

Treatment of Chronic Ischemic Brain Injury from the Perspective of Kidney Deficiency and Vessel and Collateral Impediment

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Abstract:

Chronic brain injury refers to a clinical syndrome that is characterized by chronic progressive organic damage to the brain caused by various factors and ultimately leads to dysfunction of higher nervous functions. Chronic brain injury encompasses a wide range of conditions, among which ischemic brain injury is the most common type. Kidney essence deficiency, along with vessel and collateral impediment and brain marrow depletion, is an important pathogenesis in chronic ischemic brain injury. Tonifying the kidneys and replenishing essence, as well as unblocking vessels and collaterals and nourishing the brain, is a key therapeutic approach.

Keywords:

Kidney deficiency
Vessel and collateral impediment
Chronic ischemic brain injury

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1. Introduction

Chronic brain injury refers to a clinical syndrome that is characterized by chronic progressive organic damage to the brain caused by various factors and ultimately leads to dysfunction of higher nervous functions^[1]. Chronic brain injury encompasses a wide range of conditions, among which ischemic brain injury is the most common type. Long-term cerebral ischemia can lead to many chronic brain diseases. In addition to the most common chronic cerebral ischemia, it can cause headache, dementia,

depression, tremor, insomnia, etc.

A large number of studies suggest that kidney deficiency and vessel and collateral impediments are important pathogenesis of chronic ischemic brain injury^[2-10]. Patients with chronic ischemic brain injury are mostly middle-aged and elderly individuals, for whom kidney essence insufficiency is a significant characteristic. When kidney essence is insufficient, the brain marrow becomes empty. This condition is often accompanied by organ decline and Qi-blood deficiency. The function of

the vessel, one of the extraordinary fu organs, also begins to decline, for which damage to vessels and collaterals, like atherosclerosis, is a common symptom. Moreover, middle-aged and elderly individuals often exhibit hypercoagulability and blood hyper-viscosity, with multiple hemorheological parameters being abnormal, especially increased blood viscosity. Vessels and collaterals function best when they are unobstructed. This hypercoagulable and hyper-viscous state can easily cause vessel and collateral impediment, preventing the smooth flow of Qi and blood, and making it difficult to nourish the brain marrow.

Natural aging of the brain and long-term chronic ischemia can affect its various functions, such as mind, consciousness, memory, movement, sleep, etc., leading to symptoms of chronic ischemic brain injury, including dizziness, headache, dementia, depression, tremor, and insomnia. It is evident that kidney essence deficiency, along with vessel and collateral impediment and brain marrow depletion, is an important pathogenesis in chronic ischemic brain injury. Tonifying the kidneys and replenishing essence, as well as unblocking vessels and collaterals and nourishing the brain, is a key therapeutic approach. The following discussion elaborates on these points.

2. A brief overview of the physiology and pathology of brain marrow

2.1. Brain marrow generation

The kidneys are responsible for storing essence, which generates marrow, and this marrow accumulates to form the brain. Therefore, the “Chapter on Jing Mai of Lingshu in Yellow Emperor’s Inner Canon” states: “When a person is born, the essence is formed first, and once the essence is formed, brain marrow is generated.” During the formation of brain marrow, it continuously requires the support of kidney essence. After its formation, brain marrow still needs the continuous nourishment of kidney essence to maintain its normal structure and function.

The relationship between the heart and brain marrow is very close. The heart governs the blood vessels and promotes the upward flow of Qi and blood to nourish the brain marrow. Additionally, the heart governs the bright spirit, and the brain is the house of the original spirit. Both are crucial for the spirit of the body, hence

there is a debate about whether the heart or the brain governs the bright spirit. Therefore, the heart, the blood, and the vessel must not be separated from the essence and qi of the brain marrow for even a moment.

2.2. The relationship between brain marrow and qi, blood, essence, and body fluids

The innate essence is the most fundamental and refined substance for the generation of brain marrow. After brain marrow is formed, it requires continuous nourishment from essence to maintain its structure and function. “Anthology of Chinese Medicine” states: “When essence is sufficient, marrow is sufficient; when marrow is sufficient, the brain is full, and skills and dexterity arise thereby. Therefore, the kidneys are the organs of strenuous work.”

