

Ten Years After: A Case for Using Xing Nao Kai Qiao Acupuncture to Treat Post-Stroke Aphasia

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Abstract

Aphasia is a communication disorder experienced by many patients following a stroke. In this case, the Xing Nao Kai Qiao (XNKQ) method of acupuncture was effective in treating a 96-year old female with aphasia 10 years following the ischaemic stroke that caused the speech impairment. This patient had completed traditional speech therapy in the year following her stroke, with little improvement. However, a three-month course of acupuncture 10 years after the stroke yielded dramatic improvement in her communication. She showed improved ability to choose appropriate nouns and verbs, including using her son's name correctly for the first time in nearly a decade. Weekly scores in the online assistive therapy application, Conversation Therapy Lite, increased from an average of 20 per cent correct to 30 to 50 per cent correct. She experienced greater fluidity of speech, improved ability to craft sentences, greater overall alertness, as well as improvements in sleep and energy level. She also had a significant decrease in symptoms of senility which had developed a few years prior to treatment, as reported by the son with whom she lives.

Introduction

Approximately 795,000 strokes occur in the US each year and it is estimated that 21 to 38 per cent of all stroke patients are aphasic in the acute period following a stroke. Advanced age increases the frequency of aphasia, with adults over 65 having greater risk. Many stroke survivors suffering acute aphasia experience spontaneous recovery within six months. However, even after standard treatment, the majority of individuals suffering post-stroke aphasia will continue to have a chronic communication disability. Aphasia is defined by the loss of ability to communicate orally, through signs or in writing, or the inability to understand such communications. Aphasia is assessed according to three criteria: language comprehension, fluency of verbal output, and verbal repetition. Aphasia can range in severity; from an almost complete inability to communicate, to impairments in only one aspect of communication such as the ability to recall names of objects or string words together in a sentence.

is dominated by the left hemisphere of the brain. Individuals with damage to Broca's area, located in the frontal lobe, often speak in short, meaningful phrases, while longer sentences tend to be difficult for them to produce. There may also be concurrent right-side weakness or limb paralysis because the frontal lobe is important for physical movement. When Wernicke's area on the temporal lobe is damaged, the person is likely to speak in longer but nonsensical sentences and may not detect their own language errors. Damage to Wernicke's area has no impact on body movement. If both areas are damaged, or damage is severe in one of them, global aphasia is the result, causing severe communication difficulty both in speech and language comprehension.

The standard care in Western clinical settings for aphasia and dysphagia following stroke generally consists of speech and language therapy (SLT) and/or speech and swallowing therapy (SST) with a speech language pathologist (SLP), and can include the use of digital speech therapy programs. The therapy involves exercises that may focus on generation of complex speech or simple swallow training, depending on the severity of the patient's impairment.

Post-stroke aphasia typically results from damage to the left hemisphere of the brain ...

Typically, post-stroke aphasia results from damage to the left hemisphere of the brain, specifically Broca's and Wernicke's areas where the brain processes language. In 96.9 per cent of the population, language function

Acupuncture treatment of stroke sequelae in traditional Chinese medicine

Stroke pathology and treatment are noted in the

earliest of the classical Chinese medicine texts, dating back two millennia; today in China acupuncture continues to be used as a standard therapy in treating patients with post-stroke impairments. Acupuncture is used to treat stroke throughout most of the country's smaller scale county hospitals, where orthodox rehabilitation is unavailable, and as a complementary therapy in most of the larger, university-based hospitals. Of the 2,000,000 people who have a first stroke in China annually, about 70 to 80 per cent are left with disabilities and loss of ability to live independently, meaning stroke is China's leading cause of disability in adults. Possibly China's long history of acupuncture as a primary mode of medical care combined with the high national occurrence of stroke explain why acupuncture has come to be used widely to treat disabilities caused by stroke.

In terms of research, acupuncture for stroke rehabilitation has been widely studied. One meta-analysis of 24 systematic reviews of acupuncture treatment for stroke found that acupuncture may be superior to non-acupuncture controls for post-stroke neurological impairments and dysfunctions such as dysphagia. However, there was not clear evidence in this study showing that acupuncture could prevent or reduce post-stroke disabilities, including aphasia. Another systematic review of 17 randomised controlled trials compared standard rehabilitation alone to rehabilitation combined with acupuncture. The review found that 14 of the 17 trials showed favourable results for the combined treatment. Much of the literature concludes that future studies are needed that specifically identify the most appropriate type of acupuncture intervention for each specific post-stroke sequela. That is, research is generally lacking in terms of specific details of the optimum length and type of treatment, whether for example scalp acupuncture, body acupuncture or acupuncture with electrical stimulation.

