

Stroke (2019)

Overview

Key points

- Stroke is a common cause of death and disability [Yang 2016]
- There are a large number of systematic reviews and randomised controlled trials suggesting that acupuncture may be effective in the management of acute stroke and for post-stroke rehabilitation [Vados 2015; Liu 2015; Li 2014; Zhang 2014; Chen 2016; Fang 2016; Zhang 2015; Wang 2014]
- Studies have shown that acupuncture can make a positive contribution to the management of common complications of stroke, including swallowing problems, spasticity, insomnia, and depression [Bath 2018; Cai 2017; Cao 2016; Lee 2016]
- Acupuncture may exert its beneficial effects in stroke recovery through improved neurogenesis, regulated cerebral blood flow and reduced neuroinflammation [Lu 2016; Shin 2017; Zhu 2017; Feng 2014; Ratmansky 2016; Chavez 2017]
- Well-designed trials are needed to confirm that acupuncture is a safe, effective, low-cost option for patients who do not respond to conventional medical or rehabilitative treatments. [Shih 2015; Rodriguez Mansilla 2016]

Background

Stroke is the second most common cause of death in the world and results in significant disability. [Yang 2016] The majority of strokes are ischaemic, which means they are caused by a blockage cutting off the blood supply to the brain. [Stroke UK 2019] Ischaemic stroke is usually treated with an antiplatelet drug (aspirin), breaking down the clot (thrombolysis) using a drug such as alteplase, or thrombectomy where the clot is surgically removed. Haemorrhagic stroke is where there is bleeding in or around the brain. [Stroke UK 2019] Haemorrhagic stroke is treated using surgery and medication to correct blood flow to the brain and reduce blood pressure. [Stroke UK 2019] Post-stroke rehabilitation is carried out by a team of physiotherapists, psychologists, occupational therapists, speech and language therapists, dietitians, and specialist nurses and doctors. [Stroke UK 2019]

Stroke is one of the most common conditions treated by acupuncture in China [Robinson 2012]. The majority of stroke patients get acupuncture and Western medicine, [Fang 2014] and acupuncture is a core part of post-stroke rehabilitation. [Chen 2016]

Rehabilitation in acute and chronic stroke

Although the evidence for acupuncture in the management of stroke is promising it is of variable quality. All the systematic reviews mentioned below call for further large, well-designed trials to draw firm conclusions.

A systematic review of studies of acupuncture after acute ischemic or haemorrhagic stroke found no reduction in death or dependency or improvement in neurological and movement scores compared with control. [Xu 2018] However, Liu's (2015) meta-analysis noted improved motor function and reduced disability and neurological deficit for electroacupuncture with acute ischaemic stroke.

Other systematic reviews, across acute and chronic stroke, have found significant functional improvements and sensorimotor recovery compared with conventional treatment. [Li 2014; Zhang 2014] One systematic review found that acupuncture in combination with rehabilitation improved motor function, activities of daily living, neurological deficits and spasticity compared with rehabilitation alone. [Vados 2015]

A systematic review of studies in people with subacute and chronic stroke reported that acupuncture improves dependency, global neurological deficiency, and some specific neurological impairments. [Yang 2016] Several individual trials have shown that acupuncture, alone or in combination with other rehabilitative treatments, can improve neurologic deficits, swallowing disorders, cognitive impairment, and motor function. [Chen 2016; Fang 2016; Zhang 2015; Wang 2014]

Swallowing problems following a stroke

A review of published systematic reviews and meta-analyses confirmed that there is relatively convincing evidence that acupuncture can help with swallowing difficulties (dysphagia) after a stroke. [Zhang 2014; Yang 2016; Bath 2018] A meta-analysis of acupuncture for post-stroke dysphagia found that acupuncture improved swallowing difficulties to a greater degree than rehabilitation or medication [Li 2018] Studies of people with post-stroke dysphagia have reported improved swallowing function when acupuncture is added to standard care compared with standard care alone (medication and/or swallowing rehabilitation). [Chu 2017; Feng 2016; Xia 2016]

Post-stroke spasticity and motor dysfunction

Systematic reviews of studies of acupuncture during stroke recovery found that adding electroacupuncture to routine pharmacotherapy and rehabilitation significantly reduced upper and lower limb spasticity and improved overall motor function. [Cai 2017; Zhan 2018] However another review supported acupuncture for motor recovery and disability but not post-stroke spasticity. [Park 2014] Warm-needle moxibustion for spasticity has also been shown to reduce limb spasm and improve motor function. [Yang 2018]

Recent randomised controlled trials from China provide evidence supporting acupuncture and related treatment modalities (scalp acupuncture, pricking and cupping, moxibustion) for spasticity, motor function, quality of life and ability to self-care, but larger studies are needed [Huang 2018; Wang 2017; Wei 2016; Qi 2016].