After brain marrow is generated, it requires the warming and propulsion of Qi, and the nourishment of blood and body fluids to function normally. The brain weighs approximately 1/50 of the body weight, but cerebral blood flow accounts for about 1/5 of each heartbeat’s cardiac output. As stated in the “Chapter on Xie Qi Zang Fu Bing Xing of Lingshu in Yellow Emperor’s Inner Canon”: “The 12 meridians and 365 collaterals all send their blood and Qi upward to the head, reaching the orifices.” Blood governs nourishing and moistening and is the foundation for nourishing the spirit. Blood circulates through the meridians upward to the head and face, moisturizing the orifices and nourishing the brain marrow. Only when brain marrow is properly nourished, can the mind be energetic. As stated in the “Chapter on Ba Zheng Shen Ming Lun of Suwen in Yellow Emperor’s Inner Canon”: “Blood and Qi are the essence of human beings and should be carefully nurtured.” Furthermore, the “Chapter on Jue Qi of Lingshu in Yellow Emperor’s Inner Canon” points out: “When grains enter the body and Qi is full, the bone marrow flows into the bones, allowing the latter to bend and stretch normally. Extra bone marrow supplements and benefits the brain marrow, and moisturizes the skin, and such is called body fluid.” This highlights the importance of body fluids for the brain marrow.

2.3. Functions of brain marrow

The functions of spirit encompass mind, will, thought,

memory, perception, movement, sleep, and the governance of life processes in the body. The functions of the spirit are the summary of various specific functional activities of the brain marrow, and their external manifestation is bright spirit. Bright Spirit is the outward expression of life, observable and perceivable at all times ^[1]. The brain is the house of the original spirit. Brain marrow is the substrate that supports the functions of spirits. The functions of brain marrow are manifested as the functions of spirit. Therefore, mind, will, thought, memory, perception, movement, sleep, and the life processes in the body are all governed by brain marrow and are specific manifestations of its functions.

2.4. Diseases of brain marrow

When the functions of spirit become disordered, it can lead to various diseases affecting mind, will, thought, memory, perception, movement, sleep, etc. Clinically, these can manifest as chronic cerebral ischemia, headache, dementia, depression, tremor, and insomnia, among other conditions.

3. Kidney essence deficiency

Kidney essence deficiency along with vessel and collateral impediment and brain marrow depletion, is an important pathogenesis in chronic ischemic brain injury. Long-term cerebral ischemia and damage to the blood and vessels can lead to chronic ischemic brain injury, affecting the brain marrow and causing disorders in the functions of spirits. The site of chronic ischemic brain injury is in the brain, and kidney essence deficiency, along with vessel and collateral impediment and brain marrow depletion, is an important pathogenesis for chronic ischemic brain injury.

3.1. Kidney deficiency and chronic ischemic brain injury

3.1.1. Kidney essence deficiency, brain marrow emptiness

The generation of brain marrow and the maintenance of its functions require adequate kidney essence. If kidney essence is deficient, it would be difficult for brain marrow to be healthy and full, and its functions would be affected. The reduction in cerebral parenchyma, decreased brain

weight, and reduced number of brain cells in patients with age-related brain atrophy are typical manifestations of this condition.

3.1.2. Kidney essence deficiency, organ decline, and brain marrow undernourishment

The kidneys are the congenital foundation, and kidney essence promotes growth and development. If kidney essence is insufficient, the growth and development of the body will be affected, leading to organ decline and difficulty in nourishing the brain marrow. When brain marrow is malnourished, various brain diseases can occur.

3.2. Vessel and collateral impediment and chronic ischemic brain injury

3.2.1. Static blood cannot ascend to nourish the brain

Vessel and collateral impediments lead to blood stasis and obstruction, transforming normal blood into stagnant blood. As a pathological product formed during the disease process, static blood loses its nourishing function and thus cannot nourish the brain marrow. Undernourishment of the brain marrow leads to ischemic brain injury.

3.2.2. Vessel and collateral impediment prevents the normal circulation of Qi and blood

The vessels are the house of blood and function best when unobstructed. They facilitate the circulation of Ying-nutrients, Wei-defence, Qi and blood, and connect the organs and the torso. When blood flow is impeded and stagnates in the vessels, Ying-nutrients, Wei-defence, Qi and blood cannot circulate properly and cannot ascend to the brain. This affects the brain marrow, leading to disorders in the functions of the spirit.

