

Combined Acupuncture and Shirodhara a Complimentary Approach in the Management of Cerebral Venous Sinus Thrombosis (CVST): A Case Report

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ABSTRACT

Cerebral Venous Sinus Thrombosis (CVST) is a rare and life-threatening neurological manifestation of anti-phospholipid syndrome that affects a small percentage of stroke cases, with headache being the main symptom. A 20-year-old male patient arrived at the emergency department with complaints of severe headache, photophobia, phonophobia, nausea, and vomiting lasting for the past 4 days. Conservative management was initially undertaken, but no significant therapeutic effect was observed. Therefore, an integrated approach combining Western medicine with acupuncture and Shirodhara was implemented for 14 days. The outcome measure for headache was assessed using the Visual Analog Scale (VAS) of pain. The initial VAS score was 10. On the last day of the intervention, the patient reported significant relief, with a VAS score of 1, and a notable improvement in vision. This case report highlights the effectiveness of acupuncture and Shirodhara in managing symptoms of cerebral venous sinus thrombosis.

Keywords: Acupuncture; Cerebral Venous Sinus Thrombosis; Headache; Shirodhara.

INTRODUCTION

Cerebral venous sinus thrombosis (CVST) is a rare but life-threatening neurological manifestation of antiphospholipid syndrome, contributing to a small percentage of stroke cases. It predominantly affects younger adults and children, presenting with clinical signs and symptoms such as severe headache (97%), focal neurological deficits with or without secondary generalization (48%), muscle weakness (unilateral or bilateral paresis 46%), optic papilledema (43%), nausea, vomiting, blurred vision, epilepsy, and altered consciousness. These symptoms may appear either in isolation or in combination with other symptoms¹⁻⁴ Approximately 85% of CVST cases are linked to specific risk factors, including prothrombotic conditions, head injury, inflammatory diseases, dehydration, and malignancy.⁵ According to international studies, CVST

was first described by Ribes in 1825, with the most common location being the superior sagittal sinus (SSS), observed in 80% of cases. Less common sites include the cortical vein, jugular vein, and internal cerebral vein⁶

CASE REPORT

A 20-year-old male patient arrived at the emergency department with a four-day history of acute-onset, throbbing, and continuous headaches. Initially, the pain was generalized over the head but became more prominent in the occipital area on the last day. He experienced several episodes of nausea and vomiting, along with photophobia, phonophobia, and generalized body weakness. There was no history of fever, trauma, neck stiffness, abnormal body movements, chest pain,

palpitations, or difficulty breathing. The patient also reported a long-standing loss of appetite and some weight loss. He was a nonsmoker and nonalcoholic. On examination, the patient was stable, alert, and oriented, with a full Glasgow Coma Scale (GCS) score. His pupils were bilaterally 2mm and reactive to light, and he had negative Kernig and Brudzinski signs. Various imaging tests, including a chest X-ray, ECG, and ultrasound examinations, showed no significant abnormalities.

However, initial MRI and MRV scans of the head revealed no signal flow in the superior and inferior sagittal sinuses, straight sinus, internal cerebral vein, both transverse sinuses, and the left sigmoid venous sinus. There was also reduced caliber and interrupted signal flow in the right sigmoid venous sinus, non-visualization of the vein of Galen, the vein of Trolard, and the vein of Labbe, as well as non-visualization of the left internal jugular vein and reduced caliber of the right internal jugular vein. These findings strongly suggested the presence of bilateral cerebral venous sinus thrombosis (CVST).

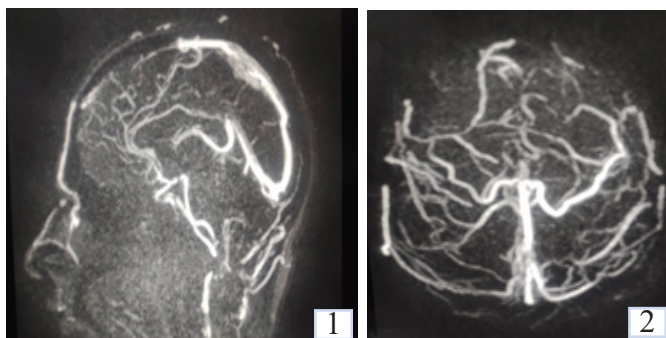


Figure 1: Lack of Signal flow is seen in anterior portion of superior sagittal sinus and inferior sagittal sinus.

