1 Introduction

A hiccups is a sudden involuntary contraction of the diaphragm with a sharp gulp-like sound, often recurring at short intervals.[1] Traditional Chinese medicine (TCM) states there is a wide range of reasons for why hiccups occur. From the view of TCM, the requirement of stomach qi or the vital energy of body is thought to fade when it comes to the patients who are severely weak, and when the illness is serious it could damage kidney essence; these all can make the disturbance of the vital qi movement. When the disturbed qi offends the diaphragm, the hiccups happens.

This case study examines a patient who developed intractable hiccups after cerebral infarction accompanied with cerebral hemorrhage, with subsequent pulmonary and urinary tract infections that further complicated the case. The author used Chinese herbal medicine to strengthen the body’s own resistance, and eliminate pathogenic factors. A combination of herbs were used to recover consciousness, clear heat, descend rebellious qi, and promote the secretion of body fluids, which achieved significant and positive clinical results.

2 Case report

A 75-year-old retired male was admitted to our hospital on February 4, 2013 for hiccups which had lasted for more than one month after his second cerebral infarction and cerebral hemorrhage.

On December 7, 2012, with no apparent cause, the patient felt weak in both legs and his body twisted to one side. He also suffered incoherent speech, and urinary-fecal incontinence. He was transported to the local hospital immediately, and was diagnosed with “cerebral infarction” via magnetic resonance imaging (MRI). Then he began to have frequent paroxysmal hiccups, which were loud and hard to control. The hiccups increased on December 18th, after his second cerebral infarction. They lasted for two days, and injection with chlorpromazine intramuscularly provided a small amount of relief. Medications such as omeprazole, domperidone, and mosapride were used with no effect, so he was transferred to our hospital for further Western medicine and TCM combination treatment. His head MRI (Dec 7, 2012) showed cerebral infarction in the right frontal lobe and left parietal lobe, and demyelination of white matter. An additional head MRI on January 24, 2013 showed hemorrhagic cerebral infarction in the left temporal-parietal lobe and knee of callosum, lacunar infarction in both sides of centrum-semioval and basal ganglia, and demyelination of white matter. An additional head MRI on January 24, 2013 showed hemorrhagic cerebral infarction in the left temporal-parietal lobe and knee of callosum, lacunar infarction in both sides of centrum-semioval and basal ganglia, and demyelination of white matter. A routine blood test (Jan 30, 2013) showed that white blood cell count was $13.5 \times 10^{12}/L$, neutrophil count was $10.7 \times 10^{11}/L$, percentage of neutrophil cells was 79.5%, and platelet count was $312 \times 10^{12}/L$. From these findings, the patient was diagnosed with “sequela of
cerebral infarction accompanied with cerebral hemorrhage”.

Accompanying symptoms included irritability, anorexia, aphasia, sweatiness and thirst, high fever of 39 ºC alongside the paroxysmal hiccups, cough with profuse yellow sputum that was easily expectorated, and right-sided hemiplegia. The patient also suffered from poor sleep, urinary incontinence and fecal incontinence, and he had both a stomach tube and catheter indwelling. His tongue body was red, tongue fur was white and greasy, and pulse was full and slippery. These findings provided him the TCM diagnose of “hiccups, deficiency of both qi and yin, hyperactivity of stomach fire, and stasis in the lungs”.

The patient’s sweatiness and thirst implied over-consumption of body fluids, which indicates qi and yin deficiency in TCM. This deficiency of qi and yin vital energy allowed the penetration of external evils, which resulted in the fire in the stomach and hot sputum in the lungs. In response, the treatment was based on nourishing yin and qi, clearing heat, reducing phlegm, and descending rebellious qi.

