

## A Review on Acupuncture Treatment for Post-stroke Aphasia

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### Abstract

Post stroke aphasia is a communication disorder that occurs after stroke which affects their daily life. With the aging of the population, an increasing number of stroke sequelae patients have brought a heavy burden to their families and society. For the treatment of post stroke aphasia, western medicine mostly uses a combination of western medicine treatment with speech rehabilitation training which are not particularly satisfying. Meanwhile acupuncture plays an important role in treating this disease due to its own unique effectiveness. The objective of this study is to review the effectiveness of the different types of acupuncture methods on treating post stroke aphasia. All the data are collected from online databases based on the inclusion and exclusion criteria. The data collection is tabulated using the Microsoft Excel and results are discussed. There are 40 selected journals that are eligible for inclusion criteria. Based on the results, the highest clinical efficacy in tongue acupuncture is needling the tongue tip without retending the needle method whereas in scalp acupuncture, the highest clinical efficacy is language I, II, III area method, while in body acupuncture, the highest clinical efficacy is Bai Hui, Feng Chi, Jin Jin, Yu Ye, Lian Quan, He Gu, Ren Zhong, Nei Guan, Ji Quan and San Yin Jiao method. Overall, the combined acupuncture method has the highest frequency and effectiveness rate among the four different types of acupuncture methods in treating post stroke aphasia. In conclusion by reviewing all the recent experimental articles, acupuncture showed higher effectiveness in treating post stroke aphasia compared to conventional therapy.

### Keywords

Sustainable healthcare, Traditional Chinese Medicine, Acupuncture, Post-stroke Aphasia

### Introduction

Stroke aphasia is one of the common sequelae of stroke. In modern medicine, it is known as "acute communication disorder" and it is one of the most prevalent signs of acute cerebrovascular disease. The main clinical manifestations of aphasia include dysfunction in listening, comprehension, conversation, reading and writing that seriously affect the quality of life of the patient. With the aging of the population, an increasing number of stroke sequelae patients have brought a heavy burden to their families and society (Junming, 2019). For the treatment of post stroke aphasia,

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western medicine mostly uses a combination of western medicine treatment with speech rehabilitation training. However, the results are not particularly satisfying. There is only about 70% of the total effective rate and the recovery speed will progressively slow down over time (Zhao, Tong, Huang, & You, 2016). Therefore, the timing of speech rehabilitation therapy is very important because the earlier the treatment, the better the condition.

In Traditional Chinese Medicine, aphasia is called as Yin Fei from the chapter of Mai Jie from Su Wen of Yellow Emperor's Classic (Daihua, 2005). Acupuncture treatment has been successfully treating stroke for more than a thousand years in China (Xu & Chen, 2020). Hence, acupuncture plays an important role in treating this disease due to its own unique effectiveness compared to TCM prescription (Liu, 2019). This study is to review the effectiveness of the different types of acupuncture methods and to analyze the method of acupuncture treatment based on the acupoints and meridians used to treat post stroke aphasia.

### **Methodology**

This review study of this research was done by referring to and collecting data from other multiple online databases, including China National Knowledge Infrastructure, known as CNKI in shortform from year 2010 to 2022 which is recently 12 years of references. All the inclusion data should be included from any articles that fulfill of TCM and western diagnostic symptoms; research with acupuncture treatment after stroke which contains an experimental group and a control group, the duration of the treatment at least 14 days. All the exclusion data should be excluded from any articles that deal with animal experiments or the combination of other therapy methods, includes prescription, massage and moxibustion; research without stroke history; research with an unclear experimental group and control group and research with topics of review, progress, case reports or experience sharing. The data collection was tabulated in Microsoft Excel according to journal of the author, type of acupuncture methods, duration of the experiment, clinical efficacy of the method used and frequency of the types of acupuncture used. In the data of body acupuncture part, more than 2 body acupoints in one research study will be grouping as body acupoints although there presents as tongue or scalp acupoint. The effectiveness of different acupuncture methods will be explained in narrative passages.

### **Result and Discussion**

A total of 40 journals are eligible for the inclusive criteria that are stated in methodology are selected from the clinical journals that are published in CNKI. There are 10 journals of tongue acupuncture, 11 journals of scalp acupuncture, 5 journals of body acupuncture and 14 journals of combined acupuncture that use different types of methods respectively to treat post stroke aphasia and the duration of the treatment ranged at least 14 days.