Figure 2: Collateral vessels are noted in posterior portion of superior sagittal sinus

Additional findings included mild deviation of the nasal septum to the left, fluid signal in the left mastoid air cells, hypertrophic right inferior nasal turbinate, a small left maxillary sinus polyp, and minimal cerebrospinal fluid (CSF) signal intensities in bilateral peri-optic spaces. A CSF study revealed elevated opening pressure of 28 cm H₂O, slightly elevated white blood cell counts, and protein levels of 50 mg/dL, while glucose levels were normal. An echocardiogram showed no regional wall motion abnormalities, no vegetation, and good left ventricular systolic function.

Table 1: Method of Insertion

Acupoints Name	Location	Method of insertion
1.Baihui(GV20)	At the vertex, 5cun directly above the median of the anterior hairline, or the midpoint of the line joining two auricular apices.	Subcutaneously 0.5cun
2.Fengchi(GB20)	In the depression between the upper portion of sternocleidomastoids and trapezius muscle	Obliquely0.8cun
3.Touwei(ST8)	0.5 cun above the anterior hairline, at the corner of the forehead	Horizontally 0.5cun
4.Hegu(LI4)	In between the 1st and 2nd metacarpal bones, approximately in the middle of the 2nd metacarpal bone on the radial side	Perpendicularly 0.8 cun
5.Yintang(EX-HN 3)	On the forehead, at the midpoint between the medial ends of the two eyebrow	Horizontally 0.3cun
6.Taichong(LR 3)	On the dorsum of the foot, in the depression distal to the junction of the 1st and 2nd metatarsal bones.	Perpendicularly 0.5cm
7.Taiyang(EX-HN 5)	In the depression about 1cun posterior to the midpoint between the lateral end of the eyebrow and the outer canthus.	Perpendicularly 0.3-0.5cun
8.Sishencong (EX-HN 1)	Four points on the vertex of the head, 1cun anterior, posterior and lateral to Baihui (DU20)	Subcutaneously 0.5-0.8cun
9.Sibai (ST 2)	In the depression at the infraorbital foramen.	Perpendicularly or obliquely 0.3cun
10. Hegu(LI 4)	In between the 1st and 2nd metacarpal bones, approximately	Perpendicularly 0.5cun

Treatment Plan

First, all necessary investigations were conducted in the emergency department. Then, the patient was transferred to a standard ward for further treatment. The patient had already been taking several medications, including Tablet Diamox, Tab Codomol, Tab Dabiron, Tab Esofast, Tab Acenil, and Tab Klozep, but no significant therapeutic effect had been observed. Therefore, we decided to implement an integrated approach combining Western medicine with Ayurvedic treatments, specifically shirodhara and acupuncture. This treatment plan was initiated after proper counseling and commenced with informed consent. The patient received a total of 14 acupuncture sessions along with shirodhara therapy. For acupuncture, the following acupoints were selected, and the method of insertion was as follows: we used Hua Tuo brand needles with a width of 0.25 mm and a length of 40 mm, and the needles were retained for 40 minutes.



Figure 3: Acupuncture and Shirodhara Application

After acupuncture, Shirodhara was performed. Shirodhara is a unique technique known for its effectiveness in treating headaches, stress, anxiety, and insomnia [9]. The term "Shirodhara" is derived from two words: "shira," meaning head, and "dhara," meaning dripping or pouring. In this case, lukewarm medicated oil, composed of two liters of sesame oil (teel tail) and 500 ml of Brahmi oil, was used. This mixed oil was slowly and steadily poured onto the forehead for a duration of 45 minutes. For both Shirodhara and acupuncture, the patient was kept in the supine position.

After completing the above therapy, the frequency and intensity of headaches, vision clarity, and other symptoms were monitored on the 2nd, 4th, 6th, 8th, and 10th days of treatment. The outcome measure for the headache was taken using the Visual Analog Scale (VAS) for pain. The initial VAS score was 10. After one day of intervention, the patient reported feeling somewhat better with a VAS score of 8, indicating slight changes in

the intensity and nature of the headache. By the 4th day of treatment, the VAS score decreased to 6, indicating moderate pain. By the 8th day, the score had further decreased to 4, and by the 10th day, it reached 3.

Additionally, the patient had experienced blurred vision that limited activities such as walking, sports, and reading. On the first day, the patient stood 6 meters away from the Snellen chart and could not read the first line, reporting unclear vision. On the 2nd day, his vision improved slightly, and he was able to read some letters on the Snellen chart. By the last day, he could easily read all the letters on the Snellen chart without any difficulty. There was no longer blurred vision, photophobia, or symptoms of nausea, vomiting, and phonophobia.

