

Integrated Chinese and Western Medicine for Meige Syndrome: A Research Progress

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Abstract

Meige Syndrome is a rare extrapyramidal disorder of the nervous system, characterized by core clinical manifestations including blepharospasm, oromandibular dystonia, and spasmodic torticollis. In severe cases, it may involve the limbs and trunk, and even present critical symptoms such as dyspnea. The clinical manifestations are significantly heterogeneous and progressively worsen with disease progression, which severely impair patients' facial function, motor activity, and quality of life. The pathogenesis and etiology of Meige Syndrome have not yet reached a unified conclusion. Existing hypotheses include basal ganglia dysfunction and neuroinhibitory deficits at multiple levels of the central nervous system. These abnormalities may involve multiple brain regions including the brainstem, spinal cord, basal ganglia, and cerebral cortex. Current main Western medicine treatments include pharmacotherapy, botulinum toxin injection, surgical intervention, and supportive care, but they are limited by short duration of efficacy and obvious adverse reactions. Under the guidance of holistic syndrome differentiation and treatment, Traditional Chinese Medicine (TCM) has formed various therapeutic regimens such as acupuncture, Chinese herbal medicine, and combined acupuncture-medicine therapy, showing unique advantages.

Keywords

Meige Syndrome, Integrated Traditional Chinese and Western Medicine, Acupuncture Therapy, Deep Brain Stimulation, Syndrome Differentiation and Treatment

1. Overview

Meige syndrome is a segmental craniocervical dystonia. Clinically, it is divided into two categories: primary and secondary based on the presence or absence of a

clear etiology. Primary Meige syndrome has no definite cause, and its commonly used clinical diagnostic criteria are mainly symptom-based, namely blepharospasm progressing to involve the mouth, jaw, etc., with the classic triad of blepharospasm- oromandibular dystonia. It is more common in women aged 40 - 70 years. Secondary Meige syndrome has clear predisposing factors or underlying diseases, such as drug-induced causes and organic encephalopathy. To clarify the scope of discussion and ensure consistency with clinical research, this paper mainly focuses on primary Meige syndrome, excluding patients with isolated blepharospasm or isolated cervical dystonia (spasmodic torticollis). Overall, the clinical manifestations of Meige syndrome are divided into motor and non-motor disorders, accompanied by the characteristic Tricks phenomenon. Motor disorders usually onset with blepharospasm, presenting as involuntary bilateral eye closure and increased blinking frequency, which gradually involve the oromandibular region (angular convulsions, difficulty opening the mouth, mastication disorders, slurred speech) and the neck. Some cases present as blepharospasm- oromandibular dystonia or isolated spasmodic torticollis. Non-motor disorders mostly manifest as sensory, psychiatric, and cognitive impairments. Sensory disturbances in the eyes resemble dry eye syndrome, which is a major cause of clinical misdiagnosis. A characteristic relationship exists between sleep and symptoms: symptoms disappear during sleep and temporarily remit upon waking. The Tricks phenomenon refers to the transient relief of clinical symptoms when patients perform specific actions, which holds significant diagnostic value [1]. Special cases may present with dyspnea as the main manifestation [2], which is prone to misdiagnosis and requires differentiation based on clinical features combined with imaging examinations.

Currently, the medical community has not reached a consensus on the exact etiology and complete pathogenesis of Meige syndrome. Mainstream hypotheses focus on abnormalities in deep structures of the nervous system, holding that dysfunction of the basal ganglia [3] (especially the caudate nucleus, putamen, and globus pallidus) is the core mechanism. As a key hub of the cortico-basal ganglia-thalamo-cortical loop, dysregulation of the basal ganglia may lead to an imbalance between inhibitory neurotransmitters (e.g., γ -aminobutyric acid, GABA) and excitatory neurotransmitters (e.g., glutamate), thereby triggering excessive, involuntary muscle contractions. In addition, abnormal regulation of certain nuclei in the brainstem (especially the midbrain and pons), upper motor neurons of the spinal cord, and even functional reorganization of the sensorimotor cortex are thought to be involved in the pathogenesis. However, how these mechanisms specifically trigger and sustain dystonia in specific craniocervical muscle groups remains an urgent problem to be solved in neuroscience.

In terms of treatment, modern medicine has formed a multi-level regimen centered on symptomatic relief. First-line treatments typically include local injection of botulinum toxin type A, anticholinergics (trihexyphenidyl), benzodiazepines (clonazepam), and dopamine receptor antagonists. For refractory patients unre-

sponsive to medications and botulinum toxin, surgical intervention becomes an important option, represented by deep brain stimulation (DBS). Nevertheless, the above treatments have limitations such as short duration of efficacy and obvious adverse reactions, while collaborative traditional Chinese medicine (TCM) treatment exerts potent effects.

