms are present on the left side, the Koshi method is applied to the right side, and for symptoms on the right side the acupuncture treatment is applied to the left side.

The first case was a 43-year old patient⁸ diagnosed with Hunt syndrome, who was treated 18 days after onset with the Koshi method on the face using the retaining needle technique for the treatment. This patient received pharmacotherapy with steroids, antiviral drugs, cerebral circulation and metabolism ameliorators, vitamin preparations and eye drops to prevent dehydration of the eye, but according to the patient "the left side of the face almost does not move and the discomfort is not alleviated". Moreover, the attending physician asked the author "not to perform acupuncture treatment on the affected side". Thus, since the chief complaints were impaired movement of the muscles and discomfort on the left side of the face, simultaneously observing associated symptoms of inability to taste food, shoulder stiffness, dryness of the eye, insomnia, constipation etc. At the start of the acupuncture treatment (18 days after onset of the condition) the 40-point paralysis score as described by Yanagihara was 10 points. The VAS values representing the difficulties in moving the left side of the face and discomfort were 55 mm and 56 mm respectively. A total of 11 acupuncture treatment sessions was given at rate of 1-3 times per week. All needles only pierced the skin to a depth of about 5 mm and were then retained for 10 minutes (retaining acupuncture technique). For the acupuncture of the face the points GB14, Taiyang, SI18, ST4, TE17 and SI19 were needled (Fig. 2, upper row). Otherwise, based on (1) determination of the treatment according to pattern identification (bian zheng lun zhi) needles were inserted and retained at LR3, KI3, KI7 and SP6, (2) to improve blood circulation through the muscles of the shoulder girdle and relief muscle tension needles were retained in the point GB21 (Fig. 2, upper row). Acupoints not in the facial region were needled on both sides. This resulted in an improvement of

the paralysis score to 38 points by the tenth acupuncture treatment (39 days after onset), while both the difficulties in moving the muscles and the discomfort of the left side of the face had been alleviated and the associated symptoms shoulder stiffness, dryness of the eye, constipation and taste subjectively been improved.

The second case was 60-year old patient diagnosed with Bell's palsy who I started treating using the retaining needle acupuncture technique 50 days after the onset⁹). This patient too received pharmacotherapy including steroids, cerebral circulation and metabolism ameliorators, vitamin preparations and eye drops to prevent dehydration of the eye, had undergone facial nerve decompression and underwent stellate blocks once a week, but the "mobility of the right side of the face did not improve much". Accordingly, in addition to the chief complaint of impaired mobility of the right side of the face (at the beginning of the acupuncture treatment the relevant VAS value was 83 mm) there were also associated symptoms including shoulder stiffness (VAS of 57 mm), low back pain (VAS of 25 mm) and the paralysis score was 12 points. The acupuncture treatment was administered once or twice a week, where all needles were inserted only to a depth of about 5 mm and retained for 10 minutes (retaining acupuncture technique). All needles in the facial region were placed on the healthy side at GB14, Taiyang, SI18, ST4, TE17, SI19 and ST7 (Fig. 2, lower row). Otherwise, based on (1) determination of the treatment according to pattern identification needles were inserted and retained at LR3, KI3, KI7 and SP6, and (2) as for a selection of points on the affected channel needles were placed and retained in distinctly tender points at LI4, TE5, LI10, (3) to improve blood circulation through the muscles of

the neck and shoulder and relief muscle tension needles were retained at GB21, SI11, SI13, SI14, SI15, BL23, BL25, BL52 and EX-B3 (Fig. 2, lower upper row). Acupoints not in the facial region were needled on both sides. This resulted in an improvement of the paralysis score to 38 points by the 27th acupuncture treatment (242 days after onset), the difficulties in moving the muscles of the face had been alleviated to a VAS score of 2 mm. The VAS score for the associated symptoms of shoulder stiffness and low back pain had improved to 22 mm and 14 mm respectively. Otherwise the patient commented on the effects of the received acupuncture treatment as "I started to sleep well", "the constipation is gone", "my stomach is feeling just fine", "my tinnitus has decreased", "I don't have any palpitations any more" etc.

