

## Case Report

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# Case Report: Migraine

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### ABSTRACT

The use of acupuncture for neurological disorders and pain management is increasing annually. Patients often seek alternative therapies due to the lack of improvement with conventional treatments and the potential side effects of pharmaceutical interventions. This case study describes the assessment and treatment of a patient presenting with migraines, exploring possible differential diagnoses. It demonstrates the clinical reasoning process of applying Chinese medicine knowledge and experience to diagnose and treat the patient. A treatment protocol is provided, which resulted in positive patient outcomes.

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### Introduction

The World Health Organization ranks migraines highly among disability-causing diseases worldwide [1]. Migraine treatment primarily relies on medications but can also include non-pharmacological therapies, such as herbs and acupuncture, to enhance the effects of medication, especially in patients who are less responsive [1]. The effectiveness of acupuncture in treating migraines has gained recognition in modern Western medicine in recent years. A meta-analysis using the Cochrane database suggests that acupuncture for migraine prophylaxis is both safe and effective, without significant adverse effects [2]. According to a U.S. survey, 9.9% of acupuncture users reported being treated for migraines or other headaches [1]. Some studies have suggested that acupuncture can inhibit pain transmission to the central nervous system by stimulating different types of afferent fibers [3]. Additionally, acupuncture has been found to facilitate the release of pain suppressors within the central nervous system, including endorphins, which are opiate chemical substances [3].

### Presenting Concerns

The patient is a 15-year-old girl who has been homeschooled and has suffered from almost daily headaches for the past 18 months. Her migraines usually start after 10 minutes of walking in the morning and last until 8 pm, with the pain worsening around 4 pm. The pain is located in the temporal region on both sides and is accompanied by mild and intermittent dizziness and brief episodes of black vision. The sensation of pain is described as a tight headband and throbbing, intermittent pain in the forehead area. She experiences sensitivity to light during headaches, as well as concentration and memory deficits during the attacks. Her primary

doctor diagnosed her with migraine headaches and prescribed Advil, Aleve, and caffeine, but these medications had no apparent effect. The patient then sought treatment at the acupuncture clinic.

### Clinical Findings

The four examinations of Chinese medicine revealed that the patient was under-weight, gloomy and responded reluctantly. She had much stress due to the pain and complained of a cold feeling of hands and feet. Her menarche is in July 24th of this year, and after that, she didn't have any menstrual period yet. Her tongue was light red with a thin, white coat and her pulse was thin and wiry.

### Timeline

18 months prior, migraines began (13.5 ± years of age).		
2 months prior start of menarche at age 15.		
Advil, Aleve, and Caffeine were prescribed without apparent effect.		
Neurology assessments: Saccades, Anti-saccades, Smooth Pursuit, Graphesthesia, Weber Test, Rimmers Test.	September 21 <sup>st</sup> , 2018	Acupuncture in DU24, Yngqiang, GB5, GB15, GB34, LI4, SJ5, ST36, SP6, LV3, BL62, LV3, LV8. Average depth was 1.5 cm (range: 0.2 – 5 cm). The response sought varied, most commonly <i>de qi</i> . All points are manual stimulation. The needles were retained for 30 minutes during each session. Heat lamp on feet. Prescribe with Head Relief Formula, 2 tablets, 3 times a day.
Right anti-saccades is undershooting. Smooth Pursuit with hesitating in the right side.	September 28 <sup>th</sup> , 2018	Migraine was no change, did not take herb. Acupuncture in DU24, Yngqiang, GB34, LI4, SJ5, LV7, ST36, SP6, KI3, BL62, LV3, LV8. Heat lamp on feet. Strong manual stimulation in LI4, SJ5. Prescribe with Head Relief Formula, 2 tablets, 3 times a day.
Right anti-saccades and Smooth Pursuit are improved.	October 5 <sup>th</sup> , 2018	The patient had less tension and frequency of migraines in the first two days after treatment. Take herb only for one day. Acupuncture in DU24, Yngqiang, GB34, LI4, SJ5, LV7, ST36, SP6, KI3, BL62, LV3, LV8. Heat lamp on feet. Strong manual stimulation in LI4, SJ5. Continue taking the same herb formula.
Right anti-saccades is undershooting	October 12 <sup>th</sup> , 2018	The patient had less tension and frequency of migraines most of the time. Constipation and insomnia. Herbs taking routinely. Acupuncture in LI4, SJ5, LV7, KI3, REN4, ST25, ST36, SP10, GB41, LV3, BL62. Warming needle on ST25. Strong manual stimulation in LI4, SJ5. Continue taking the same herb formula.
Right anti-saccades improved.	October 19 <sup>th</sup> , 2018	The patient had no migraines in 5 days after treatment. She started her second period 3 days ago. Constipation and insomnia were gone. Herbs taking routinely. Acupuncture in SJ5, LI4, LV7, ST36, SP6, GB41. Warming needles on ST36. Strong manual stimulation in LI4, SJ5. Heat lamp on feet. Tuina on head and back of the neck. Continue taking the same herb formula.

