

A New Perspective on Precision Treatment for Psoriasis Based on Traditional Chinese Medicine Pattern Differentiation

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Abstract: Psoriasis, a chronic inflammatory skin disease, aligns well with precision medicine through Traditional Chinese Medicine's (TCM) syndrome differentiation. TCM classifies psoriasis into blood heat (linked to IL-23/Th17 axis activation), blood stasis (associated with microcirculation dysfunction), and blood dryness (related to barrier impairment) syndromes. Precision strategies include combining heat-clearing formulas with biologics for blood heat, using blood-activating herbs for stasis, and applying moisture-nourishing agents for dryness. TCM also offers holistic regulation for comorbidities like depression. Future development relies on identifying biomarkers via omics technologies and building predictive models. Integrating TCM syndrome differentiation with modern medicine enables truly personalized psoriasis treatment.

Keywords: Psoriasis, TCM Syndrome Differentiation, Precision Medicine, Treatment from Blood Aspect.

1. Introduction

Psoriasis, a chronic, relapsing, and inflammatory skin disease affecting hundreds of millions globally, with its characteristic autoimmune inflammatory features and the diagnostic and therapeutic demand for integrating “disease and syndrome,” makes it an ideal model for integrated Chinese and Western medicine research [1]. Amid the wave of “precision medicine” in modern healthcare, the millennia-old concept of “treatment based on syndrome differentiation” from Traditional Chinese Medicine (TCM) offers a fresh perspective and a rich practical pathway for the precision treatment of psoriasis, thanks to its dynamic, holistic, and individualized approach. This article will explore a new paradigm for the precision treatment of psoriasis based on TCM syndrome differentiation.

2. Theoretical Foundation: The TCM Syndrome Differentiation System with “Blood Aspect Theory” at Its Core

The understanding of psoriasis in Traditional Chinese Medicine (TCM) has evolved over millennia of clinical practice and theoretical development, forming a comprehensive syndrome differentiation system centered on “Treatment from the Blood Aspect.” This system posits that the core pathology of psoriasis (known as “Bai Bi” in TCM) resides in the blood aspect, with primary mechanisms including Blood Heat, Blood Stasis, and Blood Dryness. These can be further complicated by associated syndromes such as Dampness-Heat or Toxic-Heat. This classification remarkably aligns with the modern clinical stages of the disease, providing a theoretical basis for integrated Chinese and Western medicine diagnosis and treatment [2].

2.1 Blood Heat Syndrome

Blood Heat Syndrome represents the cardinal manifestation of psoriasis during its progressive stage. Its pathogenesis is

rooted in an inherent constitution of excessive Yang Heat. When this internal predisposition encounters external pathogenic factors—such as Wind-Heat or Dryness—these invaders readily transform into intense heat within the body [3]. This pathogenic heat becomes trapped and congested at the nutrient (Ying) and blood (Xue) levels, leading to a state of “heat exuberance in the blood aspect.” This internal fire fiercely steams the skin and forces the blood to move recklessly outside its vessels, manifesting as the rapid emergence and expansion of skin lesions. Clinically, this syndrome is characterized by a vivid and dynamic presentation. The skin lesions are typically bright red or crimson, feel hot to the touch, and are covered with abundant, overlapping silvery-white scales. The Auspitz sign (pinpoint bleeding upon scale removal) is pronounced, indicative of the pathological dilation and fragility of dermal papillae capillaries. New papules and plaques emerge continuously, and existing lesions rapidly expand, often accompanied by intense itching or a burning sensation. Systemic signs reflect the internal heat: patients may experience irritability, restlessness, insomnia, a persistent thirst with a preference for cold drinks, scanty dark urine, and dry stools. The tongue mirror presents as crimson red with a yellow, often dry coating, while the pulse is typically full, rapid, and forceful. From a modern biomedical perspective, the Blood Heat Syndrome corresponds precisely to the acute inflammatory flare-up phase of psoriasis [4]. The TCM concept of “heat congesting in the blood” finds its biological correlate in the hyperactivation of the IL-23/Th17 inflammatory axis. This involves a significant influx of IL-23-producing dendritic cells, driving the proliferation of Th17 lymphocytes and culminating in a “storm” of pro-inflammatory cytokines, including IL-17A, IL-22, and TNF- α . These cytokines are directly responsible for the clinical hallmarks: they induce keratinocyte hyperproliferation (explaining the scaling and thickening), promote neutrophil chemotaxis (contributing to pustule formation in some cases), and stimulate angiogenesis and endothelial activation (accounting for the erythema and Auspitz sign). Therefore, the principle of clearing heat and cooling the blood in TCM is functionally aligned with the

modern therapeutic goal of suppressing this overactive IL-23/Th17 immune pathway [5].