2. Research on Diagnosis and Treatment in Traditional Chinese Medicine

Based on the holistic concept and syndrome differentiation and treatment, TCM diagnosis and treatment of Meige syndrome has formed a diversified therapeutic system encompassing acupuncture, Chinese herbal medicine, and combined acupuncture-medicine therapies. Different academic schools have proposed distinctive theoretical foundations and therapeutic protocols.

(I) Understanding of Pathogenesis

TCM understanding of the pathogenesis of Meige syndrome is multi-dimensional, but all center on dysfunction of zang-fu organs, disordered qi movement, and malnutrition of tendons and vessels. The liver governs tendons, stores blood, and opens into the eyes; the kidney stores essence, governs body fluids, and moistens the eye balls upward; the spleen governs the muscles of the body and nourishes them, and the eyelids correspond internally to the spleen, hence called the “flesh wheel”; the stomach is the sea of water, grain, qi, and blood, connected with the spleen via meridians, with zang-fu organs mutually paired and interior-exterior related. Essential nutrients nourish the whole body through the spleen’s transportation and transformation. Therefore, this disease is closely related to the liver, kidney, spleen, and stomach.

(II) TCM Therapeutic Methods

1. Acupuncture Treatment

Acupuncture treatment follows the core principles of regulating zang-fu functions, calming internal wind, and nourishing tendons and vessels, forming various characteristic techniques and acupoint prescriptions:

Zhang Hong [4] held that the key pathogenesis of this disease involves three combined mechanisms: “spleen deficiency leading to insufficient production of qi and blood—blood deficiency generating wind”; “anxiety and pensiveness causing qi stagnation—phlegm accumulation—phlegm clouding the clear orifices—fire transformation generating wind”; and “liver depression and qi stagnation—qi stagnation transforming into fire—fire generating wind”, leading to the syndrome of “spleen deficiency and liver depression”. Thus, strengthening the spleen is crucial. Based on the principle that “acupoints treat local disorders”, periocular acupoints are selected to promote qi and blood circulation. After 5 treatment courses, patients experienced significant symptom relief, with no recurrence during 6-month follow-up.

Zhang Shengjun *et al.* [5] classified blepharospastic Meige syndrome as the syndrome of internal stirring of wind due to blood deficiency and liver hyperactivity

based on comprehensive physical conditions, requiring treatment to strengthen the spleen, nourish blood, calm the liver, and extinguish wind. Following the acquired Bagua diagram around the umbilicus, acupuncture was performed horizontally in the order of observation, palpation, exploration, and insertion, with optimal needle sensation being tightness or resistance under the needle. After treatment, the frequency of eye closure and photophobia were alleviated accordingly.

Similarly, based on the theory that “Yangming and Jueyin govern closure”, Wang Songling *et al.* [6] developed an acupuncture regimen focusing on regulating qi in the Jueyin and Yangming meridians using interior-exterior meridian acupoint matching. Regulating Jueyin calms the liver, extinguishes wind, softens the liver, and relaxes tendons; regulating Yangming nourishes qi and blood and tendons and vessels, achieving harmonization of the liver and stomach, coordination of yin and yang, and restoration of qi movement. This effectively improves local motor symptoms and emotional state.

Zhou Ting [7] categorized this disease as “convulsive disease” according to its clinical characteristics, with the liver as the main diseased organ and involvement of the stomach, spleen, and kidney. Integrating holistic and staging syndrome differentiation, the pathogenesis is divided into deficiency and excess. Treatment adopts local acupoint selection, distal-proximal acupoint combination, and symptomatic acupoint selection to regulate the spirit, extinguish wind, and treat tendons.

Wang Chao *et al.* [8] applied the spirit-regulating theory proposed by Sun Yuzheng [9] to treat Meige syndrome, combining the theory with traditional TCM therapies and Jiao’s scalp acupuncture. Based on comprehensive patient evaluation, syndromes were differentiated as liver depression and spleen deficiency, and qi-blood deficiency. Treatments aimed to regulate the spirit, soothe the liver, and strengthen the spleen, selecting four categories of acupoints: first, spirit-regulating acupoints such as Baihui (GV20) and Benshen (GB13). Baihui, known as the “meeting of three yang and five meridians” [10], is connected to the brain via the Du meridian and can regulate the spirit. Modern research [11] shows dense blood vessels and nerves around Baihui; acupuncture stimulation enhances functional connectivity between the hippocampus and the frontal/parietal lobes. Second, the tremor control area and visual area in Jiao’s scalp acupuncture. Third, local periorbital acupoints include Yangbai (GB14) and Tongziliao (GB1). Fourth, syndrome-differentiated acupoints based on systemic conditions. Symptoms gradually resolved after treatment, with normal conditions maintained during 6-month and 1-year follow-ups.

Thus, TCM treatment of Meige syndrome shows prominent advantages of low recurrence rate, high safety, and systemic regulation.

