

## Clinical Research

# Timeliness of the analgesic effect of superficial needling on shoulder-hand syndrome after stroke \*

## 浮刺对脑卒中后肩手综合征镇痛作用的时效研究\*

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### ARTICLE INFO

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### ABSTRACT

**Objective** To observe the correlation between analgesic effect and duration of analgesic effect of superficial needling for shoulder pain of shoulder-hand syndrome (SHS) after stroke, so as to screen the best time period of analgesia. **Methods** A total of 120 patients with SHS after stroke (stage I) were recruited and superficial needling therapy was applied. Two obvious tenderness points on the affected shoulder of patients were found out. The site 80–100 mm down each tenderness point was selected for superficial needling. Bimanual needling technique was applied after inserting needles. The surrounding of tenderness points was pinched and grasped by left hand above the needling, and the technique of green dragon swaying tail was applied by right hand. The needles at each acupoint were manipulated for 3 min and retained for 30 min. The analgesic effect was evaluated dynamically by visual analogue scale (VAS) in 120 patients before treatment, immediately after treatment, 30 min after treatment, 1 h after treatment and 24 h after treatment. The analgesic effects at different time were statistically analyzed by generalized estimating equation. **Results** The mean values of VAS were 7.483, 3.950, 4.767, 5.917 and 7.217, respectively, before treatment, immediately after treatment, 30 min after treatment, 1 h after treatment and 24 h after treatment. The difference of analgesic effect at different time was statistically significant ( $P < 0.01$ ); the difference of analgesic effect of superficial needling in treatment of SHS after stroke was significant between immediately after treatment and 30 min after treatment (both  $P < 0.05$ ), while there was no significant difference between 1 h after treatment and 24 h after treatment (both  $P > 0.05$ ). **Conclusion** Analgesic effect of superficial needling for shoulder pain of SHS after stroke was different at different time points and decreased over time; analgesic effect was the most significant immediately after treatment and the optimal duration of analgesic effect was from immediately to 30 min after superficial needling therapy.

**KEY WORDS:** shoulder-hand syndrome; stroke; shoulder pain; superficial needling; VAS score; acupuncture analgesia; timeliness research

Shoulder-hand syndrome (SHS) after stroke, also known as reflex sympathetic dystrophy (RSD),

is a concurrent syndrome with the main clinical manifestations of shoulder dyskinesia algera,

ipsilateral hand, wrist pain and limb dyskinesia after stroke<sup>[1]</sup>. Its incidence in stroke patients is 12.5% to 70%<sup>[2]</sup>. SHS, often appears 1 to 3 months after stroke<sup>[3]</sup>, it is a common complication of stroke patients with hemiplegia<sup>[4]</sup>, and has become the third major complication after stroke second only to mental disorders and fall<sup>[5]</sup>.

Abnormal muscle tone and movement patterns are often induced in SHS patients due to pain and fear, leading to affected extremities falling into the vicious cycle of “paralysis→pain→spasm→pain→paralysis recovery difficult”, which can appear suddenly, slowly or insidiously. The occurrence of SHS not only seriously hinders the recovery of movement function of upper extremities, but also makes the remaining function lose again<sup>[6]</sup>.

The pathogenesis of this disease has not been fully elucidated and there are still no specific treatments in modern medicine. While, traditional Chinese medicine has achieved a relatively obvious curative effect in treatment of this disease, acupuncture therapy, especially, has become an important means and method in treatment of SHS after stroke<sup>[7]</sup>. In previous studies of our group<sup>[8-9]</sup>, superficial needling for treatment of SHS after stroke had achieved a relatively obvious curative effect and verified the effectiveness and superiority of superficial needling in improving the shoulder pain of SHS after stroke. In this study, the correlation between analgesic effect and duration of analgesic effect for superficial needling on shoulder pain of SHS after stroke was further observed, so as to screen the best time period of analgesia and to provide basis for making optimization scheme in superficial needling combined with rehabilitation training in treatment of SHS after stroke.

## CLINICAL DATA

### General data

A total of 120 patients with SHS after stroke (stage I) admitted to the inpatient and outpatient departments at Department of Rehabilitation of Shanghai Tianshan Hospital from April 2013 to January 2015 were selected. Patients themselves and their families agreed to participate in this study and signed Informed Consent Forms. The general information on patients was shown in Table 1.

### Diagnostic criteria

#### (1) Diagnostic criteria of stroke

According to the *Chinese Guidelines for Diagnosis and Management of Acute Ischemic Stroke*

Table 1 General information of SHS patients after stroke

Patients	Gender (cases)		Average age ( $\bar{x}\pm s$ , years)	Classification of the stroke (cases)		Duration of disease ( $\bar{x}\pm s$ , months)
	Male	Female		Ischemic	Hemorrhagic	
120	65	55	61±10	69	51	2.1±1.6

2010<sup>[10]</sup> and *Recommendations on Chinese Guidelines for Acute Cerebral Hemorrhage Treatment (2011 Revision)*<sup>[11]</sup> issued by guidelines writing group of diagnosis and treatment for acute ischemic stroke of cerebrovascular disease branch of Chinese Society of Neurology of Chinese Medical Association, patients were diagnosed as cerebral hemorrhage or cerebral infarction through brain CT and MRI and having hemiplegia signs.

#### (2) Diagnostic criteria of SHS after stroke and clinical manifestation of SHS at stage I

Diagnostic criteria of SHS after stroke were defined by reference to the *Rehabilitation Assessment and Treatment of Stroke*<sup>[12]</sup>.

Clinical manifestations of SHS at stage I<sup>[13]</sup>: shoulder pain that may be spontaneous or occur during motion, and movement restrained. Patient's affected hand becomes swollen quickly, and the activity of joint is limited. Edema is the most obvious at the back of hand, including metacarpophalangeal joints and individual fingers. The color of hand changes into pink or lilac. The skin temperature of affected hand is higher than that of healthy hand. Sometimes, the affected hand is wet. The nails of affected hand become whiter or more opaque than that of healthy hand. Passive movement is easy to result in severe pain, which is the major feature of this syndrome. Osseous changes (local decalcification) of hand and shoulder were commonly observed through X-ray examination in stage I. This stage can last for several weeks to 6 months and then be cured or transfer to stage II.

### Inclusive criteria

① Stable vital signs; ② at the age of 40–80 years old; ③ duration of disease were less than 6 months and the patients were the first-episode of stroke and accompanying SHS; ④ SHS at stage I.

### Exclusive criteria

① Patients suffering from other serious diseases (including liver and renal dysfunction, myocardial infarction, heart failure, gastrointestinal bleeding, serious infections, mental disorders, dementia, Parkinson's disease, epilepsy, bone and joint disease, etc.); ② patients who cannot tolerate acupuncture;

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