

# The treatment of Bell's palsy with acupuncture and Chinese herbs

by Greg River

Northern Complementary Health, Suite 2/ 368 Pennant Hills Rd, Pennant Hills 2120, 02 9484  
0077. Greg\_nch@bigpond.net.au

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## Introduction

Bell's palsy or idiopathic facial paralysis is a disease caused by inflammation of unknown origin affecting the facial nerve resulting in acute paralysis of one side of the face. The condition may cause considerable emotional distress because of its characteristic appearance drooping appearance around the eye and mouth thus adversely effecting self-esteem and life experience. Bell's palsy is seen in approximately 2 to 3 people per 10,000 and may resolve by itself within a few months with severe cases taking up to one year. Unfortunately, up to 10% of patients will experience some degree of permanent paralysis. Conventional treatment includes corticosteroids, antiviral agents, massage, painkillers, botulinum toxin and surgery. TCM therapy has shown some effectiveness in treating the condition both empirically and within clinical trials. This case report introduces a 30 year old male presenting with a typical case of Bell's palsy. His treatment is currently ongoing and is showing gradual improvement. This case report will also outline current medical knowledge regarding the condition and present treatment protocols from both conventional medicine and traditional Chinese medicine perspectives. It is hoped that this paper will serve as a useful practitioner resource as it will outline effective protocols from both clinical trials and prominent Chinese hospitals. This paper may also provide an educational opportunity for western medicine practitioners seeking to direct Bell's palsy patients toward an effective and safe therapy option. The importance of prudent management from primary care physicians in addressing viral aspects of this condition will also be stressed. Furthermore, this paper endeavours to encourage further research into the efficacy and safety of traditional Chinese medicine therapies for Bell's palsy.

## Epidemiology

The incidence rates of Bell's palsy are similar around the world and range between 20 to 32.7 per 100,000 at any one calendar year (Brandenburg and Annegers 1993; DeDiego, Prim et al. 1999; Peitersen 2002). The condition affects similar numbers of males and females and exhibits seasonal variation of incidence with fewer cases in warmer weather (De Diego, Prim et al. 1999). The greater majority of Bell's palsy patients first noticed their palsy in the morning which suggests that the onset and development of facial palsy occurs during sleep when circulatory dynamics are reduced (Kanoh, Nomura et al. 2005). The right side of the face is affected more often than the left (63%) and diabetes as well as pregnant females in the third trimester exhibit increased incidence (Ahmed 2005).

## Aetiology

The facial nerve enters the skull via a small opening in the petrous temporal bone at the base of the skull. The facial nerve services the muscles of the face, the ear, salivary and tear glands and provides some of the sensations of taste on the tongue. In Bell's palsy, the facial nerve swells and the resulting inflammation disrupts the relay of nervous system messages by nerve compression and degeneration. The subsequent lack of nerve function can be partial or total and mainly prevents facial movement, though salivation, tear production, and facial sensation may also be reduced (Kasse, Ferri et al. 2003). A diagrammatic pathway of the facial nerve has been included as appendix A.

It is hypothesized that the inflammation and swelling of the facial nerve may be caused by combined vascular, infectious and immunological reaction. Numerous infectious agents have been considered including: herpes simplex virus (HSV), influenza virus, varizella zoster virus (VZV), cytomegalovirus, Epstein-Barr virus, tuberculosis, mumps virus, lyme disease and hepatitis B virus. Of these, herpes simplex virus (HSV) is the most commonly accepted due to consistent serological evidence and is implicated as the etiologic agent in greater than 70% of cases (Billue 1997; WUSM 2005).

It is thought that the HSV virus enters the body through a mucous membrane or skin abrasion and is transported to nerve cell bodies in nerve ganglia where it lays dormant. Various stress conditions can cause the virus to reactivate and cause the condition to manifest. These stresses include menstruation, dental extraction, coldness, or exposure to other infectious agents, particularly upper respiratory tract infection (Roob 1999).

HSV has been observed in saliva (Furuta, Fukuda et al. 1998) as well as muscle biopsy and tears (Kaygusuz, Godekmerdan et al. 2004) of Bell's palsy patients at significantly higher rates than control groups. One study found that approximately 50% of Bell's palsy patients show signs of the virus compared to approximately 19% of the normal population (Furuta, Fukuda et al. 1998). However, an opposing trial found HSV as well as VZV to be non-significantly represented in affected groups (Linder, Bossart et al. 2005). The life span of the virus and the timing of testing for HSV may explain these conflicting conclusions. Furuta (1998) discovered in his trial that HSV became undetectable after two weeks onset of Bell's palsy. The evidence suggesting HSV as the major cause of this condition is demonstrated further by the success of

specific antiviral agents which have shown continued success against HSV infections (Adour, Ruboyanes et al. 1996; Allen and Dunn 2004; Allen and Dunn 2005). Furthermore, injections into rat specimens with HSV have recreated facial paralysis in approx 50% of specimens (Gok, Alpay et al. 2005).