2.2 Blood Stasis Syndrome

critical transitional phase in the disease progression. The pathogenesis evolves from prolonged accumulation of Heat Toxins that progressively consume and damage Yin and Blood. This pathological process creates a dual deficiency of both physiological fluids and vital energy, ultimately leading to Qi stagnation and blood stasis. The impaired circulation results in the accumulation of stagnant blood within the vessels and collaterals, forming what TCM describes as “fixed pathological products” that manifest as indurated plaques [6]. From a modern pathological perspective, Blood Stasis Syndrome corresponds to the chronic inflammatory phase with significant tissue remodeling. The darkened, purplish hue of lesions correlates with impaired local microcirculation, vascular dilation, and increased deoxygenated hemoglobin concentration. The characteristic thickening and induration result from epidermal hyperplasia (acanthosis), abnormal keratinocyte differentiation (parakeratosis), and dermal fibrosis - all consequences of chronic inflammation. The underlying pathology involves disturbed hemorheology (increased blood viscosity and reduced erythrocyte deformability), microvascular abnormalities (tortuous and dilated capillaries in the dermal papillae), and excessive deposition of extracellular matrix components. Furthermore, elevated expression of Vascular Endothelial Growth Factor (VEGF) and other pro-fibrotic cytokines perpetuates this stagnant state by promoting pathological angiogenesis and tissue fibrosis. Blood Dryness Syndrome often appears in the regression stage or chronic stationary stage of psoriasis. The pathological essence is the consumption of Yin and Blood due to prolonged illness, or the transformation of Blood Heat into Dryness, leading to deficiency of Body Fluids and Blood, and failure to nourish the skin. Clinically, it is characterized by light red lesions, dry, fine scaling, dry and cracked skin, and brittle hair, often accompanied by dry mouth and throat, a pale tongue with scant coating, and a thin pulse. This stage highlights the severely compromised skin barrier function [7]. Additionally, common complex patterns include Dampness-Heat Accumulation Syndrome (often seen in inverse psoriasis) and Fire Toxin Blazing Syndrome (corresponding to pustular or erythrodermic psoriasis). This “Blood Aspect Differentiation” system not only accurately describes clinical presentations but also profoundly reveals the internal laws of the disease’s dynamic evolution, providing theoretical guidance for precise intervention [7-8].

2.2.1 Blood Heat Syndrome and IL-23/Th17 Inflammatory Axis Activation

The “heat” state of Blood Heat Syndrome is closely related to the overactivation of the IL-23/Th17 inflammatory axis in modern medicine. Studies show significant infiltration of IL-23+ dendritic cells in the lesions of patients with this syndrome, along with abnormally elevated levels of Th17 cells and related effector cytokines (IL-17A, IL-22, TNF- α), driving keratinocyte hyperproliferation and intense inflammatory response [9]. This provides a TCM theoretical basis for using targeted therapies like IL-17/IL-23 inhibitors

and directs mechanistic research on heat-clearing and blood-cooling herbs (e.g., Sheng Di Huang, Mu Dan Pi, Chi Shao) [10].

2.2.2 Blood Stasis Syndrome and Microcirculation Dysfunction & Tissue Fibrosis

The pathological essence of Blood Stasis Syndrome involves abnormalities in the dermal microvasculature (dilation, tortuosity), hemorheological changes (increased whole blood viscosity, enhanced erythrocyte aggregation), and tissue fibrosis. Chronic inflammation leads to overexpression of Vascular Endothelial Growth Factor (VEGF), promoting angiogenesis, collectively forming the pathological basis of “microscopic blood stasis.” Blood-activating and stasis-resolving herbs (e.g., Dan Shen, Tao Ren, Hong Hua) exert therapeutic effects by improving microcirculation and inhibiting fibrosis.