### Diagnostic Testing and Assessment

Neurology Testing Shows as Below.

September 21 <sup>st</sup> , 2018	Saccades	Anti-saccades
Scale	R:1 L:1	R:2 L:1
Saccades and Anti-saccades testing scale: 0 = Normal. 1 = Mild slowing and/or reduction in amplitude. 2= Moderately impaired. Definite and early fatiguing. 3 = Severely impaired. Frequent hesitation in initiating movements or arrests in the ongoing movement. 4 = Can barely perform the task. Notes: In the right side of anti-saccades, latency is mild, and speed is fast, accuracy is undershooting		
Graphesthesia	Positive / <input type="checkbox"/> Negative	
Smooth Pursuit	Positive / <input type="checkbox"/> Negative	
Weber Test	Positive / <input type="checkbox"/> Negative	
Rinners Test	L: Positive / <input type="checkbox"/> Negative R: Positive / <input type="checkbox"/> Negative	
Notes: Smooth Pursuit with hesitating in the right side.		
September 28th, 2018	Saccades	Anti-saccades
Scale	R:1 L:1	R:2 L:1
Notes: In the right side of anti-saccades, latency is mild, and speed is fast, accuracy is undershooting		
Graphesthesia	Positive / <input type="checkbox"/> Negative	
Smooth Pursuit	<input type="checkbox"/> Positive/ Negative	
Weber Test	Positive / <input type="checkbox"/> Negative	
Rinners Test	L: Positive / <input type="checkbox"/> Negative R: Positive / <input type="checkbox"/> Negative	
Notes: Smooth Pursuit with hesitating in the right side.		
October 5th, 2018	Saccades	Anti-saccades
Scale	R:1 L:1	R:1 L:1
Notes: The right side of anti-saccade is improved.		
Graphesthesia	Positive / <input type="checkbox"/> Negative	
Smooth Pursuit	Positive / <input type="checkbox"/> Negative	
Weber Test	Positive / <input type="checkbox"/> Negative	
Rinners Test	L: Positive / <input type="checkbox"/> Negative R: Positive / <input type="checkbox"/> Negative	
Notes: The smooth pursuit is improved.		
October 12nd, 2018	Saccades	Anti-saccades
Scale	R:1 L:1	R:2 L:1
Notes: In the right side of anti-saccades, latency is mild, and speed is fast, accuracy is undershooting		
Graphesthesia	Positive / <input type="checkbox"/> Negative	
Smooth Pursuit	Positive / <input type="checkbox"/> Negative	
Weber Test	Positive / <input type="checkbox"/> Negative	
Rinners Test	L: Positive / <input type="checkbox"/> Negative R: Positive / <input type="checkbox"/> Negative	
Notes: The right side of anti-saccade is improved.		
October 19th, 2018	Saccades	Anti-saccades
Scale	R:1 L:1	R:1 L:1
Notes: The right side of anti-saccade is improved.		