Additional infectious agents have been indicated as causative agents for Bells' palsy. Research has found significant causal relationships to Epstein-Barr virus (Ramos, de Miguel et al. 2003; Kaygusuz, Godekmerdan et al. 2004), hepatitis B (Unlu, Aslan et al. 2003), varicella-zoster virus, cytomegalovirus, mumps virus (Kaygusuz, Godekmerdan et al. 2004) as well as influenza virus, tuberculosis, and lyme disease (Salinas, Alvarez et al. 2004). It is most apparent by these results that a viral infection is indicated as the initiating factor in activating cellular immunity. However, which virus is still not known beyond doubt.

## Clinical Features and Diagnosis

Onset:

- Paralysis: Progresses to maximal deficit over 3 to 72 hours
- Pain (50%): Near mastoid process
- Excess tears (33%)

Signs and Symptoms:

- Facial weakness
  - All branches of nerve: Upper & Lower
  - Unilateral: Bilateral in < 1%
  - Degree: Partial (30%); Complete (70%)
  - Results in mouth droop, eye can't fully close and face feels heavy
- Sensory loss
  - Mild or None
  - May be present on face or tongue: On side of paralysis
- Stapedius dysfunction (33%): High level of sensitivity to sound
- Taste: Foods may taste slightly different though usually no significant changes
- Lacrimation: Mildly affected in some patients

(Ahmed 2005; Anon 2005; WUSM 2005)

Typical diagnosis includes matching of events that correspond to the above clinical features and a clinical assessment. The patient is asked to raise their eyebrows, close their eyes and

smile. If the person has Bell's palsy, their eyebrows will raise asymmetrically, they won't be able to close the affected eye and one side of the mouth will droop (Braunwald, Fauci et al. 2001; Ahmed 2005).

## Conventional Medicine - Evidence and Current Therapy

Corticosteroids such as prednisone to reduce inflammation and antivirals such as Aciclovir are the most commonly used treatments. Extensive research has been conducted to find which is the most efficacious with Cochrane reviews completed for both (Salinas, Alvarez et al. 2004; Allen and Dunn 2005). Salinas et al. concluded that corticosteroids do not show significant benefit, however only 4 trials with a total of 179 patients were reviewed (Salinas, Alvarez et al. 2004). Allen and Dunn (2004) reviewed aciclovir alone and in combination with corticosteroids and concluded the results mostly inconclusive. Both reviews confirmed that available studies were insufficiently powered to adequately detect a treatment effect.

In the time since data collection for the Cochrane reviews, animal trials have shown no statistical difference in of the rate or degree of recovery with steroid alone, acyclovir alone or steroid + acyclovir with both found to effectively reduce swelling (Gok, Alpay et al. 2005). A review by the American academy of neurology concluded that steroids are probably effective and acyclovir (combined with prednisone) is possibly effective in improving facial functional outcomes (Grogan and Gronseth 2004). This review included studies which were not assessed by the Allen and Dunn (2004) review and indicated acyclovir and prednisone in combination to be superior to prednisone alone (Billue 1997; Roob 1999; Peitersen 2002; Axelsson, Lindberg et al. 2003; Hato, Matsumoto et al. 2003). Hato et al. (2003) found that combined therapy within 3 days of the onset of palsy was 100 percent effective and early treatment resulted in early remission. In contrast, the recovery rate in patients who started the combined therapy more than 4 days after onset was 86.2 percent (Hato, Matsumoto et al. 2003). Therefore an early combined treatment of prednisone and acyclovir is now considered best practice and current practitioner treatment guidelines reflect this change (Holten 2004). An outline of current treatment is included as appendix B.

According to all 3 systematic reviews surgical decompression of the facial nerve is not considered to be effective for improving facial function (Grogan and Gronseth 2004; Salinas, Alvarez et al. 2004). Botulinum toxin injection is a new treatment approach which as yet has not been tested by a rigorous controlled trial (Vrabec, Toh et al. 2004). Painkillers are used to relieve initial symptoms whilst massage and facial exercise are presumed to encourage neuromuscular retraining leading to quicker recovery when the nerve regenerates.

