

An Overview of Clinical Studies on Traditional Chinese Medicine in the Management of Idiopathic Epiretinal Membrane

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ABSTRACT

Idiopathic epiretinal membrane (iERM) is a common macular disorder and an important cause of visual impairment and visual distortion in the elderly population. In early-stage disease, modern ophthalmology mainly relies on regular observation, as no established non-surgical treatment has been proven effective, while surgical intervention is usually reserved for advanced cases. In China and other regions, some patients with early-stage iERM seek Traditional Chinese Medicine (TCM) as a conservative or complementary therapeutic approach. This article reviews published clinical studies from China concerning the application of TCM in early-stage iERM, including Chinese herbal medicine based on syndrome differentiation and integrated acupuncture-herbal therapy. Existing studies, although limited in sample size and mainly consisting of small case series or case reports, suggest potential improvements in functional visual outcomes such as best-corrected visual acuity, contrast sensitivity, macular visual sensitivity, and subjective visual discomfort. However, most studies lack objective structural evaluations using optical coherence tomography, and current evidence is insufficient to confirm the effectiveness of TCM in modifying the anatomical characteristics of epiretinal membrane. Overall, while TCM may offer symptomatic and functional benefits for patients with early-stage iERM, further well-designed clinical trials incorporating standardized diagnostic criteria and imaging-based outcomes are required to clarify its role in the management of this retinal condition.

Keywords: Idiopathic Epiretinal Membrane; Traditional Chinese Medicine; Fundus Diseases; Macula; Retina

Abbreviations: iERM: Idiopathic Epiretinal Membrane; TCM: Traditional Chinese Medicine; OCT: Optical Coherence Tomography; PPV: Pars Plana Vitrectomy; ILM: Internal Limiting Membrane; BCVA: Best-Corrected Visual Acuity; logMAR: Logarithm of the Minimum Angle of Resolution

Introduction

Idiopathic epiretinal membrane (iERM) is a fibrocellular, avascular proliferative membrane that develops on the surface of the internal limiting membrane in the macular region. Thickening and contraction of this membrane can lead to retinal wrinkling in the macula, vascular tortuosity, and subsequent impairment of retinal function, making it an important cause of decreased visual acuity and visual quality in middle-aged and elderly individuals. The condition occurs predominantly in older adults, with its prevalence increasing with advancing age [1]. Epiretinal membrane is more commonly observed in Asian populations, particularly among Chinese individuals. Epidemiological

studies have reported a prevalence of approximately 7.6% in the Chinese population [2]. The etiology of idiopathic epiretinal membrane remains incompletely understood. Histologically, the membrane is a transparent structure on the retinal surface, composed of reactive cellular elements, vitreous components, and fibrotic tissue [3]. In the early stages, most patients are asymptomatic; however, as the disease progresses, clinical symptoms such as decreased visual acuity and metamorphopsia may gradually develop.

Clinical Staging, Imaging, and Treatment

Idiopathic epiretinal membrane (iERM) can be clinically classified into three stages [4].

1. Stage 0 is characterized by a completely transparent preretinal membrane without deformation of the inner retinal layers. The retinal surface exhibits a cellophane-like reflex without evident retinal distortion.

2. Stage 1 presents as a wrinkled, cellophane-like preretinal membrane. Irregular fine folds appear on the inner retinal surface, typically arranged in a radial pattern, and mild tortuosity of small macular vessels may occasionally be observed.

3. Stage 2 is marked by a distinct, shallow gray membrane over the inner retina, accompanied by obvious retinal deformation and contraction. Retinal wrinkling becomes prominent, and in some cases, minor retinal hemorrhage and macular edema may occur.

In clinical practice, stage 0 iERM is often difficult to detect by routine funduscopic examination. Optical coherence tomography (OCT), a high-resolution and noninvasive imaging modality, allows direct visualization of suspected epiretinal membranes and provides detailed morphological assessment of confirmed stage 1 and stage 2 lesions. Characteristic OCT features of epiretinal membrane can thus be clearly demonstrated, facilitating early diagnosis and objective evaluation of disease severity. At present, the mainstay of treatment for symptomatic epiretinal membrane is surgical intervention. The standard surgical approach is pars plana vitrectomy (PPV) combined with epiretinal membrane peeling, often accompanied by internal limiting membrane (ILM) peeling to reduce the risk of postoperative recurrence. The indication for surgical treatment of idiopathic epiretinal membrane is closely associated with the severity of visual impairment [5]. In general, surgical removal of the membrane is considered when there is a persistent decrease in visual acuity to below 0.2 or when patients experience severe metamorphopsia that significantly affects visual function and quality of life. In cases with mild visual symptoms or stable visual acuity, conservative management and regular follow-up are usually recommended.

Rationale for Exploring Traditional Chinese Medicine

Therefore, for patients with early-stage epiretinal membrane, clinical management in modern medicine is generally limited to regular observation and follow-up. At present, no established non-surgical or pharmacological intervention has been proven effective in halting or reversing disease progression, and surgical treatment is not routinely recommended until significant visual impairment or severe metamorphopsia develops. In this context, some patients in China and other East Asian regions may seek complementary and alternative medical approaches, particularly Traditional Chinese Medicine (TCM), in an attempt to alleviate symptoms, slow disease progression, or delay the need for surgery. In addition, the high cost of vitreoretinal surgery and concerns regarding surgical risks may also contribute to patients' preference for conservative or non-surgical therapeutic options. The present article aims to summarize and review clinical

studies conducted in China on the treatment of early-stage epiretinal membrane using Traditional Chinese Medicine, with the goal of providing new perspectives and potential references for early intervention and conservative management of this condition.