3.3. Kidney deficiency and vessel and collateral impediments influence each other

3.3.1. Kidney deficiency can easily lead to vessel and collateral impediments

3.3.1.1. Kidney Qi deficiency leads to poor blood circulation

The kidneys are the congenital foundation. Kidney Qi, as the innate Yuan-primordial Qi, is the source of the body's Qi. Blood depends on Qi for circulation. When kidney Qi is insufficient, the body's Yuan-primordial Qi

is not adequately supplied, leading to uncontrolled Qi movement and vessel and collateral impediment.

Kidney Qi deficiency can also affect the heart, liver, and spleen, thereby disrupting blood circulation. Blood is generated by the heart, stored in the liver, and controlled by the spleen, and the kidneys have a close relationship with the heart, liver, and spleen. The heart governs the blood and vessels, serving two main functions: generating blood, and circulating blood through the vessels to nourish the entire body, in which case the heart is the basic driving force for blood circulation. The heart belongs to Yang and is associated with fire in the Five Elements, the kidneys belong to Yin and are associated with water in the Five Elements. The heart and kidneys are interdependent, mutually restraining, and inseparable. The liver is an important organ for storing blood and works together with the heart to maintain blood circulation. The liver generates blood, the kidneys store essence, and essence and blood share the same source. The liver and kidneys mutually supplement Yin fluids, and they both can storage and clear. The spleen is the postnatal foundation and the source of Qi and blood generation. The spleen also regulates the blood of the organs. The kidneys are the congenital foundation, and the spleen and kidneys have a close relationship in mutual nourishment between congenital and postnatal foundation.

3.3.1.2. Kidney yang deficiency can easily lead to blood stasis

Kidney yang, also known as primordial Yang or genuine Yang, is the foundation of the body's Yang Qi, playing a role in promoting and warming various organs and tissues^[11]. Blood depends on Qi for circulation and flows more readily when warm, but tends to congeal when cold. If kidney Yang is deficient, the warming function is impaired, and cold arises internally and attacks the vessels, leading to poor blood circulation. Additionally, kidney yang cannot perform Qi transformation normally, and cannot transport blood properly.

3.3.1.3. Kidney Yin deficiency can lead to obstruction of blood circulation

Kidney Yin, also known as primordial Yin or genuine Yin, is the foundation of the body's Yin fluids, playing a role in nourishing and moisturizing various organs and

tissues^[11]. Kidney Yin deficiency can lead to vessel and collateral impediment in three main ways: (1) Yin and blood deficiency results in inadequate blood volume, causing slow blood movement and stagnation of blood in the vessels, which gradually leads to blood stasis; (2) Insufficient body fluids result in dryness of the vessels, impairing smooth blood flow and causing obstruction; (3) Yin deficiency causes internal heat, which can scorch the blood and cause blood stasis. Once blood stasis occurs, the circulation of Qi and blood through the vessels and collaterals is impaired, leading to vessel and collateral impediment.

3.3.1.4. Kidney essence deficiency can lead to slow blood flow

The kidneys store the essence received from the organs. When kidney essence is deficient, the primary driving force that stimulates and promotes the Qi transformation of the organs weakens, slowing down the circulation of Qi, blood, and body fluids. This forms the basis for blood stasis. Additionally, when kidney essence is insufficient, kidneys fail to nourish liver, leading to undernourishment of the meridians^[12], making them stiff and fragile, causing vascular hardening and convulsion in the vessels and collaterals, which can also slow down blood flow.

3.3.1.5. The vessels originate from the kidneys

As the congenital foundation, the kidneys promote the growth and development of the body. The prosperity or decline of the organs and the torso is governed by the kidneys. The vessels are considered extraordinary organs, and their processes of birth, growth, maturity, aging, and decline are closely related to the abundance or depletion of kidney essence. When the kidneys are deficient, the vessels also become weak, and the vessels being weak makes them prone to stagnation of phlegm and blood stasis, leading to the entanglement of stagnant phlegm and static blood in the vessels, which is often referred to as pathogens lingering in the deficient areas.