## Traditional Chinese Medicine

Bell's Palsy is known as Zhong Feng and translates as Wind Attack. It is categorised as External Wind Stroke attack with the main pattern differentiation being Wind invasion due to emptiness of the Channels (Maclean and Lyttleton 1998). Wind is thought to take advantage of the vacuity to enter the body and attack the sinews and vessels in the area of the face. This results in Qi and Blood stagnation causing the inability of flesh to relax or contract (Wolfe 2003). The principle of treatment is to expel Wind and promote the movement of Qi and Blood by scattering Stasis.

Vacuity mostly refers to an insufficiency of Essential Qi. According to the Nei Jing: Despoilation of the Essential Qi results in vacuity. Modern sources state that any disease in which there is an insufficiency of the necessary normal physiologic movement, or in which the functions of the bodies normal regulatory and compensatory actions are reduced, can be described as a vacuity pattern (Teng, Ergil et al. 1999). In TCM terms Qi is the normal regulative and compensative function of the human body (Teng, Ergil et al. 1999). Vacuity patterns emerge slowly over time and can be reflective of a lifestyle of consuming incorrect foods, overwork, stress and indulgence which consumes Qi without replenishment (Teng, Ergil et al. 1999).

Normally Wind-Cold attack would invade through the head and nose and attack the Lung's Defensive Qi leading to the familiar symptoms of cold and flu (Maciocia 2004). It is a sudden pattern which correlates to modern theories of pathogenic viral attack. In the case of Bells' palsy the invading Wind-Cold primarily stays in the facial Yang-Ming channels. The Yang Ming is significant because these are the channels that are most abundant in Qi and Blood. In Bell's palsy it appears that a vacuity pattern debilitates Qi and Blood thus exposing the channels to injury. The first vulnerable portion of the channel is then impaired.

## Evidence for TCM

An author search for TCM treatment (acupuncture and herbal medicine) of Bell's palsy within Google Scholar, Google Print as well as online databases MEDLINE, Cochrane register, Science Direct and PubMed returned numerous citations of which 6 full text papers were retrieved (Zhang, Wei et al. 1991; Xing, Yang et al. 1994; Zang 1999; Stone 2002; Wolfe 2003; He, Zhou et al. 2004). Very limited access to Chinese language papers limited further search results. 5 of the papers concluded excellent results for acupuncture therapy and were useful for treatment protocols (outline in appendix C). He et al. (2004) conducted a Cochrane systematic review which included 3 randomised controlled trials (Liu 1996; Shao 1999; Yu 1999). Two of which used acupuncture (Liu 1996; Yu 1999) while the third used acupuncture combined with drugs (Shao 1999). The studies included a total of 238 patients and showed that the therapeutic effect of acupuncture alone was superior to that of medication or that acupuncture combined with medication was better than medication alone (He, Zhou et al. 2004). However, due to poor reporting methods the quality of trials was inadequate to allow any conclusion about the efficacy of acupuncture and more research with high quality trials was recommended (He, Zhou et al. 2004). The 3 included trial treatment protocols are included in appendix C.

Within the Cochrane review it was mentioned that over 50 Chinese language articles had been reviewed by a previous author between 1984 and 1994. The therapeutic effect of acupuncture was found to be good with the literature reporting the lowest cure rate of 37% and a highest of 100% per cent, averaging 81 per cent (He, Zhang et al. 1995).

## Case presentation

30 Year male presented in September 2005 with right side Bell's palsy. He had woken 6 weeks previously with the condition. The week prior to waking with facial hemiplegia he had experienced cold and flu like symptoms for 1 week and was feeling very tired. During this time he continued to work a physically demanding occupation (plumber) 6 days per week. The day before the onset of Bell's palsy he experienced a metallic taste in his mouth. Without delay (<18 hrs from onset) the patient consulted with a neurologist who confirmed the diagnosis as mild Bell's palsy and upon request was administered prednisone for 10 days. When the patient inquired about the use of antiviral medication he was told it would be of no use to his condition as he did not exhibit herpetic lesions approximating the ear canal. Unabated by the prednisone, the Bell's palsy continued to progress to a more complete facial hemiplegia over the next two days. At presentation he continued to demonstrate almost complete facial paralysis affecting muscles of the eye, mouth, nose and forehead.