Based on the above described results application of the Koshi method as an integral part of the acupuncture treatment for peripheral facial nerve palsy indicates the possibility that it promotes recovery, but it remains difficult to explain the exact mechanism at work during the promotion this recovery, including the improvement of associated symptoms. However, mainly animal experiments revealed that the acupuncture stimulation has effects that reportedly include reduction of muscle tension¹¹), improvement of muscular blood flow^{12,13}), improvement of neuronal blood flow^{14,15}), promotion of physical and mental relaxation¹⁶), promotion of peristaltic bowel movements¹⁷) and the like. Moreover, some reports also indicate, that the acupuncture stimulation does not only increase muscular blood flow at the stimulation site, but affects muscular blood flow on the contralateral side also¹⁸). This suggests the possibility that the acupuncture stimulation

applied to the healthy side in this case somehow affected the contralateral side via higher neuronal centers, or else the possibility, as described above, that the effects of the acupuncture stimulation improves symptoms in the facial region as well as associated symptoms like shoulder stiffness, low back pain, insomnia, constipation etc. On the other hand, however, the administration of steroids or other pharmacotherapy, the performance of facial nerve decompression, stellate ganglion blocks etc. may possibly have contributed to limiting the facial nerve conduction disturbances, or else the drugs may possibly have promoted repair of the facial nerve, indicating the possibility that combination therapy including acupuncture, pharmacotherapy and surgery promotes recovery.

Also, while improvement of the chief complaint(s) and associated symptoms is important regarding the acupuncture treatment for facial palsy, inhibition of the development of synkinesis is considered to be another important aspect of the treatment. Thus, treatment for facial palsy should be guided by careful observation and in case of performing acupuncture basically a combination therapy with the treatment administered by otorhinologists is essential.

Moreover, ENoG measurements made before and after the acupuncture treatment as well as RCTs conducted appear to be an important task for the future in order to objectively assess the effects of acupuncture treatment for peripheral facial nerve paralysis.