#### ***Clinical efficacy of tongue acupuncture***

There are 10 journals of tongue acupuncture from the selected 40 journals. Among the 10 journals, there are 2 journals of needling the tongue body without retending the needle method, 1 journal of needling the tongue tip without retending the needle method, 3 journals of tongue three-needle method, 1 journal of using *Jin Jin* and *Yu Ye* method, 1 journal of *Lian Quan*, *Ju Quan*, *Hai Quan*,

*Jin Jin* and *Yu Ye* method, 1 journal of *Guan's* tongue acupuncture, *Jin Jin* and *Yu Ye* method and 1 journal of *Zhong Ju*, *Ju Quan*, *Jin Jin* and *Yu Ye* method.

Table 1. Clinical efficacy of the tongue acupuncture

Author(s) Years	Method		Clinical efficacy (%)	
	Experimental group	Control group	Experimental group	Control group
(Luo et al., 2010)	Needling the tongue body without retending the needle & language training	Language training	87.60	72.40
(Liu, 2011)	Needling the tongue tip without retending the needle	<i>Ya Men</i> , <i>Lian Quan</i>	100.00	87.50
(Zhao et al., 2014)	Tongue three-needle & language training	Language training	92.86	84.62
(Wang et al., 2016)	<i>Lian Quan</i> , <i>Jin Jin</i> , <i>Yu Ye</i> , <i>Ju Quan</i> , <i>Hai Quan</i> & Schuell stimulation	Schuell stimulation	90.00	76.70
(Li et al., 2017)	<i>Zhong Ju</i> , <i>Ju Quan</i> , <i>Jin Jin</i> , <i>Yu Ye</i> & Schuell stimulation	Schuell stimulation	89.00	64.00
(Song et al., 2017)	Tongue three-needle & Schuell stimulation	Schuell stimulation	87.10	76.67
(Gao, 2018)	<i>Jin Jin</i> , <i>Yu Ye</i> & Schuell stimulation	Schuell stimulation	82.50	60.00
(Li & Sun, 2019)	Tongue three-needle	Language training	95.00	70.00
(Xu & Chen, 2020)	<i>Guan's</i> tongue acupuncture, <i>Jin Jin</i> , <i>Yu Ye</i> & language training	Language training	88.00	64.00
(Lai et al., 2022)	Needling the tongue body without retending the needle & language training	Language training	84.44	64.44

In Table 1, it is obvious to see that the highest clinical efficacy is 100% which is the method of needling the tongue tip without retending the needle by Liu 2011. The second highest clinical efficacy is tongue three-needle which is 95% by Li & Sun 2019. The lowest clinical efficacy is 82.50% which is the method of using *Jin Jin* and *Yu Ye* only by Gao 2018. The difference between the highest clinical efficacy with the lowest clinical efficacy is 17.5%.

Needling the tongue tip without retending the needle method has the highest clinical efficacy of 100% according to the journal of Liu 2011. The acupoint used is also known as heart acupoint because tongue tip belongs to the heart. As tongue is the sprout of the heart and the five

Zang organs belong to the tongue, and the meridian circulation is closely related to the tongue and throat, so needling the tongue tip can stimulate the related meridian Qi, in order to unblock meridian and collateral, regulate the five Zang organs to promote speaking. As the heart also controls mental activity and the brain belongs to the house of mental activity, combining with modern western view, tongue is the important pronouncing organ. The tongue is supplied with four pairs of cranial nerves, including the trigeminal nerve, facial nerve, glossopharyngeal nerve, and hypoglossal nerve. Clinically, most stroke patients often suffer from motor or sensory tongue impairment which eventually affects the speech function of the patients, thus acupuncture on the tongue tip can stimulate the relevant cranial nerves to restore the motor or sensory function of the tongue to treat aphasia.

### *Clinical efficacy of scalp acupuncture*

There are 11 journals of scalp acupuncture from the selected 40 journals. Among the 11 journals, there is 1 journal of Fang's scalp acupuncture method, 7 journals of language I, II, III area method, 2 journals of temporal three-needle method and 1 journal of using Bai Hui, Tong Li and language I, II, III area method.