Based on the above, his herbal formula was as follows: Huangqi (Radix Astragali Mongolici) 15 g, Zhuzishen (Rhizoma Panacis Majoris) 15 g, Zhimu (Rhizoma Anemarrhenae) 15 g, Shigao (Gypsum Fibrosum) 30 g, Dingxiang (Flos Caryophylli) 15 g, Xiangfu (Foeniculi Rhizoma) 15 g, Shichangpu (Rhizoma Ailicea Bambusae) 15 g, Tianzhuzi (Citri Rubrum) 6 g, Qinggan (Herba Eupatorii Capillaris) 15 g, Tianzhuhuang (Concretio Ailicea Bambusae) 15 g, Tianzhuzi (Citri Rubrum) 6 g, Rougui (Cortex Cinnamomi Cassiae) 6 g, Wuweiizi (Fructus Schisandrae Chinensis) 9 g, Gegen (Radix Puerariae Lobatae) 30 g, Haifushi (Pumex) 15 g, Yangrugen (Radix Codonopsis Lanceolatae) 30 g, powder of Chuanbeimu (Balbus Fritillariae Cirrhosae) 3 g, Zhebeimu (Balbus Fritillariae Thunbergii) 9 g, Kuxingren (Semen Armeniacae Amarum) 9 g, Ju Hong (Exocarpium Citri Rubrum) 15 g, Tianzhuzi (Semen Castanopsis Eyrei) 9 g, Shangping (Os Draconis) 30 g (decocted first), calcined Muli (Concha Ostreae) 15 g (decocted first), Funghuangyi (Membrana Follicularis Ovi) 9 g, Dazao (Fructus Jujubae) 15 g, and Gancao (Radix Glycyrrhizae) 6 g.

Three doses of this prescription were given to the patient. His family members were told to give him one dose, which were concentrated in 200 mL, everyday via the nasogastric-tube; 100 mL taken after breakfast and another 100 mL taken after dinner. For every 100 mL, it is better to take 50 mL one time, and take the other 50 mL every half an hour, which was called “small amounts with frequent times”.

At the same time, Quanxie (Scorpio) powder 20 g and Dilong (Earthworm Lumbricus) powder 20 g were mixed at a ratio of 1:1, and dosed 1 g three times per day. Also Angong Niuhiuang pills (a TCM prescription that has heat-clearing and detoxifying properties, stops convulsions and revives unconsciousness) were used to address the source of the stroke.

**Second visit (2013-02-08):** The patient’s family members said that the hiccups became less severe after only one dose of herbal medicine, and the hiccups stopped completely after taking the entire decoction. The patient’s body temperature returned to normal, but his symptom of heat-phlegm could still be seen via his tongue and pulse signs. So the patient was given another seven doses of the same formula.

**Third visit (2013-02-16):** The patient regained consciousness and did not have any more hiccups. The sweating, cough and expectoration were all reduced. His appetite and sleep were fine, but he still had urinary and fecal incontinence. His tongue body was reddish, tongue fur was white and greasy, and the pulse was stringy.

His herbal formula was modified by removing Zhimu, Shigao and Haifushi, then adding Danshen (Radix Codonopsis) and Baizhu (Rhizoma Atractylodis Macrocephalae). He was given fourteen doses this time and was asked to continue taking Quanxie and Dilong powder as before.

**Follow-up:** After one month of combined traditional Chinese and Western medicine treatment, the patient was in stable condition, his infection was controlled, the hiccups, fever, cough and other symptoms disappeared, and then he received rehabilitation therapy.

### 3 Discussion

From the Western medicine perspective, hiccup is an abnormal reflex, or myoclonus, generated by repetitive activity of the inspiratory solitary nucleus, because of a release of inhibitory-regulatory control from the higher nervous system[2]. Intractable hiccups, defined as persisting symptoms for more than 48 h[3], is a common complication of nervous system conditions. There are often repetitive hiccups attacking that cause physical pain and negatively impact the patients’ quality of life. Severe hiccup also impedes recovery from illness.

Hiccups are normally treated through self-care and are treated medically only in severe cases. For intractable hiccups, some benefits have been shown in Western medicine by usage of both non-pharmaceutical therapies such as stimulating the vagal nerve and interference of normal breathing, and pharmaceutical therapies including lidocaine, drugs that promote gastric motility, anticholinergic agents, antipsychotic drugs, and antiepileptic drugs. However, none of these therapies are commonly used in the clinic, due to their limited efficacy or strong side effects. It is clinically relevant and important to find an effective treatment for intractable hiccups that has little or no side effects[4].

The patient in this case suffered from cerebral infarction accompanied with cerebral hemorrhage. The onset of
hiccups could be due to the original neurological function damage, and serious pulmonary and urinary tract infections. Muscle relaxants such as lioresal can reduce tension in the diaphragm, but may also impede myodynamia recovery, which is a well-known complication after stroke. This was an appropriate case to consider the usage of TCM.