2. Chinese Herbal Medicine Treatment

Herbal treatment is based on syndrome classification, with personalized formulas tailored to different pathogeneses.

Wang Songling [6] summarized three pathogeneses of Meige syndrome, focusing on liver treatment: Liver qi transforming into fire: treated with modified Gualou Guizhi Decoction combined with Lingjiao Gouteng Decoction to calm the liver, extinguish wind, clear heat, and purge fire; Liver-kidney deficiency with internal stirring of deficient wind: treated with modified Tianma Gou teng Yin combined with Liu wei Di huang Wan to tonify the liver and kidney, nourish wood, and subdue yang; Liver failing to govern coursing and qi-blood disharmony: treated with Xue fu Zhu yu Decoction supplemented with worm medicines to soothe the liver, relieve depression, activate blood, unblock collaterals, and stop convulsions.

Based on the liver being the wind wood governing tendons, Xu Chao *et al.* [12] argued that blepharospastic Meige syndrome is mostly induced by emotional disorders, leading to liver qi stagnation and hyperactive liver fire, which consume yin blood and cause malnutrition of tendons and vessels, resulting in blepharospasm. Thus, modified Xiaoyao Wan can be used to soothe the liver, relieve depression, benefit qi, nourish yin, and clear fire, with attention to psychological regulation.

3. Clinical Effect Evaluation Tools

To improve the comparability between clinical studies of Meige syndrome, especially in the field of integrated TCM and Western medicine, the use of standardized and internationally recognized clinical outcome assessment tools is recommended. Severity scale: Burke-Fahn-Marsden Dystonia Rating Scale (BFMDRS) [13] is one of the most widely used tools for assessing the severity of dystonia, including a motor scale (BFMDRS-M) and a disability scale (BFMDRS-D), which can effectively assess systemic dystonia including the eyelids and oromandibular region, and should be the first choice for evaluating core efficacy indicators. In addition, Cranio-Cervical Dystonia Questionnaire (CDQ-24) is a health-related quality of life scale designed specifically for patients with craniocervical dystonia, covering multiple dimensions such as physical function, mental state, and pain, which can effectively capture patients' self-perceived therapeutic benefits [14].

3. Research on Diagnosis and Treatment in Western Medicine

Western medical treatment of Meige syndrome is mainly symptomatic, aiming to relieve muscle spasm and improve dysfunction. Treatment includes medications, surgery, and physical therapy, with personalized regimens selected according to disease severity and symptom type.

(I) Pharmacological Treatment

Local injection of botulinum toxin type A [15]: a common therapy for facial dystonia, which selectively blocks acetylcholine release at the neuromuscular junction to relieve muscle spasms, rapidly improving blepharospasm and oromandibular spasms. Clinical studies confirm definite short-term efficacy but limited duration, requiring repeated injections in some patients. Combined with low-frequency repetitive transcranial magnetic stimulation (rTMS), efficacy is en-

hanced and remission prolonged.

Oral medications: mainly anticholinergics and dopamine receptor modulators, adjuvantly relieving spasms but with limited overall efficacy and potential adverse reactions (e.g., dry mouth, dizziness), requiring strict indication control in clinical application.

(II) Surgical Treatment

Deep brain stimulation (DBS) [16] is a major surgical procedure for refractory Meige syndrome. Electrodes implanted into specific brain targets deliver electrical signals to regulate neural circuits and improve dystonia. Clinical studies compare efficacy of different targets [17], with the globus pallidus internus (Gpi) and subthalamic nucleus (STN) as common targets. Both effectively improve symptoms but differ in efficacy durability and adverse reaction rates, requiring individualized selection.

Neurosurgical robot-assisted DBS [18] improves surgical accuracy and efficacy.

In addition, CT-guided cranial nerve radiofrequency ablation [19], a novel minimally invasive treatment, relieves spasms by thermocoagulating partial nerve fibers. It is less invasive and faster-recovering than DBS, providing an alternative for patients ineligible or unwilling to undergo DBS, though its safety and long-term efficacy require further investigation.

(III) Other Therapies

Low-frequency rTMS [20] is a physical therapy that induces electrical currents in the cerebral cortex via changing magnetic fields from scalp coils, regulating cortical excitability and neural networks. Low-frequency (≤ 1 Hz) rTMS applied to the primary motor or supplementary motor cortex inhibits cortical hyperactivity and improves spasm in some patients. It can be used alone or combined with botulinum toxin type A, offering non-invasive, high-safety advantages for mild-to-moderate patients or adjuvant therapy.

4. Safety Considerations

Corresponding adverse reactions will occur in any clinical intervention of Meige syndrome. Therefore, a systematic monitoring and response system needs to be established.

