



Chinese Herbal Treatment of Anterograde Psychogenic Amnesia: A Case Report

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Abstract

A 30-year-old woman with unwitnessed collapse that developed into anterograde amnesia with cognitive impairment underwent continuous pharmacological treatment and psycho-psychiatric rehabilitation in Australia with poor therapeutic results. After treatment with TCM, the patient's memory, attention, executive ability and mental status were improved significantly, reflecting the advantages of TCM in treating rare diseases.

Keywords: Anterograde psychogenic amnesia; Cognitive impairment; Traditional Chinese Medicine

Introduction

Anterograde amnesia is the forgetting of events that occurred after the illness and is characterized by the inability to form new memories [1]. Anterograde amnesia is commonly associated with organic impairment and often reveals in patients with Alzheimer's disease, cerebral aneurysms, Korsakov's syndrome, alcohol intoxication, and benzodiazepine use [2]. Here we present a case of anterograde psychogenic amnesia that, in addition to paracrine amnesia, also produced widespread cognitive deficits.

Case Presentation

A 30-year-old married woman with no history of any psychiatric or neurological disorders and no family history of medical problems. She was admitted to EHS Box Hill Hospital after fainting on her way to school and was found to have memory problems with patchy memory deficits that would affect her daily life. For example, she forgot what was told various health workers during stay in the emergency department and forgot to have a neck massage. Multi-planar multi-sequence imaging of the brain showed that the Dural venous sinuses were normal, they were patent with no evidence of thrombosis, the diffusion weighted scans are normal. The ventricular size was normal and there is no evidence of hemorrhage on the susceptibility weighted imaging. A series of tests revealed a lack of organic finding. On a comprehensive analysis she was diagnosed with psychogenic paracrine amnesia and was treated with Sertraline Hydrochloride. She was later transferred to the Maroondah PAPU for ongoing management and given psycho-psychological treatment, but the persistent memory deficits persisted. With these persistent problems, she returned to her home country to seek treatment, and was transferred to several western hospitals, including the one in Maroondah, where she was told that there was no effective treatment. With these persistent problems, she returned to China for treatment and was told that there was no effective treatment in many western hospitals.

When the patient came to the Memory Specialized Clinic in November 2020, we found that the patient's memory deficit was only paracrine and did not include distant memory deficit. The patient was seen in our outpatient clinic in November 2020, and we found that her memory deficits were only anterograde, with no distant memory deficit. The patient had normal memories of previous events, such as childhood experiences and marriage dates, and she was able to recognize her mother and elaborate on the purpose in going to Australia. However, when asked about the current date and month, she did not remember. In the mental status, a decrease in eye contact was noted, the presence of mental disorders, depression, hostility, anxiety, depression, and cognitive deficits, diminished attention, executive power, and judgment were found. The patient was observed to be obese, with darkish complexion, binocular dullness, anorexia, tingling in the left side of the head, fatigue, normal stool and urine, purplish dim tongue, white tongue

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coating, thready and unsmooth pulse. In the hospital, the patient was thoroughly investigated. The muscle power and muscle tone of the limbs were normal, the deep and superficial sensations were normal, the coordination, pathologic reflex nerve was not elicited, the meningeal irritation sign was negative, MRI, EEG, renal function, liver function, electrolytes, blood glucose, total cholesterol, urinalysis, stool routine, coagulation function were unremarkable, and there was no evidence of obvious organic involvement. MoCA: Her MoCA was 15/30, with predominant deficits in memory (0/5) and language (0/3) and orientation (2/6). Self-Rating Depression (SDS) Scale: Major depression. According to the theory of traditional Chinese medicine, this is a case of Qi deficiency with blood stasis. The treatment was to invigorate Qi and activating Blood, and open the orifice and awaken consciousness, with the addition and subtraction of Buyang Huanwu decoction: 60 g of Radix Astragali, 15 g of Radix Angelicae Sinensis, 15 g of Radix Paeoniae Rubra, 15 g of Chuanxiong Rhizoma, 15 g of Semen Persicae, 15 g of Flos Carthami, 6 g of *Pheretima*, and 15 g of *P. tenuifolia*. 14 doses of 150 ml/dose in water, 2 times/d. After taking the medicine, the complexion improved slightly, the eyes were slightly refreshed, fatigue was reduced, appetite improved, and mental. There is a slight improvement in mental condition. In the second consultation, he added 15 g of aromatic turmeric root-tuber and 15 g of *Salvia Miltiorrhizae* to the original formula and took 14 doses with water decoction. In the third diagnosis, memory was still problematic, daily activities improved, attention and executive function improved, physical strength recovered significantly, anxiety, depression, headache and other symptoms significantly reduced, appetite returned to normal, add *Acorus calamus* 15 g above, 28 doses with water decoction. Follow-up after June, memory gradually improved, recalled many things that happened, has returned to Australia to continue their studies. A year later, he learned that he passed the school subject examination and graduated successfully, and sent a banner to express her gratitude.