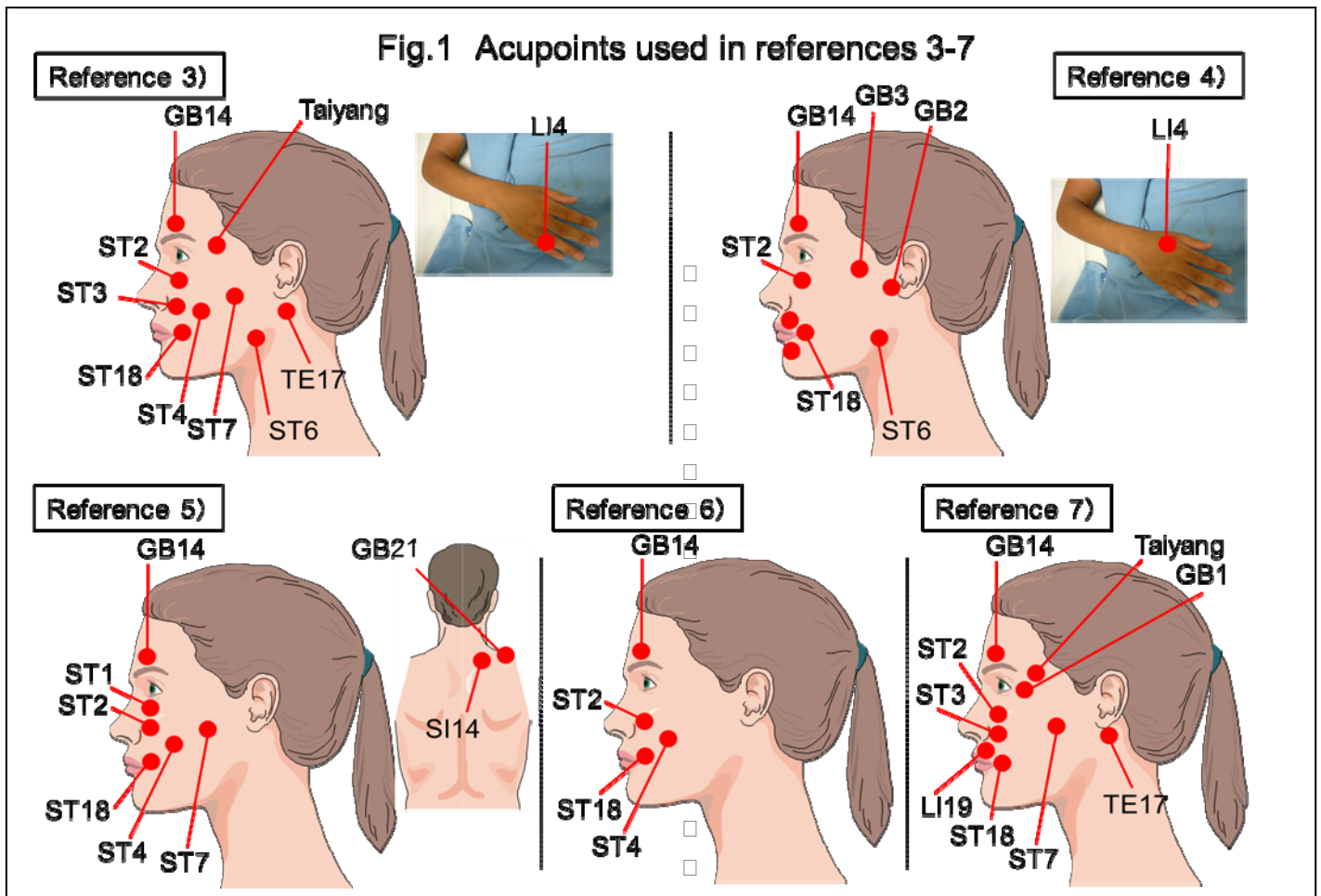


Chart with the acupoints used in references 3) through 7)
Acupuncture treatment was performed on the affected side of the face.