3.3.2. Vessel and collateral impediment can exacerbate kidney deficiency

3.3.2.1. Stasis and congealing can damage the kidneys

When stasis accumulates internally, the vessels become obstructed, and the circulation of Qi, blood, Ying-

nutrients, and Wei-defence is impeded. As a result, the kidneys cannot receive adequate nourishment, leading to kidney deficiency. Over time, prolonged stasis can generate stagnant heat, and the combination of stasis and heat can easily injure kidney Yin. If the stasis is not dissipated, it can obstruct the circulation of Qi and blood, and may easily entangle with phlegm dampness. When phlegm dampness and stasis are entangled, the circulation of Qi and blood is more severely impeded.

3.3.2.2. Healthy Qi deficiency affects the kidneys

Prolonged obstruction by pathogenic factors such as blood stasis, phlegm dampness, and fire heat can eventually cause diseases in the collaterals, leading to the depletion of the body's healthy Qi. The nature of the pathology shifts from tip pathogen to healthy Qi deficiency, causing Qi, blood, Yin, and Yang to be insufficient, leading to the decline of the organs. As the saying goes, "when essence and Qi are depleted, there is a deficiency." When the organs are damaged, the kidneys will ultimately be affected, resulting in kidney deficiency.

In summary, kidney deficiency and vessel and collateral impediments influence each other. Kidney deficiency can affect blood circulation, leading to blood stasis and vessel and collateral impediment. Internal accumulation of static blood can cause vessel obstruction and impair the circulation of Ying-nutrients and Wei-defence, thereby exacerbating kidney deficiency.

4. Analysis of main symptoms of chronic ischemic brain injury in traditional Chinese medicine

4.1. Dizziness

Dizziness is primarily seen in chronic cerebral ischemia. In elderly individuals, kidney essence deficiency can lead to insufficient nourishment of the brain marrow. Alternatively, long-term illness can weaken the body, damaging kidney essence and Qi, leading to deficiency in the sea of marrow. Both conditions can result in dizziness. As stated in the "Chapter on Hai of Lingshu in Yellow Emperor's Inner Canon": "When the sea of marrow is insufficient, there may be dizziness, tinnitus, soreness in the crus, vertigo, visual disturbances, and fatigue with a tendency to lie down." Blood stasis can also obstruct

the brain vessels, impair Qi movement, and disrupt the functions of spirit, leading to dizziness.

4.2. Headache

Headache is a common symptom of chronic ischemic brain injury. When kidney essence is insufficient, the brain marrow becomes empty. When static blood obstructs the collaterals, Qi and blood cannot reach the brain, leading to undernourishment of the brain marrow. In both cases, the primary manifestation is a hollow pain throughout the head. Headaches caused by blood stasis obstructing the collaterals are often characterized by sharp, stabbing pain in the head.

4.3. Forgetfulness

Forgetfulness is primarily manifested as vascular dementia. Vascular dementia refers to cognitive decline caused by cerebral ischemia and hypoxia, which can result from ischemic stroke, hemorrhagic stroke, and other conditions. Some scholars think that the site of vascular dementia is in the brain, with kidney essence and Qi deficiency being the root pathogenesis, and blood stasis and phlegm dampness obstructing the brain collaterals being the tip pathogenesis^[13]. Treatment should focus on tonifying the kidneys, circulating the blood, and transforming phlegm. The kidneys govern storage, and postnatal learning and memory depend on this function. When kidney essence is insufficient, the brain marrow becomes empty, the function of storage is impaired, and the functions of spirit are impeded, leading to forgetfulness. Static blood, as one of the most common pathological factors, can obstruct the vessels and collaterals and also result in forgetfulness.

4.4. Decline of spirit

Ding (2019) believes that the core pathogenesis of depression is "Yang stagnation and spirit decline," with the key to pathogenesis being Yang stagnation, disharmony between Ying-nutrients and Wei-defence, and dysregulation of the functions of spirit^[14]. Kidney Qi, as the innate Yuan-primordial Qi, is the source of the body's Qi. The Yang Qi of the body is rooted in kidney Yang. When kidney Yang is deficient, Yang Qi becomes stagnated and unable to spread, leading to depressed functions of spirit, decline of spirit and mind,

and diminished will, resulting in depression. Vessel and collateral impediments can obstruct the circulation of Qi and blood, and impair the function of Qi movement, which can also hinder the uplifting and warming functions of Yang Qi, thus affecting the functions of the spirit and leading to this condition.