Graphesthesia	Positive / <input type="checkbox"/> Negative	
Smooth Pursuit	Positive / <input type="checkbox"/> Negative	
Weber Test	Positive / <input type="checkbox"/> Negative	
Rinners Test	L: Positive / <input type="checkbox"/> Negative	R: Positive / <input type="checkbox"/> Negative
Notes:		

Neurological tests provide strong evidence of the relationship between migraines and brain dysfunction. Frontal lobe tests, including anti-saccades tests, indicate a deficiency in prefrontal lobe function, involving the orbitofrontal, medial frontal, and anterior cingulate cortex. These areas are associated with executive function, social reasoning, impulse control, learning, planning, sequencing, and organization. These findings correlate with the patient’s symptoms of poor memory and loss of concentration. Parietal lobe tests, particularly smooth pursuit tests, show that the right side is more hesitant and less accurate than the left side, indicating dysfunction in the intraparietal area, which affects eye movement control. Temporal lobe tests, however, did not provide significant results to suggest a relationship between migraines and temporal lobe dysfunction.

**Therapeutic Focus and Assessment**

The principles of treatment were to move Qi and Blood, soothe the Liver, and nourish the Kidney. The main acupuncture points selected were DU24, Yingtang, GB5, GB15, GB34, LI4, SJ5, ST36, SP6, BL62, LV3, and LV8. Strong tonifying manipulation was applied at LI4 and SJ5, while other points were needled with balanced tonifying-draining manipulation. Treatment was administered once per week, with needles retained for 20 minutes during each session.

The herbal prescription was Head Relief Formula, taken as two tablets three times per day. Golden Flower produces the Head Relief Formula and contains the following ingredients: Fang Feng (*Saposhnikovia divaricata*), Gao Ben (*Ligusticum sinense*), Bo He (*Mentha haplocalyx*), Hong Hua (*Carthamus tinctorius*), Bai Zhi (*Angelica dahurica*), Dan Shen (*Salvia miltiorrhiza*), Gou Teng (*Uncaria rhynchophylla*), Man Jing Zi (*Vitex trifolia*), Chai Hu (*Bupleurum chinense*), Huang Qin (*Scutellaria baicalensis*), and Chi Shao (*Paeonia lactiflora*). This formula is based on Tong Qiao Huo Xue Tang and is designed to dispel Wind, open the channels, move Blood, and relieve pain.

**Follow-up and Outcomes**

After three treatments, the frequency and intensity of the migraines substantially reduced, and the patient became more talkative with an improved complexion. Once the patient began routinely taking the herbal formula, her headaches showed significant improvement, and her irregular menstrual cycle became more regular and less crampy. However, the patient continued to experience persistent complaints of constipation, insomnia, and feeling cold, suggesting a lingering deficiency of Kidney Yang.

To address this, warming needles were applied to ST36 and ST25 in subsequent treatments to tonify the Kidney and promote the transformation of Yang Qi. Ear seeds placed at Shenmen to calm the mind were also used to aid in sleeping. The patient’s pulse changed after each treatment, becoming less wiry than before.

Neurological assessments showed improvements in Saccade and Anti-saccade tests, indicating increased flexibility, speed, and accuracy. Significant improvements were also noted in smooth pursuit tests, demonstrating enhanced eye movement control.