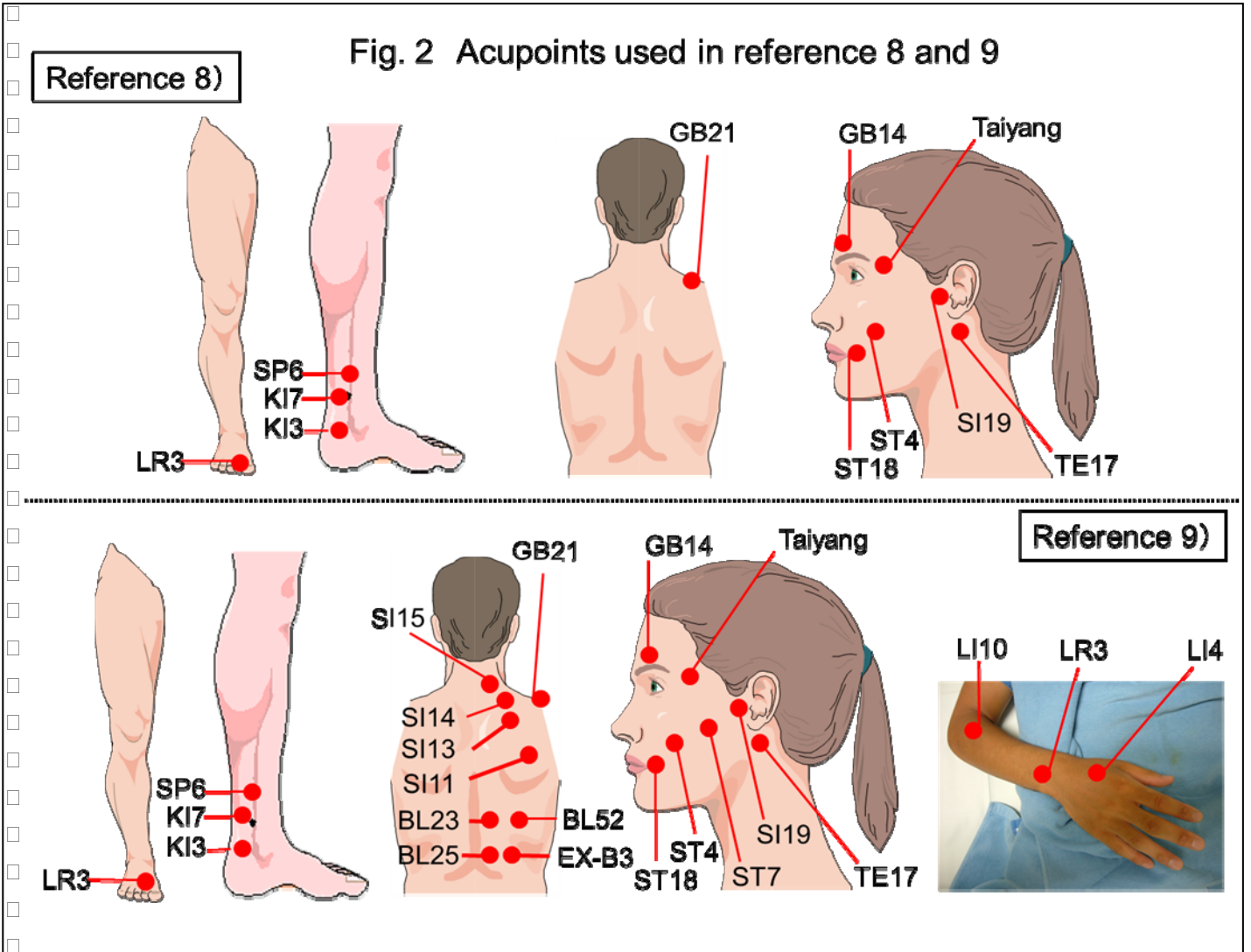


Chart with the acupoints used in references 8 through 9

Application of the Koshi method during acupuncture treatment performed on the healthy side of the face.

References

- 1) Murakami S. (editor): Treatment of facial palsy update. ENTONI Book 111. Japan Hospital Press: 1-10, Tokyo; 2010; Japanese only
- 2) Japan Society of Facial Nerve Research (edition): Facial Nerve Palsy Treatment Guidelines – Bell's Palsy and Hunt syndrome – KANEHARA & Co., LTD; Tokyo; 2011; Japanese only
- 3) Ando F., et al.: Evaluation of acupuncture-combined therapy for peripheral facial palsy. Facial N Res. Jpn 8:167-170, 1988.
- 4) Ebiko K., et al.: Effects of acupuncture on refractory Bell's paralysis and Hunt's syndrome. Kampo Med 60(3): 347-355, 2009.
- 5) Kasuya, et al.: Acupuncture treatment for peripheral facial paralysis. Jpn Society of Acupuncture and Moxibustion 52(1): 32-42, 2002.
- 6) Okada T., et al.: Electro-acupuncture for facial palsy with synkinesis. Jpn Society of Acupuncture and Moxibustion 55(4): 601-607, 2005.
- 7) Morito A., et al.: Acupuncture treatment in a peripheral facial paralysis with the sequelae. Jpn Society of Acupuncture and Moxibustion 53(2): 190-194, 2003.
- 8) Tsuru H., et al.: A case of acupuncture treatment for facial paralysis. Facial N Res. Jpn 30: 160-162, 2010.
- 9) Tsuru H., et al.: A case of acupuncture treatment for Bell's palsy. Quarterly published Oriental Medicine 17(3): 2011.
- 10) Murakami S. (editor): Treatment of facial palsy update. ENTONI Book 111. Japan Hospital Press: 73, Tokyo; 2010; Japanese only
- 11) Kinoshita H.: Experimental research into the effects of acupuncture on local pain II: Effects of retained acupuncture needles on the process of posttetanic high level contraction recovery; Showa Med. J. 41:393-403; 1981; Japanese only
- 12) Tsuru H., et al.: Effect of acupuncture stimulation on the blood flow of the skeletal muscle in rabbits. Jpn Society of Acupuncture and Moxibustion 49(1): 6-14, 1999.
- 13) Shinhara H.: Influence of acupuncture stimulation on the induction of variations in skeletal muscle blood flow and energy metabolism in ischemia-reperfusion stressed rats; Meiji University of Integrative Medicine 23:41-54,1998; Japanese only
- 14) Yamaguchi D., et al.: Effect of acupuncture stimulation to the low back on blood flow to the sciatic nerve trunk in rabbits. Jpn Society of Acupuncture and Moxibustion 47(3): 165-172, 1997.
- 15) Inoue M., et al.: Effects of lumbar acupuncture stimulation and sciatic nerve electrical stimulation on blood flow to the sciatic nerve trunk. Jpn Society of Acupuncture and Moxibustion 48(2): 130-14-, 1998.
- 16) Yano T., et al.: The effects of electro-acupuncture and TENS on EEG Topogram. The Bulletin of Meiji University of Oriental Medicine 1: 55-64, 1985.
- 17) Iwa M., et al.: Electroacupuncture elicits dual effects, stimulation of delayed gastric emptying and inhibition of accelerated colonic transit induced by restraint stress in rats. Dig Dis Sci 51: 1493-1500, 2006
- 18) Tsuru H., et al.: Acupuncture on the blood flow of various organs measured simultaneously by colored microspheres in rats. Evid Based Complement Alterate Med 6: 77-83, 2009

□