4.5. Tremor

Tremor is most commonly seen in vascular Parkinsonism, which refers to a disease characterized by clinical symptoms similar to those of Parkinson's disease, and caused by ischemic cerebrovascular disease or cerebral arteriosclerosis. According to Huang *et al.* (2019), kidney essence deficiency is the root cause of the disease, while internal blood stasis is the key factor in its development^[10]. Movement is one of the functions of brain marrow. When kidney deficiency and vessel and collateral impediment occur, brain marrow's functions are impaired, leading to motor symptoms such as tremors.

5. Treatment of chronic ischemic brain injury with kidney-tonifying and collateral-unblocking formula

For kidney essence deficiency, along with vessel and collateral impediment and brain marrow depletion, which is the important pathogenesis of chronic ischemic brain injury, the study proposes that the pathogenesis lies in kidney essence deficiency, vessel and collateral impediment, undernourishment of the brain marrow, damage to the original spirit and dysfunction of the spirit. Treatment should focus on tonifying the kidneys and replenishing essence, unblocking vessels and collaterals, and nourishing the brain. This study recommends using a self-formulated kidney-tonifying and collateral-unblocking formula. The composition of the formula includes *Rehmannia glutinosa*, *Angelica sinensis*, *Lycium barbarum*, *Dendrobium officinale*, *Polygonatum odoratum*, *Testudinis carapax*, *Salvia miltiorrhiza*, *Gastrodia elata*, *Cistanche deserticola*, *Polygala tenuifolia*, *Platycodon grandiflorus*, and *Achyranthes bidentata*.

Rehmannia glutinosa has a sweet taste and is slightly warm in property, entering the liver and kidney meridians. It excels at tonifying blood, nourishing Yin, replenishing

essence, and enriching the marrow, making it the monarch medicine. "Compendium of Materia Medica" states that it can "replenish bone marrow, increase muscle mass, generate essence and blood, tonify the organs, promote blood circulation, benefit hearing and vision, and darken hair..." It enters the liver and kidney meridians and specializes in nourishing blood and Yin, replenishing essence, and enriching the marrow. Therefore, it is often used for conditions involving essence and marrow deficiency.

Angelica sinensis has a sweet and pungent taste and is warm in property. It excels at tonifying and nourishing blood as well as harmonizing and circulating blood, making it a minister medicine. Not only does it circulate blood and transform stasis, promoting circulation in the brain vessels and collaterals, but also it has nourishing functions, making it an excellent herb for tonifying blood, as it can tonify and harmonize blood. As essence and blood share the same source, it is particularly suitable for blood stasis obstructing the collaterals due to kidney deficiency and blood stasis. When used together, *Rehmannia glutinosa* and *Angelica sinensis* follow the formula of Zhen Yuan Yin, which means tonifying yuan-primordial Qi, from "Complete Works of Jingyue", jointly exerting the effects of tonifying the liver and kidneys.

Lycium barbarum has a sweet taste and is neutral in property. Acting on the liver, kidney, and lung meridians, it can nourish the liver, tonify the kidneys, and moisten the lungs. "Treatise on the Nature of Medicinal Substances" states that it "can tonify and replenish essence of various deficiencies." This indicates that it can tonify the essence and blood of the liver and kidneys, thereby strengthening and nourishing the brain. Therefore, "Treasury of Words on the Materia Medica" states: "It is commonly said that *Lycium barbarum* excels at treating eye disorders, but it does not treat the eyes directly; instead, it strengthens the essence and invigorates the spirit. When the spirit is full and the essence is sufficient, eye disorders can be treated effectively." *Dendrobium officinale* has a sweet taste and is slightly cold in property, acting on the stomach and kidney meridians. It functions to tonify the stomach and generate body fluids, nourish Yin and clear heat. By nourishing stomach Yin, it ensures a sufficient source of Qi and blood generated in the middle Jiao, allowing the brain marrow to be nourished. It can also tonify