Traditional Chinese medicine stroke theory

This Xing Nao Kai Qiao (XNKQ) method is the most recent interpretation of a long evolution of stroke theory in Chinese medicine. The classic text *Nei Jing* (Inner Classic) describes cerebrovascular accident in terms of wind-stroke (zhong feng), involving a pathological rushing of qi upwards to the head. Although the *Nei Jing* does not mention specific treatment for stroke, the patient is said to live if the qi can be redirected downwards and perish if it cannot. The classification of wind as the predominant pathology involved was based on the observation of the sudden onset of stroke, as well as the other symptoms that were thought to mimic the chaotic nature of wind such as hemiparesis or loss of consciousness.

Over the two millennia since the *Nei Jing*, the TCM (traditional Chinese medicine) understanding of the pathology and aetiology of wind-stroke has had multiple major shifts, and five primary models of the disease have

been identified. The classification of stroke in terms of endogenous wind (manifesting as tremors, seizures, etc.) versus exogenous illness (such as infectious diseases or bi syndrome induced by weather) has been a topic of contention for centuries. In the early 1800s, Wang Qing-Ren's *Yi Lin Gai Cuo* (Correcting Mistakes in the Forest of Medicine), put forward a model of stroke as rooted in qi deficiency, with the characteristic unilateral symptoms being caused by the qi only being strong enough to supply one half of the body. Although this work did mention 'brain qi', it did not denote the brain as a specific location of pathology. Zhang Xi-Chuan's work, *Yi Xue Zhong Zhong Can Xi Lu* (Chinese at Heart but Open to the West, 1933), developed a more modern basis for stroke prevention & treatment, accepting the brain as a focal point and integrating biomedical ideas such as that of hypertension with the traditional understanding of qi rushing upwards to the head.

The modern TCM model of stroke tends to emphasise a pathomechanism involving deficiency of Liver and Kidney yin, hyperactive Liver yang, internal wind stirred by pathogenic fire, with qi and blood ascending chaotically to the brain, and obstruction of the shen. The primary aetiological factors for this pathomechanism are understood to be emotional stress, improper diet, exogenous wind and underlying constitutional deficiency.

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Shen, penumbra and neuroplasticity: the Xing Nao Kai Qiao method

The Xing Nao Kai Qiao (XNKQ) method is an approach to stroke rehabilitation that incorporates both traditional TCM theory and modern neuroplasticity theory. Dr. Shi Xue-min created this method through extensive clinical observation and training with China's preeminent acupuncture physicians of the 20th century, and the method is distinguished by the rigour with which it has been tested. In Tianjin, China, the XNKQ acupuncture method is used in combination with standard speech pathology treatment as the primary method of rehabilitation in the area's largest rehabilitation hospital for post-stroke impairment.

As described above, according to TCM theory, stroke involves disturbance of the shen (a person's mind or spirit), and therefore treatment must involve reviving the shen. In TCM, this pathology is referred to as 'qiao bi shen ni' (the orifices are closing and shen is hiding). The primary Xing Nao Kai Qiao needling technique is translated as the 'enlightening the mind, opening the orifices' technique. The XNKQ method further holds that if the shen is awoken, it may appropriately lead the Heart and the mind, which

together control and complete all activities of life. The XNKQ treatment methodology requires awakening the patient from their subdued consciousness, while also tonifying the Liver and Kidneys and moving the blood to remove obstruction from the channels and collaterals.

The therapeutic importance of reviving the shen in the Xing Nao Kai Qiao method can be understood in modern terms through neuroplasticity and the acute ischaemic penumbra. The ischaemic penumbra is the area of the brain that has been affected by the disruption of blood flow, whether due to blockage or haemorrhage. This area is not the site of the actual infarct - the tissue is not dead and with correct treatment can be saved. Recent studies show that the damaged neurons in the penumbra can indeed be brought back from the brink and regenerated with acupuncture. In the weeks, months and years following a stroke, the therapeutic focus will shift from saving the penumbra to increasing neuroplasticity. The area of infarction has been established, the penumbra may be healing, new neural connections can be formed and other areas of the brain enlisted to take over the functions once managed by the area of the brain that has been lost. This idea of re-establishing neural connection throughout the brain and the body can be accomplished with acupuncture; it requires proper point selection and skilled needle technique.