Table 2 Clinical efficacy of scalp acupuncture

Author(s) Years	Method Experimental group	Control group	Clinical efficacy (%)	
			Experimental group	Control group
(Huang et al., 2014)	Fang's scalp acupuncture	Jin Jin, Yu Ye, Lian Quan, Qu Chi, Wai Guan, He Gu, Huan Tiao, Feng Shi, Zu San Li, Tai Chong	94.98	68.69
(Zhao et al., 2016)	Language I, II, III area & language training	Language training	91.43	71.43
(Qi, et al., 2017)	Language I, II, III area & language training	Language training	89.47	68.42
(Xue & Zhang, 2017)	Language I, II, III area & Schuell stimulation	Schuell stimulation	95.65	73.91
(Yu et al., 2017)	Temporal three-needle & language training	Language training	90.91	70.45
(Sun et al., 2019)	Bai Hui, Tong Li, language I, II, III area & schuell stimulation	Schuell stimulation	87.93	72.41
(Xiao et al., 2019)	Language I, II, III area & language training	Language training	86.00	60.00
(Wang & Xu, 2020)	Language I, II, III area & language training & drug therapy	Language training & drug therapy	86.20	70.10

(Xie et al., 2020)	Language I, II, III area & language training	Language training	93.33	73.33
(Luo et al., 2021)	Language I, II, III area & language training	Language training	90.00	76.67
(Cao et al., 2022)	Temporal three-needle & language training & drug therapy	Language training & drug therapy	92.30	60.00

In Table 2, it is shown that the highest clinical efficacy is 95.65% which is language I, II, III area method from Xue & Zhang 2017. The second highest clinical efficacy is *Fang's* scalp acupuncture method with the clinical efficacy of 94.98%. The lowest clinical efficacy is also language I, II, III area method by Xiao et al. 2019 which is 86.00%. The difference between the highest clinical efficacy and lowest clinical efficacy is 9.65%.

Language I, II, III are originated from *Jiao's* scalp acupuncture which was proposed by *Jiao Shun Fa*. It is used based on the theoretical basis of the functional positioning of the cerebral cortex. Language I area is located at the motor area which is at the anterior oblique line of the vertex-temporal of lower 2/5. Language II area is located at the parallel of parietal tuberosity to the anteroposterior midline which is 3cm down from the parietal tuberosity along the 2cm backwards. Language III area is located at 4cm backwards from the midpoint of the hearing sickness area, which is good in treating sensory aphasia. Acupuncture on the language I, II, III area can excite the scalp which can enhance the effect of nerve reflex and functional restriction. *Jiao Shun Fa* believes that the function of the cerebral cortex is related to the corresponding scalp, thus it can regulate the function of the underlying cerebral cortex. As language centres of the brain are closely interconnected, so if one of the centre is damaged, it will affect the function of other centres. Therefore, acupuncture on the language area can help in stimulating the sensory and motor area to enhance the recovery of language function.

### ***Clinical efficacy of body acupuncture***

There are 5 journals of body acupuncture are selected. Among the 5 journals, there is 1 journal of using *Ya Men, Tian Ding* and *Jian Shi* method, 1 journal of *Bai Hui, Feng Chi, Jin Jin, Yu Ye, Lian Quan, He Gu, Tong Li* and *Zu San Li* method, 2 journals of *Lian Quan, Bai Hui, Shen Shu* and *Xin Shu* method and 1 journal of *Bai Hui, Feng Chi, Jin Jin, Yu Ye, Lian Quan, He Gu, Ren Zhong, Nei Guan, Ji Quan* and *San Yin Jiao* method.

Table 3. Clinical efficacy of body acupuncture

Author(s) Years	Method Experiment group	Control group	Clinical efficacy (%)	
			Experimental group	Control group
(Wu, 2011)	<i>Ya Men, Tian Ding, Jian Shi</i>	Language training	90.24	73.17
(Cui et al., 2012)	<i>Bai Hui, Feng Chi, Jin Jin, Yu Ye, Lian Quan, He Gu, Tong Li, Zu San Li</i> & language training	Language training	92.65	78.20

(Di, 2016)	<i>Lian Quan, Bai Hui, Shen Shu, Xin Shu</i>	Schuell stimulation	84.20	62.94
(Fan et al., 2017)	<i>Lian Quan, Bai Hui, Shen Shu, Xin Shu</i>	Schuell stimulation	85.30	65.38
(Jia & He, 2017)	<i>Bai Hui, Feng Chi, Jin Jin, Yu Ye, Lian Quan, He Gu, Ren Zhong, Nei Guan, Ji Quan, San Yin Jiao &amp; language training</i>	Language training	95.00	68.30

From Table 3, there is shown that *Bai Hui, Feng Chi, Jin Jin, Yu Ye, Lian Quan, He Gu, Ren Zhong, Nei Guan, Ji Quan* and *San Yin Jiao* method from Jia & He 2017 has the highest clinical efficacy which is 95.00%. The second highest clinical efficacy is 92.65% which is the method of *Bai Hui, Feng Chi, Jin Jin, Yu Ye, Lian Quan, He Gu, Tong Li* and *Zu San Li* from Cui et al. 2012. The lowest clinical efficacy is 84.20% which is *Lian Quan, Bai Hui, Shen Shu* and *Xin Shu* method from Di 2016. By comparing the highest clinical efficacy and lowest clinical efficacy, the difference between both rates are 2.35%.