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Discussion

The special feature of this case is the patient's inability to learn or recall information about the new scenario without seeing any obvious organic damage. Persistent anterograde memory impairment is often caused by damage to the basal forebrain and Papez circuit (hippocampal structure, mammillary body, anterior nucleus of the thalamus, cingulate gyrus, parahippocampal cortex, and their connections through the fornix and mammillary body–thalamic conduction tract) [3]. Cholinergic nuclei in the basal forebrain, such as the septum pellucidum and the diagonal band of Broca, are thought to be associated with amnesia [4]. The hippocampus, located between

Table 1: Montreal cognitive assessment scale.

Test	Pre-treatment assessment Score	Post-treatment assessment Score
Visuospatial/executive function	4/5	5/5
Naming	3/3	3/3
Memory	0/5	3/5
Attention	4/6	6/6
Language	0/3	3/3
Abstraction	2/2	2/2
Orientation	2/6	6/6
Total Score	15	28

the thalamus and the medial temporal lobe, is involved in the storage, conversion and orientation of long-term memory. Damage to the hippocampus can lead to disruption of recent memory storage [5].

The anterior thalamic nucleus is located deep in the anterior thalamic node, and it receives the papillary-thalamic tract originating from the mammillary bodies and sending fiber projections to the cingulate gyrus [6]. Damage to the anterior thalamic nucleus and the mammillary-thalamic tract leads to amnesia and abnormalities in language and emotional status [7]. The fornix is an important part of the Papez circuit, connecting the hippocampus and mammillary bodies. It is composed of four parts: the fimbria hippocampi, crura of the fornix, body of the fornix, and fornicolumn, and any damage to its structure leads to declarative memory loss [8]. The mammillary bodies are part of the hypothalamus and damage to the mammillary bodies can lead to decreased memory, intelligence, calculation and comprehension [9]. This study also demonstrated that that for patients with purely acute-onset memory impairment, special attention should be paid to areas such as the fornix column and the mammillary bodies to avoid misdiagnosis [9].

This case is extremely rare, with imaging demonstrating no significant organic damage and the presence of cognitive dysfunction other than memory-based. We therefore considered several reasons: First, it may be due to small vascular lesions with frequent vascular anatomical variants, as tiny ischemic foci were found on later MRI. Second, the causative infarct foci are usually small and in unusual locations and may not be detected on computed tomography scans of the head; third, the patient's own psychological stress adversely affects his brain function, which leads to severe anterograde amnesia and cognitive impairment. This type of anterograde amnesia of unknown etiology is rare.

Traditional Chinese medicine has shown significant efficacy in improving memory and cognitive function [10]. From the perspective of Chinese medicine, Qi deficiency with blood stasis are important pathogenic factors in "anterograde amnesia". Qi and blood are the basic substances that constitute the human body and maintain its vital activities, and they guarantee the physiological activities of the organs and meridians. The normal operation of Qi and blood is the material basis for the brain to perform its physiological functions. Brain marrow is the key substance for memory formation. When Qi deficiency is unable to push blood to run, blood power is weakened, deposited and blocked, thus for stasis. Stasis of blood makes the blood run poorly, blocking the brain channels, and prevents the Qi and blood from moistening the brain marrow, resulting in memory loss and dullness. In this patient, Qi deficiency is the root cause and blood stasis is the symptom, so invigorating Qi and activating

blood is the main therapeutic principle. Buyang Huanwu Decoction (BYHWD), consisting of *Radix Astragali*, *Radix Angelicae Sinensis*, *Radix Paeoniae Rubra*, *Chuanxiong Rhizoma*, *Semen Persicae*, *Flos Carthami*, and *Pheretima*, has been used in China for hundreds of years. Studies have shown that BYHWD improves cognitive function by protecting neurons and reducing the expression of inflammatory factors [11]. Recently, several clinical trials have shown that BYHWD has been used to treat vascular dementia. *P. tenuifolia* is a traditional herb known for its effectiveness in treating insomnia, depression, disorientation, and memory impairment [12,13]. Vitality can dominate the vital activities of the human body, and *P. tenuifolia* calms the mind and maintains normal mental activities such as consciousness, thinking, and emotion in humans. Modern studies have shown that *P. tenuifolia* enhances learning and memory by reversing neuronal apoptosis in the hippocampus and exhibits antidepressant effects by preventing the reduction of BDNF mRNA in the hippocampus of depressed mice [14]. The orifice is the material basis of all mental consciousness and thinking activities of the body and can regulate mental consciousness and thinking activities. If blood stasis, phlegm and other evil Qi block the orifice, it will cause abnormalities in memory, mental and other functions. *Acorus calamus* wakes up the brain and opens up the orifices, dispels the evil Qi, ensures the normal function of the orifices, and thus improves the mental consciousness and thinking activities.

Conclusion

Anterograde psychogenic amnesia is a rare finding, which poses a diagnostic and therapeutic challenge, and conventional treatment has not been effective. Traditional Chinese Medicine (TCM) has successfully treated anterograde amnesia by invigorating Qi and activating Blood, awakening consciousness and opening the orifice, and treatment based on syndrome differentiation, reflecting the advantages of TCM in the treatment of intractable diseases and functional pathologies. However, we have to admit that there is no direct evidence to explain the efficacy of TCM. We recommend that more clinical studies be conducted in the future to determine the role of TCM in anterograde psychogenic amnesia.

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