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Case presentation

This is the case of a 96-year-old female who suffered an ischaemic stroke ten years prior to beginning acupuncture treatment in 2018. The patient was left with chronic aphasia and her speech was best described as frankly non-fluent, demonstrating an average phrase length of five words or less. Over a period of three months and thirteen treatments, her speech and communication improved significantly and she experienced a dramatic improvement in concurrent symptoms of senility.

Following the stroke in 2008, she initially experienced significant aphasia. She underwent speech therapy with a speech pathologist for about one year, but experienced little improvement and the aphasia still persisted a decade later. In the few years preceding acupuncture treatment, she had been regularly using an iPad speech therapy programme, Conversation Therapy Lite, several times a week; her scores would average 20 to 30 per cent. She had taken Warfarin and baby aspirin (325 milligrams daily) immediately following the stroke, but discontinued them after three years.

At the initial visit, the patient's energy level was low. She moved slowly, requiring assistance to rise from a seated

position in the waiting room and walk to the treatment room. However, she was aware of her surroundings and seemed cheerful. In response to questions she would most often just smile and look to her son to answer. When she would respond, she offered one to three words, consisting of affirmatives, negatives or inconclusive statements unrelated to the question. Her son reported that she had significant difficulty finding words and that most days it was challenging to get her to talk at all. She could go almost the whole day without speaking. When she did speak it was after much prompting. 'Yes' and 'no' answers were often confused, and she regularly used incorrect nouns and verbs, including her son's name. She regularly referred to the squirrels on their patio as 'cats' and seemed unaware of her mistake. Her son reported that she was usually tired enough to need a nap in the afternoons. She would often experience confusion in the afternoons and evenings, trying to leave to 'go home' although they were already at home. Most nights she would wake from sleep in the middle of the night with restlessness and confusion, and required coaxing to return to bed.

Her health was otherwise stated as generally good with no complaint of pain, and her only other diagnosis was hypothyroidism for which she took levothyroxine daily. She did suffer from urinary incontinence, but digestion and appetite were reported to be good. Her diet was predominately grain-free, with low lectin foods.

Diagnosis

The patient's Chinese medicine diagnosis was deficiency of qi, blood, yin and yang, with phlegm obstructing the orifices. This diagnosis was based on the patient's pale tongue with a slightly greasy coat, a soft, slightly deep pulse, her fatigue (even with 10 or more hours of sleep), difficulty with concentration and frequent confusion. According to Chinese medicine theory, if the shen is obstructed by phlegm then it will not be able to coordinate the activities of life. If there is insufficient qi, blood, yin and yang then the body cannot generate energy to carry out the proper bodily functions. The treatment principles were to revive and regulate the shen, nourish the Liver and Kidney to support yin and yang, and tonify and regulate qi and blood.

Treatment

Acupuncture was provided once per week over a period of thirteen weeks. The acupoints used were chosen from the so-called major and minor prescriptions from the XNKQ method, with other specific points selected on the basis of the patient's presentation (see Tables 1 and 2). The main points selected were aimed primarily at treating aphasia, as she did not have motor impairment of her extremities. Additional points were used to tonify qi and blood and support the patient's overall health as it presented at her weekly appointments. The needles used on the scalp were

0.22 x 40 millimetres; on the face 0.18 x 30 millimetres; on the hand, wrist, foot, and ankle, 0.20 x 30 millimetres; and on the neck, body and other extremities, 0.25 x 50 millimetres, unless otherwise noted (all DBC Spring brand).