## Additional information:

Right ear sensitivity to sounds

Right side pain proximal to mastoid process

No ongoing abnormal taste sensation

Increasing incidence of spontaneous lacrimation

Right side shallow nasolabial groove

Presented with extremely low energy

Previous oral exposure to herpes simplex virus 1

History of depression 12 months prior (controlled by medication at the time)

Self employed and long history of working many hours per week without reprieve

Has woken 4am in mornings as long as he can remember

Regular to move bowels, no excessive thirst, normal appetite

Feels tired a lot of the time

Pulse: Wiry and slippery

Tongue: Red tip, red spots, white slightly greasy coat. Trembling tongue.

## Treatment:

Chinese medicine diagnosis is External Wind-Cold attacking the channels of the face.

Underlying Qi and Blood deficiency with existing Damp and Heat affecting Liver, Spleen and

Heart. Initial principle of treatment was to expel Wind and resolve Damp. Second principle of treatment was to invigorate Qi and Blood and promote Blood circulation to the face.

Herbal Formulation used:

Initial: Qin Jiao, Fang Feng, Chuan Xiong, Pu Gong Ying, Dang gui, Xi Xin, Bai Shao, Di Long, Fu Ling, Gan Cao.

Chi Shao, Huang Qin, Bai Zhi and Bai Zhu were used to modify the formula.

Later: Dang Gui, Sheng Di, Huang Qi, Ren Shen, Chuan Xiong, Rou Gui, Hong Hua, Di Long, Bai Shao, Fang Feng, Gan Cao.

Bao He Wan patent was used intermittently to aid digestion

Acupuncture points used:

Stomach 4 (thread toward Stomach 6), Stomach 6 (perpendicular), Stomach 7 (perpendicular), Bitong, Large Intestine 20 (toward Bitong), Small intestine 18 (perpendicular), Stomach 2 (thread toward Large Intestine 20), Gall Bladder 14 (thread to YuYao), San Jiao 17 (toward opposite ear 0.5-1 cun), Stomach 3 (perpendicular), Du 26 (thread toward Large Intestine 19), Du 20 (directed forward), Bladder 2 (thread toward YuYao), Stomach 7 (perpendicular and directed medial), Gall Bladder 20 (perpendicular), Yintang (M-HN-3), TaiYang (M-HN-9), JiaChengJiang (M-HN-18). Significant rubor or sweating was achieved on the affected side every treatment.

Distal points: Stomach 36, Gall Bladder 34, Liver 3, Large Intestine 4, Lung 7, San Jiao 5, Spleen 6.

Topical herbs applied as paste: Chuan Xiong, Rou Gui, Gan Jiang, Ai Ye, Mu Dan Pi

Hand held moxa stick used above face as well as electronic stimulation and strong cupping of Du 14.

Points needled varied slightly each week.

The patient was advised to drink more water, eat less sugars, exercise when energy increases and avoid beer. If alcohol was consumed he should replace with small amount of spirits such as vodka.

The patient's treatment is still ongoing with twice weekly visits (week 5 at time of writing). Within one week the patient noticed more energy. By the fourth visit some nostril flaring with breathing was noted. Gradual improvement of eye closure was achieved and by the 6th visit could almost close except for the most medial aspect. After 4 weeks the patient began exercising again and energy levels have continued to stay high. Pain proximal to mastoid

process largely resolved and moderate improvement noted on facial symmetry by the 8th visit. The patient feels his face is improving for the therapy.

Possible adverse herbal reaction noted at week 3 causing colic-like symptoms after eating. Possibly related to drinking alcohol (beer), and eating rich foods the previous night and exacerbated by the heavier Yin/Blood herbs which impeded the Spleen's function. Gastrointestinal symptoms continued for approximately 1 week and herbs were discontinued during that time. Upon waking the patient noticed stiffness in knees after needling Gall Bladder 34 and then later for needling Stomach 36- both points were discontinued.

## Discussion

The patient is showing gradual improvement. Choosing Yangming combined with Taiyang and Shaoyang points appears to be beneficial. The combination of incorrect foods and herbal exacerbation has delayed the momentum of treatment to this point. However, as the patient will be continuing exercise and increases Qi and Blood supply to his face his progress will hasten. The patient is now aware that he was exposed to this condition from overwork, stress and poor lifestyle. He has been made aware that he will need to continue to improve these aspects to strengthen the body's resistance to future pathogenic factors.