Western medicine treatment is dominated by oral medication, local injection of botulinum toxin, and DBS. Oral medication is prone to systemic adverse reactions such as dry mouth, constipation, blurred vision, drowsiness, dizziness, unsteady walking, and cognitive decline. Long-term use of some drugs may also lead to dependence or tolerance. Although botulinum toxin injection has a definite efficacy, it may cause transient and reversible local reactions such as ptosis, dry eye, diplopia, mastication weakness, and local soreness. DBS has surgical and stimulation-related adverse reactions such as intracranial hemorrhage, infection, headache, and stimulation-related dysarthria and mood changes. In this regard, a corresponding monitoring process needs to be established during treatment. During oral medication treatment, mental state, gastrointestinal reactions, urination, and

cognitive function should be regularly observed, and intraocular pressure should be monitored if necessary. After botulinum toxin injection, the occurrence time, scope, degree, and outcome of local symptoms should be mainly recorded. After DBS, incision healing, neurological signs, and stimulation-related adverse reactions should be closely monitored.

TCM treatment is dominated by oral Chinese herbal medicine, acupuncture, moxibustion, and combined therapy, with mild overall adverse reactions and low incidence. Chinese herbal medicine mostly manifests as gastrointestinal discomfort, such as nausea and diarrhea. Notably, there is a potential risk of drug-drug interaction when patients take Chinese herbal medicine and Western medicine simultaneously. For example, the combined use of herbs with anticholinergic effects (such as *Flos Daturae*) and trihexyphenidyl has a clear pharmacological synergistic effect. The tropane alkaloids (atropine, scopolamine) contained in such herbs are competitive muscarinic acetylcholine receptor antagonists, with the same mechanism of action as trihexyphenidyl. The combined use of the two will significantly increase the risk of anticholinergic poisoning, such as aggravated dry mouth, constipation, and even induced central nervous system symptoms such as delirium [21]. Clonazepam and olanzapine can also aggravate Meige syndrome [22]. Therefore, when formulating an integrated TCM and Western medicine treatment plan, clinicians must inquire about the patient's medication history in detail and be alert to potential interactions. Acupuncture mainly causes local soreness, subcutaneous ecchymosis, and occasional needle syncope; moxibustion mostly causes local scalds. During TCM treatment, the gastrointestinal tolerance and systemic symptoms of patients after taking medicine should be mainly monitored. During acupuncture and local operations, local reactions should be observed to guard against risks such as needle syncope and bleeding, and the patient's tolerance should be evaluated in a timely manner to adjust the plan.

5. Comprehensive Management

This disease is a chronic, functional, disabling movement disorder, and comprehensive management will play an important role. First, it is necessary to distinguish between primary and secondary Meige syndrome. For secondary Meige syndrome, the primary treatment is to receive etiological treatment, and observe the curative effect after completion. For patients without relevant etiology, stepped treatment and multidisciplinary management are required. Stepped treatment refers to starting with oral medication to see if symptoms can be controlled; if the effect is poor, botulinum toxin injection is performed; if still uncontrolled, surgical treatment can be performed, and TCM treatment can be attempted throughout the process. Multidisciplinary management is based on the symptoms and psychology of patients. This disease mostly manifests on the face and will also have a certain impact on patients' mental health. A study included 90 patients with craniofacial movement disorders and 30 healthy individuals, and assessed mental health such as depression and anxiety through Hamilton Anxiety Rating Scale

(HAMA), Hamilton Depression 24 Rating Scale (HAMD-24), etc., and found that mental health problems in patients with craniofacial movement disorders increased significantly [23], so they can consult a psychology department. In terms of symptoms, it can manifest in the eyes, oral cavity, and even affect the respiratory muscles [2], so they can consult the relevant departments.

6. Conclusions

As a refractory movement disorder, clinical diagnosis and treatment of Meige syndrome require both symptom control and systemic regulation. Monotherapy with either Western or Chinese medicine alone cannot fully meet patients' demands for efficient, long-lasting, safe treatment with improved quality of life.

Western medicine features rapid onset and strong specificity, ideal for rapid symptom relief in severe cases (e.g., botulinum toxin type A for local spasms, DBS for refractory cases). However, limitations include short efficacy duration, adverse reactions, invasiveness and high costs of surgery, and failure to fundamentally regulate bodily functions.

TCM focuses on systemic regulation via acupuncture and herbal medicine to adjust zang-fu functions and balance qi-blood-yin-yang, improving local spasms while regulating emotions and sleep with minimal adverse reactions and high safety, suitable for long-term management. Nevertheless, TCM has a relatively slow onset and may insufficiently control severe symptoms alone, requiring combination with Western medicine.

With advances in pathogenesis research and therapeutic innovations, integrated traditional Chinese and Western medicine will become the future trend, evolving into an in-depth, organic, evidence-based model. Through complementary advantages to maximize efficacy, it will provide superior diagnosis and treatment services for patients.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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