DISCUSSION

CVST is a rare form of venous thromboembolism.^{7,8} This complex condition is characterized by a wide range of clinical manifestations and potential complications. Following the administration of Shirodhara and acupuncture therapies, highly significant improvements were observed. According to modern physiology, continuous electromagnetic waves are produced in the brain and can be recorded using an electroencephalogram (EEG). The intensities of brain waves on the scalp range from 0 to 200 microvolts, with frequencies ranging from once per second to 50 or more times per second.¹⁰ Shirodhara is a well-established therapeutic procedure with a history spanning centuries, known for its ability to normalize brain waves and scalp microvolt levels in various cephalic diseases. The center of the forehead, evolutionarily related to the third eye, is connected to the pineal gland. The constant flow of medicated liquid over the forehead produces both pressure and vibration effects simultaneously. A study by Sahu A.K. et al. showed that the pressure created by the oil dripping affects impulse conduction, which ultimately calms the mind, reduces stress, and relaxes the body.¹¹ Research indicates that the vibration sense is transmitted through cerebrospinal fluid (CSF), and this vibration combined with mild temperature activates the thalamus and basal forebrain functions while stimulating nerve endings of the autonomic nervous system. This leads to the release of acetylcholine (Ach), serotonin, and catecholamines to normal levels. During Shirodhara, the patient focuses on the oil falling on their head, which increases the intensity of alpha brain waves, decreases cortisol and adrenaline levels, and normalizes the two important neurotransmitters, serotonin and norepinephrine, which

regulate a wide variety of neuropsychological processes, including pain and sleep.

The second part of this treatment is acupuncture. Various studies, including molecular imaging research, suggest that electroacupuncture inactivates the upstream excitatory system and reduces neuronal transmission efficiency by inhibiting neurotransmitters and receptors such as glutamate, NMDA receptors, P2XR, SP, CGRP, and ion channels (TRPV1 and HCN). It also enhances opioid peptides like β -endorphin and MOR receptors, as well as GABA and its receptors.¹² Research conducted by Li et al. and Wang Z-Z in 2021 and 2022 demonstrated that acupuncture at the Fengchi acupoint increases posterior cerebral circulation.¹³ A 2021 study by White TG et al. showed that the trigeminal nerve significantly controls cerebrovascular tone.¹⁴ Thus, the acupoints Touwei (ST8) and Jiache (ST6) used in this treatment are closely related to the trigeminal nerve. Suzuki et al. (2020) and Waki et al. (2017) conducted a study on healthy individuals and found that electroacupuncture in the V1 branch of the trigeminal nerve increases cerebral blood flow in the prefrontal cortex.¹⁵ Research by Hu WL and Kuo CE indicated that acupuncture at Taiyang (EX HN5) is a useful complementary treatment for sustainable adjunctive effects on refractive correction for anisometropic amblyopia.¹⁶ A 12-month follow-up case report by N Gao et al. also showed that electroacupuncture significantly reduced the monthly frequency and intensity of headaches.¹⁷ A 2023 study by Feng et al. found that shallow puncture with more twirling was superior to flunarizine hydrochloride, significantly reducing total VAS scores and increasing serum levels of 5-HT and β -endorphin in migraine patients. He Chen et al.'s 2024 systematic review and meta-analysis also concluded that acupuncture provides durable post-treatment effects in managing frequent episodic and chronic tension-type headaches.¹⁸ Studies by Yong-sing Park et al. (2014) and Ida Nurwati et al. (2023) found that acupuncture at Sibai (ST2) and Baihui (GB20) enhances eyesight by balancing the release of stimulatory (proinflammatory IL, bradykinin, PG) and inhibitory (Ach, GABA, NA, β -endorphin, NO, somatostatin) mediators in the neural acupuncture unit (NAU).^{19,20}

CONCLUSION

Overall, it was found that combining Shirodhara and acupuncture therapy with Western medicine had a beneficial effect in this case. The patient's vision and headache symptoms significantly improved. The primary

purpose of this case report is to raise awareness about complementary treatment options for conditions like CVST, demonstrating the effectiveness of an integrated treatment approach. This approach also helps to alleviate unnecessary anxiety, save time, and reduce expenses for the patient. However, further studies are needed to prove its effectiveness, as this is a single case study. This case report serves as a foundation for future research in the management of cerebral venous sinus thrombosis.

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