Traditional Chinese Medicine–Based Individualized Treatment and Clinical Evidence

According to Traditional Chinese Medicine (TCM) theory, therapeutic strategies are not determined solely by a diagnosis defined in modern biomedical terms. Instead, patients with the same disease entity may receive different treatments based on syndrome differentiation and constitutional characteristics. In the context of epiretinal membrane, patients are classified according to their TCM constitution and pathological patterns, and individualized herbal prescriptions are formulated accordingly. A clinical study conducted by Gao Jun, et al. [6], investigated the effects of a modified traditional TCM formula, Zhujing Pills (Zhujing Wan), combined with constitution-specific adjunct prescriptions, in the treatment of 30 patients with early-stage idiopathic epiretinal membrane. The results demonstrated significant improvements in best-corrected visual acuity (BCVA) and macular visual sensitivity, along with a reduction in visual discomfort symptoms. However, changes in central foveal thickness and macular volume did not reach definitive conclusions, and further investigation is required to clarify the structural effects of this intervention.

A study conducted by Chen Li [7], guided by Traditional Chinese Medicine theory, proposed that early-stage idiopathic epiretinal membrane is closely associated with liver deficiency (Gan Xu). Based on this pathogenic understanding, the author independently formulated an herbal prescription named Guben Mingmu Powder (Guben Mingmu San), which was administered to 21 patients with early-stage epiretinal membrane. Compared with baseline measurements, visual acuity improved in all patients after treatment, as reflected by best-corrected visual acuity (BCVA, converted to logarithm of the minimum angle of resolution [logMAR]). In addition, contrast sensitivity showed significant improvement at spatial frequencies of 6, 12, and 18 cycles per degree (c/d) after treatment. Similar to other clinical studies, this investigation did not include a comparative analysis of morphological changes in the epiretinal membrane, such as retinal thickness or macular structural parameters.

With regard to acupuncture-based interventions, Hang Weiqi, et al. [8]. Reported a case in which integrated acupuncture and herbal medicine therapy was applied to a patient with early-stage idiopathic epiretinal membrane. The acupuncture protocol included traditional ocular-related acupoints such as Jingming (BL1) and Chengqi (ST1), in combination with oral Chinese herbal medicine. After 20 days of treatment, the patient's visual acuity improved from 0.5 to 1.0. Although this report suggests a potential benefit of combined acupuncture and herbal therapy for early epiretinal membrane, it represents a

single-case observation, and no structural evaluation of the epiretinal membrane or macular morphology was conducted. Therefore, further studies with larger sample sizes and objective imaging outcomes are required to validate these findings.

Discussion

Current clinical research on the use of Traditional Chinese Medicine (TCM) for epiretinal membrane in China remains at a relatively preliminary stage. The number of available studies is limited, and many reports consist of small case series or single-case observations, which are insufficient to establish the overall efficacy or generalizability of TCM interventions for this condition. Moreover, the majority of existing clinical studies primarily focus on functional outcomes, such as visual acuity or macular visual sensitivity, while objective structural parameters, particularly optical coherence tomography (OCT)-based morphological assessments, are rarely included. From a strict evidence-based medicine perspective, the current data are therefore inadequate to confirm the effectiveness of Chinese herbal medicine or acupuncture in modifying the anatomical features of epiretinal membrane. Nevertheless, it is noteworthy that most of these studies target patients' subjective and functional visual complaints, including blurred vision and metamorphopsia. The reported findings consistently suggest improvements in visual function and visual comfort, indicating that TCM-based interventions may offer symptomatic benefits in patients with early-stage epiretinal membrane.

This research emphasis on clinical symptoms rather than retinal structure can be partly understood from a historical and theoretical perspective. In ancient China, ophthalmologic disorders were diagnosed and evaluated exclusively based on patients' visual experiences, as advanced imaging technologies were unavailable. Consequently, traditional Chinese ophthalmology placed primary importance on functional visual manifestations, rather than on anatomical or structural changes of the macula. This historical context may help explain why contemporary TCM-related clinical studies continue to prioritize visual function as their main outcome measure. An intriguing question therefore arises: why do some patients report improvement in visual symptoms despite the absence of significant structural changes in the epiretinal membrane? Possible explanations may include subtle functional modulation of retinal physiology, improved retinal microcirculation, or compensation mechanisms within the visual system; however, these hypotheses require further systematic investigation.

At present, no effective non-surgical treatment has been established for early-stage epiretinal membrane, while surgical intervention is usually reserved for advanced cases with marked visual impairment. Although vitrectomy with membrane peeling is effective in selected patients, postoperative recurrence of epiretinal membrane has been reported [9], and surgery may also be associated with complications such as macular edema [10]. In this context, TCM may represent a potential research direction for conservative or adjunctive management, particularly in early-stage disease. Future studies with larger sample sizes, standardized diagnostic criteria, objective imaging endpoints, and longer follow-up periods are warranted to more rigorously evaluate the role of TCM in the management of epiretinal membrane.

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