kidney Yin and reduce deficiency heat, making it adept at tonifying kidney Yin deficiency. *Polygonatum odoratum* has a sweet taste and is slightly cold in property, acting on the lung and stomach meridians. It can nourish the Yin of the lungs and stomach and also clear heat from the lungs and stomach, nourishing Yin without hindering the elimination of pathogens. “Materia Medica of South Yunnan” states that it can “supplement Qi and blood, and tonify middle Jiao and spleen.” As previously mentioned, the lungs and the middle Jiao have a close relationship with the brain. Therefore, “A Supplement to Materia Medica” states that it “governs intelligence, regulates blood and Qi, and strengthens the body.” Together, *Lycium barbarum*, *Dendrobium officinale*, and *Polygonatum odoratum* can tonify liver and kidney with yin and essence deficiencies, enhancing the effects of the monarch medicine.

Salvia miltiorrhiza has a bitter taste and is slightly cold in property, acting on the heart, Pericardium, and liver meridians. It excels at circulating blood and regulating menstruation, eliminating stasis and alleviating pain, cooling blood and resolving abscesses, and alleviating vexation and calming the mind. “Ri Hua Zi’s Summary of Materia Medica” states that it can “nourish the spirit, stabilize the will, and promote the Guan pulsation.” Only by circulating blood and eliminating stasis, as well as regulating and clearing blood and vessels, can adequate blood supply to the brain marrow be guaranteed and the functions of the spirit be benefited. *Gastrodia elata* soothes the liver and submerges Yang, removes wind and unblocks the collaterals, making it an important medicine for treating dizziness and headache. These two medicines can treat yang hyperactivity and the disorder of Qi movement caused by Yin deficiency of the liver and kidneys respectively.

Testudinis carapax has a sweet taste and is cold in property, acting on the kidney, liver, and heart meridians. It excels at nourishing the kidneys and liver and is commonly used to tonify Yin, submerge Yang, and tonify blood and nourish the heart. *Polygala tenuifolia* has a bitter and pungent taste and is warm in property. It functions to calm the mind and enhance intelligence, and to eliminate phlegm and relieve stagnation. “Compendium of Materia Medica” states that “*Polygala tenuifolia* enters the kidney meridian of foot-Shaoyin and is not a medicine

for the heart meridian. Its primary function is to strengthen intelligence and tonify essence, treating forgetfulness. The reason is that essence is stored in the kidney meridian, and intelligence is a function of the kidney meridian. When the kidney meridian is insufficient, intelligence declines, and the heart’s governance of bright spirit is also impaired, leading to confusion and forgetfulness.” When used together, these two medicines ensure that kidney Qi is sufficient and reaches its intended destinations, and thus the cerebral parenchyma is sufficient and the brain functions strongly and healthily.

Yin and Yang are the source of each other, and they support each other, nourish each other and rely on each other. When tonifying Yin, it is important not to neglect nourishing yang, hence the use of *Cistanche deserticola* in the formula. “Correct Interpretation of Materia Medica” states: “When ‘Shennong’s Classic of Materia Medica’ discusses the effects of *Cistanche deserticola*, it describes how this medicine stores Yin... *Cistanche deserticola* is heavy and descending, directly entering the kidneys. It is warm and moistening, without causing damage by harsh, dry heat. It can warm and nourish the essence and blood, thereby circulating Yang Qi, hence it is said to benefit essence and Qi. When treating masses and nodules, its salty taste can soften hardness and enter the blood phase, while also tonifying Yin essence and warming and nourishing Yang Qi, thus promoting smooth circulation of Qi and blood and resolving obstructions.” This shows that *Cistanche deserticola* can tonify kidney Qi, replenish essence and blood, warm Yang Qi, and assist blood circulation.

Achyranthes bidentata circulates blood and eliminates stasis, and tonifies the liver and kidneys. “Orthodox Materia Medica” states that it can “tonify bone marrow, replenish essence, tonify yin and circulate blood.” *Platycodon grandiflorus* has a light and clear smell, entering the lung and stomach meridians. “Essays from Chongqing Hall” states that “*Platycodon grandiflorus* opens and clears the stagnation of lung Qi and heart Qi; it is a medicine for the upper Jiao.” The lungs govern Qi, and when lung Qi is opened, the Qi of the entire body circulates freely, with clear Qi ascending and turbid Qi descending, ensuring continuous Qi transformation by the organs, allowing the brain marrow to be healthy and sufficient and the functions of spirit to reach the entire

body. The two medicines both serve as assistant and guide medicines, capable not only of tonifying the kidneys and soothing the spirit, but also of regulating and harmonizing qi and blood, thereby promoting Qi and blood to ascend to nourish the brain marrow.