At each treatment, needles were inserted and stimulated according to the XNKQ protocol. Whilst the points are the same as those commonly used in standard TCM acupuncture practice, the important difference with the XNKQ is the needling technique. For example, in the case of Sanyinjiao SP-6 and Neiguan P-6, the qi sensation should spread from the point beyond a distal joint; or Yintang M-HN-3 and Renzhong

DU-26 should be stimulated until eye watering is observed. The needling methods used in this case are described in Table 3. Indications for the specific depths and needling techniques can be found in Dr. Shi Xue-Min's text, *Comprehensive Textbook of Acupuncture & Moxibustion*, which were modified according to the patient's specific constitution and presentation. With the XNKQ method, a great deal of care is applied to determine the proper technique for each individual patient to elicit the desired qi response. In the *Comprehensive Textbook of Acupuncture & Moxibustion* Dr. Shi reminds the practitioner of the instructions in *The Miraculous Pivot* (Ling

	Major Prescription	Minor Prescription	Specific Aphasia / Dysphagia Points
Main Points	Neiguan P-6 (bilateral)	Neiguan P-6	Fengchi GB-20
	Renzhong DU-26	Shangxing DU-23	Yifeng SJ-17
	Sanyinjiao SP-6 (diseased side)	Yintang M-HN-3	Wangu GB-12
		Sanyinjiao SP-6 (diseased side)	Shanglianquan M-HN-21 Waichinchin (two points, each one cun either side of Lianqian REN-23)
Assistant Points (all on diseased side)	Jiquan HE-1 (0.30 x 60mm)		Jinjin M-HN-20 (with bloodletting)
	Chize LU-5		Yuye M-HN-20 (with bloodletting)
	Weizhong BL-40		

Table 1: Xing Nao Kai Qiao method points. [Neiguan P-6, Sanyinjiao SP-6, Shangxing DU-23, Yintang M-HN-3, Fengchi GB-20, Yifeng SJ-17, Wangu GB-12, Shanglianquan M-HN-21 and Waichinchin were used at every treatment. As this patient did not have impairment of her limbs, Weizhong BL-40, Chize LU-5 and Jiquan HE-1 were not used and are included above only as they are part of the XNKQ protocol. Also, Jinjin EX-HN12 and Yuye EX-HN13 were not used due to patient preference.]

Point	Purpose
Zusanli ST-36 (Balance SL-Type Needle 0.25 x 75mm)	Tonify qi & blood
Yinlingquan SP-9 (Balance SL-Type Needle 0.25 x 75mm)	Transform dampness; treat mild oedema in lower legs
Fenglong ST-40	Transform phlegm, calm shen
Taixi KID-3	Tonify Kidney yang, yin, jing and qi
Fuliu KID-7	Tonify Kidney and Spleen yang
Shaohai HE-3	Course Heart qi for tremor/shaking in arms; clear Pericardium
Lieque LU-7	Strengthen wei qi
Shousanli LI-10	Supplement qi & blood
Wangu GB-12	Dispel wind, calm shen
Fengchi GB-20	Dispel wind, open channels
Tianchong GB-9	Eliminate internal wind
Yifeng SJ-17	Disperse wind, clear channels
Auricular Shenmen (DBC Spring 0.16 x 15mm)	Calm and awaken shen

Table 2: Other acupuncture points used

The treatment can only be finished when there is arrival of qi. Only in such cases can the practitioner get good curative results.

Shu) chapter 'Ending and Beginning' (Zhong Shi): 'During needling, the practitioner should only pay attention to the sensation of the needle and fully concentrate on the patient without listening to any other sounds.' He also cites Biao You-Fu's directions, 'When needling, the practitioner should not look anywhere else but the patient, carefully holding the needle as if holding a tiger. They should not think about anything else except the patient and treat the patient as if they were God.' Dr. Shi continues, 'The arrival of qi must be obtained at every point and the treatment can only be finished when there is arrival of qi. Only in such cases can the practitioner get good curative results.'

The sparrow pecking technique is indicated for Sanyinjiao

SP-6, Renzhong DU-26 and Yintang M-HN-3. The practitioner is directed to first twist the needle a little bit in either direction (usually clockwise), until he or she feels a 'needle grab' or the needle feels stuck, and then begins lifting and thrusting rapidly with low amplitude in respect to needle depth. This is done until they feel de qi sensation or, when applicable, the qi sensation travels beyond a distal joint or tears swell in the eyes. When the appropriate reaction is observed, the practitioner should stop. The technique should be explained to the patient beforehand, with details of how the qi may feel as it spreads, although the exact sensation will be slightly different for each patient. For example, it may feel like crackling electricity spreading under the skin from the point and along the extremity. Or it may feel like a sunburst radiating out from the point in all directions. In this case, manipulation of the needle was discontinued once the patient felt the qi sensation, and then repeated up to three times, depending on the patient's agreement on continued needle stimulation.