*Bai Hui* and *Ren Zhong* are acupoints of the governor vessel, as governor vessel enter into the brain collateral, so they can help to refresh mind and open orifice. *Feng Chi* is the bladder meridian that is nearby the brain, as bladder governs decision, so *Feng Chi* can help to refresh mind and open orifice. *Lian Quan* is located beneath the tongue and is the meeting point of conception vessel and Yin link vessel whereas *Jin Jin* and *Yu Ye* are located beneath the tongue collaterals. These three acupoints can help to open the tongue orifice to improve the language recovery. *Zu San Li* and *He Gu* are foot *Yang Ming* meridian, as there is saying of “treat atrophy by using *Yang Ming* meridian”, so both acupoints can help to treat post stroke aphasia which is due to atrophy. *Tong Li* is connecting acupoint of heart meridian of hand *Shao Yin*, as tongue is the sprout of heart and heart governs spirit, so *Tong Li* can help to regulate *Qi* and blood of the heart meridian; *Ji Quan* is also from heart meridian of hand *Shao Yin*, it is the starting point of hand *Shao Yin* and connect with heart and its location has many nerves and blood vessels that associated with the heart, so *Ji Quan* can promote stimulation to the heart. Both acupoints can help to regulate heart meridian’s *Qi* and blood to treat post stroke aphasia. *Nei Guan* is the connecting point of pericardium meridian of hand *Jue Yin*, as heart governs blood and stores spirit, so *Nei Guan* can regulate heart *Qi* and soothe *Qi* and blood. *San Yin Jiao* is the intersection point of foot three *Yin*. Foot three *Yin* connects with the tongue, so *San Yin Jiao* can help to nourish the tongue to treat aphasia.

### ***Clinical efficacy of combined acupuncture***

There are 14 journals of combined acupuncture from the selected 40 journals. Among the 14 journals, there are 3 journals of scalp acupuncture combined with body acupuncture method, 8 journals of tongue acupuncture combined with scalp acupuncture method and 3 journals of combination of tongue, scalp and body acupuncture method.

Table 4. Frequency and clinical efficacy of acupuncture methods

Acupuncture method	Frequency	Clinical efficacy of experimental group (%)
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Tongue acupuncture	10	88.82
Scalp acupuncture	11	90.75
Body acupuncture	5	89.48
Combined acupuncture	14	90.86

From Table 4, in order to conclude the combined acupuncture method, it is shown that combined acupuncture method has the highest rate of efficacy of 90.86%, whereas tongue acupuncture method has the lowest rate of efficacy of 88.82%. Combined acupuncture shows more effective in treating post stroke aphasia. However, the difference between the highest and the lowest efficacy rate of both methods is not significant due to there is only 2.04% different. Therefore, each type of acupuncture method has their own unique in their effectiveness to treat the disease.

Overall of the journals selected, the combined acupuncture method has the highest clinical efficacy of the experiment group in mean which is 90.86% compared to the other type of acupuncture methods. Combined acupuncture method is a method that is with a combination of other types of acupuncture method, including tongue acupuncture, scalp acupuncture and body acupuncture. However, in spite of that, the difference of the clinical efficacy between the highest clinical efficacy of the combined acupuncture with the lowest clinical efficacy of the tongue acupuncture is not significant because it is only 2.04% different. As a result, it can be concluded that each method has its own effectiveness in treating post stroke aphasia.

### Conclusion

In the review, it can obviously be shown that the efficacy of the different acupuncture methods in the experimental group is higher than the control group from each journal. Furthermore, acupuncture treatment considered as an option for alternative treatment which cost lower, the needle is recyclable which can be sustainable. The World Health Organisation (WHO) defines a Sustainable Healthcare System as a system that improves, maintains or restores health, while minimizing negative impacts on the environment and leveraging opportunities to benefit of the health and well-being of current and future generations. So acupuncture treatment can be considered as alternative treatment to improve the health and well-being of the post stroke patient as a sustainable health care.

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