6. A typical case

Patient Li, male, 85 years old, came for consultation due to “episodic dizziness for over three years” on October 16, 2019. The patient experiences intermittent dizziness and unsteady gait, with episodes occurring at irregular intervals. Symptoms improve with rest. He has experienced a decline in hearing and memory and persistent tinnitus. His energy and physical strength are generally average. He walks slowly due to skelalgia from osteoarthritis in his knees. He has a normal appetite and normal food intake and falls asleep normally with occasional snoring and good sleep quality. He has one bowel movement per day, with the stool well-formed and not sticking to the toilet bowl. He experiences frequent urination with dribbling after voiding and needs to urinate 2–3 times at night. His mouth is dry, but he does not experience bitterness and prefers to drink water. His tongue is purple and dark, with a thin and scanty tongue coating. He has a wiry and hard pulse. The patient has a history of hypertension for over 30 years and osteoarthritis in both knees for over 20 years. On physical examination, the Romberg sign was positive, and no significant abnormalities were detected in the examination of the rest of the nervous system.

Ancillary tests: Cranial MRI showed multiple ischemic and degenerative lesions in the brain. Diagnosis: chronic ischemic brain injury, with a pattern identification of Yin deficiency and blood stasis, as well as vessel and collateral impediment, and brain marrow depletion.

Treatment Principle: Tonifying the kidneys and replenishing essence, along with unblocking vessels and collaterals and nourishing the brain.

Prescription: *Rehmannia glutinosa* 24 g, *Ophiopogon japonicus* 30 g, *Angelica sinensis* 15 g, *Cornus officinalis* 24 g, *Astragalus complanatus* 24 g, *Testudinis carapax*

30 g, *Dendrobium officinale* 24 g, *Lycium barbarum* 24 g, *Schisandra chinensis* 12 g, *Gastrodia elata* 18 g, *Salvia miltiorrhiza* 20 g, *Cistanche deserticola* 20 g, *Platycodon grandiflorus* 12 g, *Achyranthes bidentata* 15 g. Decoct in water and take one dose daily. Follow-up on October 23: the patient’s dizziness intensity and frequency have significantly decreased, and urinary frequency and dribbling have also improved. The above prescription was formulated into water pills, with 10 g taken in the morning and evening each day. Follow-up after 3 months: the patient’s dizziness has been largely relieved, and urination at night has not exceeded twice per night.

The patient is in his eighties, with kidney essence deficiency. His symptoms of hearing loss, memory decline, tinnitus, dribbling urination, and dry mouth are all manifestations of kidney deficiency. Kidney deficiency and brain marrow depletion lead to episodic dizziness. Kidney deficiency results in a lack of source of Qi, blood, Yin, and Yang, causing blood stasis that results in a purple, dark tongue. Yin deficiency leads to dryness in the blood vessels, resulting in a wiry and hard pulse. Therefore, the modified kidney-tonifying and collateral-unblocking formula is used. In this formula, *Rehmannia glutinosa*, *Cornus officinalis*, *Testudinis carapax*, *Dendrobium officinale*, *Lycium barbarum*, and *Cistanche deserticola* tonify the liver and kidneys. Since the patient’s symptoms of kidney yin deficiency are particularly prominent, *Ophiopogon japonicus* is added to enhance the Yin-nourishing effect. Additionally, *Astragalus complanatus* and *Schisandra chinensis* are included to warm and tonify the liver and kidneys, and to secure essence and astringe urine. *Gastrodia elata* soothes the liver, submerges Yang, removes wind and relieves dizziness. *Angelica sinensis*, *Salvia miltiorrhiza*, *Platycodon grandiflorus*, and *Achyranthes bidentata* circulate blood, transform stasis, regulate Qi, and unblock collaterals. During the second visit, the patient’s main symptoms were significantly alleviated. However, given his advanced age and the difficulty in regenerating kidney essence, the formula was changed to water pills, and he was advised to take them long-term.

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Disclosure statement

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