In the face of research presented in this case report it is difficult to believe that the primary physician refused to administer an anti-viral medication. Furthermore, only at the patient's request was prednisone prescribed. Despite reviews concluding that neither prednisone nor Acyclovir show significant benefit when used alone, significant evidence now shows that together they have greater effect. Understanding that Bell's palsy may take up to 72 hours to fully present, studies suggest that early combined treatment is necessary to reduce the risk of permanent damage. It is a source of frustration to the patient and the practitioner that the condition was allowed to continue unabated without appropriate pharmaceutical treatment.

## Conclusion

Bell's palsy is a significantly debilitating condition which can be very slow to improve. This case report has outlined current medical knowledge of the condition and presented treatment protocols from both conventional medicine and traditional Chinese medicine perspectives. The case represents a typical presentation of vacuity syndrome and Wind-Cold pathogenic attack leading to facial paralysis. In this instance it is most likely due to viral pathogen activity or reactivation. Even though this patient's condition would be classified as severe he has demonstrated some improvement of facial motor function. It is hoped that continuation of therapy will see further improvement. It has also been shown that Bell's palsy is a condition in which conventional medicine has limited understanding and efficacy. Furthermore, that initial decisions made by primary care physicians regarding drug therapy may greatly influence the prognosis of disease. Chinese medicine has treated conditions such as Bell's palsy for over a

millennia, however, in an era of increasing demand for evidence-based practice, more high quality research is required to understand the efficacy of TCM.

## References

Adour, K. K., J. M. Ruboyanes, et al. (1996). "Bell's palsy treatment with acyclovir and prednisone compared with prednisone alone: a double-blind, randomized, controlled trial." *The Annals Of Otolaryngology, Rhinology, And Laryngology* 105(5): 371-378.

Ahmed, A. (2005). "When is facial paralysis Bell palsy? Current diagnosis and treatment." *Cleveland Clinic Journal Of Medicine* 72(5): 398-401, 405.

Allen, D. and L. Dunn (2004). "Aciclovir or valaciclovir for Bell's palsy (idiopathic facial paralysis)." *Cochrane Database Syst Rev*(3): CD001869.

Allen, D. and L. Dunn (2005). "Aciclovir or valaciclovir for Bell's palsy (idiopathic facial paralysis)." *The Cochrane Database of Systematic Reviews*(3).

Anon (2005). "Bell's Palsy." *Better health: Victorian Government Health Initiative*: [http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Bell's\\_palsy](http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Bell's_palsy).

Axelsson, S., S. Lindberg, et al. (2003). "Outcome of treatment with valacyclovir and prednisone in patients with Bell's palsy." *The Annals Of Otolaryngology, Rhinology, And Laryngology* 112(3): 197-201.

Billue, J. S. (1997). "Bell's palsy: an update on idiopathic facial paralysis." *The Nurse Practitioner* 22(8): 88, 97-100, 102-105; quiz 106-107.

Brandenburg, N. and J. Annegers (1993). "Incidence and risk factors for Bell's palsy in Laredo, Texas 1974-1982." *Neuroepidemiology* 12(6): 313-25.

Braunwald, E., A. Fauci, et al. (2001). *Harrison's Principles of Internal Medicine*. New York, McGraw Hill.

De Diego, J. I., M. P. Prim, et al. (1999). "Seasonal patterns of idiopathic facial paralysis: a 16-year study." *Otolaryngology And Head And Neck Surgery* 120(2): 269-271.

Deng, T., K. Ergil, et al. (1999). *Practical diagnosis in Traditional Chinese Medicine*, Churchill Livingstone.

Furuta, Y., S. Fukuda, et al. (1998). "Reactivation of herpes simplex virus type 1 in patients with Bell's Palsy." *Journal of Medical Virology* 54(3): 162-169.