Point	Insertion	Depth	Technique/Stimulation
Neiguan P-6	Perpendicular insertion	0.1 – 0.5 cun	Once qi is obtained, stimulate with lifting and thrusting at a small amplitude (0.1-0.2 cun), while twisting away from midline, until qi sensation is felt, often described as a sensation of crackling electricity spreading into the hand, not just the middle finger. Repeat stimulation after 10-15 minutes of needle retention. Caution: avoid the median nerve, which would send electrical pain down middle finger.
Renzhong DU-26	Oblique insertion toward nasal septum	0.3 - 0.5 cun	Sparrow pecking reducing method: first twist the needle slightly in either direction until small grab is felt or the needle feels stuck, then begin thrusting and lifting rapidly. Repeat until tears swell in eyes, then stop. Strong stimulation for stroke patients is necessary, especially if they are in a sleepy state of subdued consciousness.
Sanyinjiao SP-6	Located along edge of the tibia, with a 45-degree oblique insertion towards Kidney channel	0.5 - 1.5 cun	Reinforce by thrusting and lifting method. Each time the needle is thrust, the goal is to get a sensation to surge along the channel, up to three times, ideally into the foot to stimulate the connection from the brain to the legs.
Jiquan HE-1	Located along the Heart channel 1- 2 cun distal to the standard location, perpendicular insertion	0.5 – 1.0 cun	Reduce by thrusting and lifting method; goal is to get the sensation to surge along the channel three times.
Yintang M-HN-3	Horizontal insertion toward the nose	0.1 - 0.3 cun	Obtain the 'stuck needle' feeling with a slight twist, then reduce with gentle sparrow pecking method going straight down, tapping the frontal bone each time. Continue until the eyes water or facial expression changes as in very elderly patients the eyes can be quite dry and may not water.
Shangxing DU-23	Needle towards Baihu DU-20, 3 cun needle	0.3 - 2.5 cun	Even technique using quick rotating method.

Table 3: Examples of needling methods of XNKQ points used in treatment

Treatment progression

On the second visit, the patient seemed more alert and responded more easily to questions, though still with brief answers and sometimes mixing up her yes and no responses. Her son reported that she had consistently used his name correctly during the previous week for the first time in years, was able to speak in full sentences and seemed more alert. She did nap for about an hour once home after the appointment but seemed relaxed rather fatigued.

By the sixth weekly treatment, the patient showed significant improvement, making better word choices more often and with reduced symptoms of dementia. For example, her son reported that she had begun calling the squirrels on the deck at home squirrels instead of cats for the first time in ten years, and was generally using more appropriate nouns. She also was no longer waking up at night with restlessness and confusion, and not asking to go home in the afternoons when they were already at home. She also had one day where she was particularly talkative, as if she was back to her old self prior to the stroke and had a long phone conversation with her sister.

At the thirteenth visit, steady improvements continued to be observed, with the patient spontaneously speaking in full sentences almost daily, with correct word choices and timing. Still on occasion, especially when prompted to speak or questioned as opposed to speaking spontaneously, she would struggle for the right word and mix up yes and no responses. Her energy also continued to improve, and she no longer needed to nap during the day. Her score on the Conversation Therapy Lite application was 65 per cent following the last treatment, and she had averaged between 30 and 60 per cent over the previous two months. At the time of writing, the patient looks forward to her treatments, continues to see benefits in her energy levels and wishes to maintain improvement in her speech. The treatment plan is to continue acupuncture once every two to four weeks.

Discussion

The XNKQ method, translated as 'enlightening the mind and opening the orifices', is focused on awakening the shen and re-engaging the patient's mind with their life and body. This case presents the successful treatment of aphasia with the XNKQ acupuncture method and is notable because treatment was begun ten years following the stroke that caused the speech impairment. This woman's success in reaching a greater level of vitality, an improved ability to interpret her world and to communicate more accurately with those around her on a daily basis must not be undervalued.

The XNKQ method offers straightforward techniques that all acupuncture practitioners can learn, and yet throughout most of the United States it is difficult to find acupuncturists with this specialised training. Greater

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awareness of the efficacy of XNKQ treatments is vital in order to bring this essential therapy to aphasic persons throughout our world. This is even more relevant given the forecasted rise of the incidence of stroke and the increasing survivability of stroke due to modern life-saving medicine.

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