In TCM theory, this patient’s inappropriate rising of stomach qi offends the diaphragm and induces the onset of hiccups. The patient is elderly, and his vital energy has declined, making him more susceptible to invasion by pathogenic factors. Unfortunately, the patient happened to suffer a stroke, which kept him bedridden with a lingering disease. The illness further weakened his vital energy. Over time, because the weakened vital qi could not properly combat and expel the pathogens, they became stagnant, turning into pathogenic fire. The pathogenic fire consumed the body’s yin, engendered dryness-heat, and lead to the deficiency of both qi and yin. Additionally, the patient’s poor physical condition meant that external pathogens could easily invade, which also stagnated the viscera qi, gradually affecting the proper descending of stomach qi and dispersing function of the lungs, eventually generating stomach fire and qi obstruction of the diaphragm. When this stagnation qi with stomach fire rush into the throat, hiccuping occurs. Just as it is stated in the book entitled A Guide to Clinical Practice Case: Hiccup, "Obstruction of pulmonary qi and adverse rising of yang pathogen due to yin deficiency can both cause hiccup." Consequently, the principle of the treatment is to strengthen body resistance and eliminate evil, and to nourish yin and qi, clear heat and reduce phlegm, modify adverse-rising energy and control hiccup.

This prescription used ideas from “Baihu Renshen Decoction”, a classic TCM prescription that can nourish yin, tonify qi, and clear heat, and also incorporated “Dingxiang Shidi Decoction” for warming the middle Jiao and calming the rebellious qi in the stomach. In addition to the basic principles of clearing heat and boosting qi, many herbs were used to recover consciousness. These are very strong medicinalis, which under normal (conscious) circumstances would be difficult for people to tolerate. Zhimu and Shigao can clear heat from the stomach, remove the dysphoria and alleviate thirst. Dingxiang, Xiaohuixiang and Ganjiang are pungent-spicy in flavor, which means they can warm the middle Jiao and dispel cold. Dingxiang and Xiaohuixiang were both dosed at 15 g, to help descend the rebellious stomach qi, control hiccup and quickly relieve pain. Shidi is bitter but gentle, a herbal medicine known for stopping hiccups, especially when combined with Shigao and Dingxiang. The emetic function of Shidi needs to be taken into consideration, and it should not be used in large dosages. These six drugs mentioned above were used simultaneously to warm and clear, for the purpose of descending rebellious qi and controlling hiccups rapidly. Huangqi and Zhuzishen reinforce vital energy by nourishing qi and yin and resisting pathogens, and Rougui guides fire to the source qi of the kidneys. Wuweizi can astringe and calm the mind, and help Gegen and Yangrugen to retain body fluids and stop sweating. Chuanbeimu, Zhebeimu, Kuxingren, Juhong, Haifushi, and Tianzhuzi can clear heat, relieve cough and reduce sputum, to help improve the function of the lungs. Tianzhuzhuang and Shichangpu can help revive consciousness by resolving the invisible phlegm. Calcined Longmu and Muli are heavy; they can tranquilize the mind and also subdue the hyperactivity of yang. Gancao and Dazao can help Fenghuangyi to tonify and soothe the stomach; they also support Huangqi to nourish the middle-earth, and harmonize all medicines in the prescription. Quanxie and Dilong are antispasmodic, which are able to dispel wind and clear the collaterals, thus treating the sequela of apoplexy. In addition, it has been found that Dilong has anticoagulative properties and can improve the hemorheology indexes.

On the third visit, the patient no longer had the obvious manifestations of heat and cold, which implied that his condition had improved. So we removed Shigao and Zhimu, and added Danshen and Baizhu for strengthening the spleen and nourishing qi.

In this case, the purpose of treatment was to strengthen the body’s own resistance, and eliminate pathogens by nourishing qi and yin, which then assisted with descending rebellious qi, promoting the secretion of body fluids, reducing phlegm, and recovering consciousness. All these drugs together are emanative and also astringent. They helped the stomach qi to descend, and the lung qi to disperse, so the hiccups could be controlled. A general review of this prescription shows that when the patient’s whole presentation was taken into account, it was suitable for his formula to both reinforce and reduce. The principle-method-recipe medicines worked intricately together, filling in where Western medicine had shortcomings, and showed outstanding clinical results. Once again, TCM was shown to be a versatile and profoundly effective system.

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5 Conflict of interests

There are no conflicts of interest to declare.
REFERENCES


Submission Guide

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