**Discussion**

In this patient’s case, the condition was initially induced by Wind and Cold, causing recurring headaches and dizziness. After 18 months of migraines, Qi and Blood flow less freely in the meridians. Physical exhaustion depletes Qi, reducing its capacity to move Blood, leading to stagnation and pain. This explains why the patient experienced dramatic relief after taking an herbal formula containing herbs that tonify and move Blood. A gloomy demeanor indicates Blood stasis, while a wiry pulse reflects pain and the presence of Wind-Cold. Due to her weak overall constitution and Liver and Kidney deficiency, the migraines persisted and could not be cured. In the past, this patient had a compromised immune function and easily caught colds. Additionally, her first menstrual period occurred later than the average age, indicating a post-heaven Liver and Kidney essence deficiency. This deficiency makes the body more susceptible to external pathogenic influences, which can obstruct the meridians and trigger migraines. The nature of Wind is to float upward, often targeting the upper part of the body. When Wind and Cold invade the Yang meridians and Yang Qi is deficient, it cannot reach the top of the body, resulting in pain in the forehead and sides of the head.

**Acupuncture Treatment Approach**

DU24, Yingtang, GB5, and GB15 are selected as focal points at the site of the migraine. Needling these points clears their respective meridians to facilitate the smooth flow of Qi and Blood. Combining LI4 and SJ5 with strong tonifying manipulation helps dispel Wind and Cold. Points such as ST36, SP6, BL62, LV3, and LV8 focus on addressing Liver and Kidney deficiency, with warming needle techniques also used to activate Yang Qi and reach the head, thereby relieving pain. By the third treatment, the patient’s migraine frequency had substantially reduced, and her pulse became less wiry. The warming needle application resulted in warmer hands and feet for the patient, and her menstrual periods became more regular.

**Pathophysiology of Migraines**

According to Claudia Francesca Gasparini the pathophysiology of migraines involves a disorder of neurovascular origin, implicating cranial neurovascular anatomical structures [4]. This neurovascular scaffold includes three main domains: the neural domain (involving hyperexcitability and cortical spreading depression-like neural events), the vascular domain (involving intracranial constriction and vasodilation), and the nociceptive domain (activation of trigeminal structures). These domains encompass the main aspects of the current model of migraine pathobiology.

Additionally, fluctuations in hormone levels, particularly estrogen withdrawal, play a significant role in migraine pathogenesis [5]. Estrogen and progesterone influence pain-processing network function and endothelial mechanisms involved in migraine pathophysiology.

**Mechanisms of Acupuncture in Migraine Treatment**

Recent research has expanded the evidence base for acupuncture as a prophylactic treatment for headaches, driven by several large trials of high quality [1]. The physiological mechanisms underlying

acupuncture's effectiveness in migraine treatment remain unclear. Studies suggest acupuncture induces changes in nervous system performance, including alterations in neuronal concentrations of K<sup>+</sup>, Na<sup>+</sup>, and Ca<sup>+</sup> [2]. Hypotheses propose acupuncture's impact on pain relief through modulation of the hypothalamic-pituitary-adrenal axis and the endogenous opioid system [2]. Research by Dr. Li and Dr. Zeng highlights acupuncture's potential to modulate abnormal brainstem activity implicated in migraine pathophysiology, suggesting it may help restore balance in the trigeminovascular nociceptive pathway [6].

### Limitation

Pain management and its treatments typically involve multiple factors, which complicates the evaluation of the cause-and-effect relationship between symptoms and treatment outcomes. The effectiveness of therapies, as well as the patient's choices and active participation, all contributed to the outcomes observed in this case. It is challenging to attribute the improvement in migraine solely to acupuncture treatment, and this report reflects the experience and outcomes of a single individual.

Furthermore, future follow-up with the patient is essential to assess the long-term effects of acupuncture treatment. Longitudinal observation will provide more insights into the sustained benefits and any potential changes in symptomatology over time.

### Patient Perspective

The patient stated that she believes her willingness to change her lifestyle and adopt a self-care regimen of meditation has allowed her to keep the disease from progressing. She also finds that her weekly acupuncture and herb formula is playing a vital role in maintaining the physical manifestations of the disease at bay and even reversing some of the progression of the symptoms in her depression and other symptoms.

### Conclusion

Resolution of the symptoms in this patient resulted from a personalized medicine approach in Chinese medicine that incorporated evaluations for diagnosis and guiding treatment that used targeted lifestyle modifications.

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