- Gok, U., H. C. Alpay, et al. (2005). "Comparisons of steroid, acyclovir, lipoprostoglandin E1 and steroid + acyclovir treatments in facial paralysis: A rat study." *International Journal of Pediatric Otorhinolaryngology* 69(9): 1199-1204.
- Grogan, P. and G. Gronseth (2004). "Practice parameter: Steroids, acyclovir, and surgery for Bell's palsy (an evidence-based review): Report of the Quality Standards Subcommittee of the American Academy of Neurology." *Neurology* 56(7): 830-836.
- Hato, N., S. Matsumoto, et al. (2003). "Efficacy of early treatment of Bell's palsy with oral acyclovir and prednisolone." *Otology & Neurotology: Official Publication Of The American Otological Society, American Neurotology Society [And] European Academy Of Otology And Neurotology* 24(6): 948-951.
- He, L., D. Zhou, et al. (2004). "Acupuncture for Bell's palsy." *Cochrane Database Syst Rev*(1): CD002914.
- He, S., H. Zhang, et al. (1995). "Review on acupuncture treatment of peripheral facial paralysis during the past decade." *Journal of Traditional Chinese Medicine* 15(1): 63-67.
- Holten, K. B. (2004). "How should we manage Bell's palsy?" *The Journal Of Family Practice* 53(10): 797-798.
- Kanoh, N., J. Nomura, et al. (2005). "Nocturnal Onset and Development of Bell's Palsy." *Laryngoscope* 115(1): 99-100.
- Kasse, C. A., R. G. Ferri, et al. (2003). "Clinical data and prognosis in 1521 cases of Bell's palsy." *International Congress Series* 1240: 641-647.
- Kaygusuz, I., A. Godekmerdan, et al. (2004). "The role of viruses in idiopathic peripheral facial palsy and cellular immune response." *American Journal of Otolaryngology* 25(6): 401-406.
- Linder, T., W. Bossart, et al. (2005). "Bell's Palsy and Herpes Simplex Virus: Fact or Mystery?" *Otology & Neurotology* 26(1): 109-113.
- Liu, M. (1996). "Journal of Clinical Acupuncture." *Comparison of Acupuncture and Drug Treatment for 130 Patients with Facial Palsy* 12(5,6): 56.
- Maciocia, G. (2004). *Diagnosis in Chinese Medicine: A Comprehensive Guide*. London, Churchill Livingstone.
- Maclean, W. and J. Lyttleton (1998). *Clinical handbook of internal medicine*. Sydney, University of Western Sydney.
- Peitersen, E. (2002). "Bell's Palsy: the spontaneous course of 2,500 peripheral facial nerve palsies of different etiologies." *Acta Oto-laryngologica Supplementum supplement*(549): 4-30.

- Ramos, A., I. de Miguel, et al. (2003). "Bell's palsy and Epstein-Barr virus infection." International Congress Series 1240: 655-656.
- Roob, G. (1999). "Peripheral facial palsy: etiology, diagnosis and treatment." European Neurology 41(1): 3-9.
- Salinas, R. A., G. Alvarez, et al. (2004). "Corticosteroids for Bell's palsy (idiopathic facial paralysis)." Cochrane Database Syst Rev(4): CD001942.
- Shao, S. (1999). "Acupuncture and Western Medicine for 58 Patients with Peripheral Facial Palsy." New Chinese Medicine 30(1): 14.
- Stone, A. (2002). "Acupuncture Treatment of Bell's Palsy - Protocol by Dr. Wang of the Yunnan Province Hospital of TCM, Kunming China." <http://gancao.net/ht/bells.shtml>.
- Unlu, Z., A. Aslan, et al. (2003). " Serologic Examinations of Hepatitis, Cytomegalovirus, and Rubella in Patients with Bell's Palsy." American Journal of Physical Medicine & Rehabilitation 82(1): 28-32.
- Vrabec, J. T., E. H. Toh, et al. (2004). "Facial nerve disorders committee: Controversies in facial paralysis." Otolaryngology - Head and Neck Surgery 131(2): P230.
- Wolfe, H. (2003). "Joining Needling for Facial Paralysis." Blue Poppy Press  
www.bluepoppy.com: accessed 6/10/2005.
- WUSM (2005). "FACIAL NERVE (VII) DISORDERS." Washington University School of Medicine <http://www.neuro.wustl.edu/neuromuscular/nanatomy/vii.htm>: Accessed 3/10/2005.
- Xing, W., S. Yang, et al. (1994). "Treating old facial nerve paralysis of 260 cases with the acupuncture treatment skill of pause and regress in six parts." Zhen Ci Yan Jiu 19(2): 8-10. Article in Chinese, abstract only.
- Yu, Y. (1999). "Analysis of Acupuncture for Peripheral Facial Palsy." Shanghai Journal of Acupuncture and Moxibustion 18(5): 26.
- Zang, J. (1999). "80 cases of peripheral facial paralysis treated by acupuncture with vibrating shallow insertion." Journal of Traditional Chinese Medicine 19(1): 44-47.
- Zhang, D., Z. Wei, et al. (1991). "Clinical observations on acupuncture treatment of peripheral facial paralysis aided by infra-red thermography--a preliminary report." Journal of Traditional Chinese Medicine 11(2): 139-45.
- Greg River MAACMA. M.TCM, Grad. Dip Lang, B App Sc TCM, Ad Cert TCM