2.2.3 Blood Dryness Syndrome and Skin Barrier Function Impairment

The modern pathological basis of Blood Dryness Syndrome is severe dysfunction of the skin barrier. This manifests as reduced synthesis of intercellular lipids like ceramides, decreased expression of Aquaporin-3 (AQP-3), abnormal keratinocyte differentiation, leading to decreased stratum corneum hydration and increased transepidermal water loss [11]. Blood-nourishing and dryness-moistening herbs (e.g., Dang Gui, Shu Di Huang, Mai Dong) promote barrier repair by regulating these processes. Research into the comorbidity of psoriasis and depression has revealed the intrinsic link between the “Liver Qi Stagnation” syndrome and disturbances in the neuro-endocrine-immune network. TCM compound formulas (e.g., Xiaoyao San, Longdan Xiegan Tang) regulate neurotransmitters like serotonin (5-HT) and norepinephrine (NE), inhibit overactivation of the hypothalamic - pituitary - adrenal (HPA) axis, and modulate downstream inflammatory factors, embodying the holistic regulatory advantage of “treating both body and mind.” [12]

3. Precision in Practice

3.1 Precise Formula and Herb Selection

Blood Heat Syndrome: Select formulas like Xijiao Dihuang Tang or Liangxue Huoxue Tang to clear heat and cool the blood, combined with herbal active ingredients that inhibit the IL-23/Th17 pathway (e.g., indirubin, baicalin, paeonol) [13]. **Blood Stasis Syndrome:** Select formulas like Taohong Siwu Tang or Xuefu Zhuyu Tang to activate blood and resolve stasis, or use single herbs like Dan Shen, E Zhu, Chuan Xiong to improve microcirculation. **Blood Dryness Syndrome:** Select formulas like Danggui Yinzi or Siwu Tang to nourish blood and moisten dryness, promoting barrier repair [14].

3.2 Synergistic Effects of Integrated Chinese and Western Medicine

For severe Blood Heat Syndrome, a combination of “IL-17 inhibitor + heat-clearing and blood-cooling TCM” can be used. TCM may enhance anti-inflammatory effects, regulate immune homeostasis, and reduce the side effects of biologics.

For refractory Blood Stasis plaques, adding blood-activating and stasis-resolving TCM to phototherapy can significantly improve plaque thickness [15]. For patients with comorbid depression, combining conventional treatment with Shugan Jieyu Capsule or Chaih JiaLong gu Muli Tang can improve psychological state and quality of life [16].

3.3 Precise Prevention and Dynamic Prediction

Based on the “Preventive Treatment of Disease” theory, analyzing individual constitution tendencies using the Five Circuits and Six Qi theory can provide personalized prevention plans. Utilizing modern statistical methods to construct a “Disease-Syndrome Combination Dynamic Prediction Model,” which dynamically monitors PASI scores, TCM syndrome scores, IL-17, and other biomarkers, allows for real-time assessment of relapse risk, enabling dynamic adjustment of treatment plans and precise intervention before relapse occurs [16].

4. Challenges and Prospects

Although the prospects for precision treatment based on syndrome differentiation are broad, several challenges remain: the objective and standardized diagnostic criteria for TCM syndromes need refinement; the multi-component, multi-target mechanisms of TCM require deeper clarification; and high-quality clinical research evidence needs strengthening. Utilizing modern technologies like metabolomics and metagenomics to identify syndrome-specific biomarkers and establish objective diagnostic standards. Deepening research into the molecular mechanisms of TCM compounds and single ingredients to elucidate their precise targets and network regulatory mechanisms. Promoting the development of AI-assisted diagnosis and treatment systems that integrate TCM syndrome differentiation experience with modern medical data to support clinical decision-making. Conducting rigorously designed, multi-center, large-sample clinical trials to validate the efficacy advantages of the disease-syndrome combination treatment. Through interdisciplinary integration, precision treatment of psoriasis based on TCM syndrome differentiation is poised to bring more individualized and effective diagnosis and treatment plans to patients.

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