Insomnia

Most clinical studies have demonstrated the positive clinical effects of acupuncture in the treatment of post-stroke insomnia, and a meta-analysis revealed that acupuncture may be more effective than medication. [Lee 2016] In one study, electric stimulation of acupoints was found to have a similar effect to medication (estazolam). [Tang 2015]

Cognitive impairment

Data suggest that acupuncture may improve cognitive impairment after stroke. [Liu 2014; Zhan 2017; Zhang 2014] For example, a systematic review showed that, in people with subacute and chronic stroke, acupuncture may have beneficial effects on improving global neurological deficiency, and specific neurological impairments. [Yang 2016]

A study to compare the efficacy of combination therapy of acupuncture plus nimodipine versus acupuncture alone and nimodipine alone in patients with post-stroke mild cognitive impairment found that the combination therapy was associated with greater improvement compared with either treatment alone. [Wang 2016]

Post-stroke hiccups

According to a systematic review, acupuncture may be effective in the management of hiccups following stroke when used as an adjunct to medical treatment. Further studies are required to make definite conclusions. [Yue 2017]

Post-stroke urinary problems

Urinary incontinence affects up to 60% of people hospitalised after a stroke. A systematic review to assess the effects of interventions for treating urinary incontinence at least one-month post-stroke suggested that acupuncture may increase the number of continent people. [Thomas 2019] Some patients suffer instead from urinary retention. A small Chinese study found that adding acupuncture to standard rehabilitation decreased the residual volume of urine compared with rehabilitation alone. [Yang 2017]

Central post-stroke pain

A Cochrane review reported that, in people with subacute and chronic stroke, acupuncture may have beneficial effects on pain. [Yang 2016] However, another systematic review of trials of interventions for central post-stroke pain, including opioids, anticonvulsants, antidepressants and acupuncture found that all therapies had little to no effect on pain. [Mulla 2015]

Constipation

Studies have shown that acupuncture may improve spontaneous bowel movements and reduce laxative use. [Zhang 2018; Zhang 2013; Wang 2015] A meta-analysis concluded that acupuncture and moxibustion are effective in the management of post-stroke constipation compared with control. [Yang 2014]

Depression

A retrospective cohort study found that the use of acupuncture for acute or subacute stroke was not associated with the incidence of depression [Lu 2017]. As an earlier meta-analysis had showed that acupuncture provides relief from post-stroke depression, it is suggested that acupuncture may be better at helping manage depression than preventing its occurrence. [Zhang 2009; Yang 2016]

Risks after stroke

A series of large, Taiwanese, retrospective cohort studies has found that, compared to those who didn't use acupuncture, those who used acupuncture in the post-stroke period had reduced risks of stroke recurrence [Shih 2015], acute myocardial infarction [Chuang 2015], epilepsy [Weng 2016], dementia [Shih 2017] and pneumonia [Chang 2018], but not depression [Lu 2017]).

Potential mechanisms

How does acupuncture work for stroke?

Pre-clinical studies

Acupuncture may improve stroke recovery through neurogenesis (the development of new neurons) [Lu 2016; Chavez 2017]. In a pre-clinical meta-analysis in ischaemic stroke in rats, acupuncture improved: [Lu 2016; Shin 2017; Zhu 2017]

- Cell proliferation, migration and differentiation when compared with control groups
- Neurological deficits and reduced brain oedema in experimental ischemia

Pre-clinical and clinical studies show that, in ischemic stroke rehabilitation, acupuncture may regulate cerebral blood flow and prevent apoptosis (cell death) in the ischemic area, regulate neurochemicals, and improve memory after stroke.[Chavez 2017; Shin 2017; Zhu 2017; Feng 2014; Ratmansky 2016] Acupuncture may also induce reorganization and integration of the functional networks in the brain, reduce neuroinflammation and regulate the blood brain barrier [Fu 2017; Gao 2018; Li 2017; Feng 2014; Chen 2014; Lui 2016a; Lee 2015; Chang 2017]

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