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Exploring the Application Prospects of Traditional Chinese Medicine in Periodontitis: Postprint

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Date: 2022-12-05T00:00:00+00:00

Abstract

This paper summarizes the recent application status of Traditional Chinese Medicine (TCM) in periodontitis treatment, elaborates on the research background, current developments, and therapeutic effects of TCM for periodontitis, and explores the application prospects of TCM in periodontitis therapy, aiming to provide further references for clinical periodontitis treatment.

Full Text

To Explore the Application Prospect of Traditional Chinese Medicine in Periodontitis

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Abstract

This article reviews and analyzes the current application status of Traditional Chinese Medicine (TCM) in periodontitis treatment in recent years, elaborating on the research background, developmental status, and therapeutic outcomes of TCM approaches for periodontitis. By exploring the application prospects of TCM in periodontitis management, this paper aims to provide additional references for clinical treatment. The fundamental treatment for periodontitis involves the removal of dental plaque and calculus, including scaling, root planing, and subgingival debridement. In recent years, research has demonstrated that TCM yields significant effects in treating periodontitis. Periodontitis is a chronic destructive disease that invades the gingiva and periodontal supporting tissues,

characterized by periodontal pocket formation, gingival inflammation, alveolar bone resorption, and varying degrees of tooth mobility, and is considered one of the leading causes of tooth loss in humans. TCM classifies periodontitis under the categories of “Yaxuan” (gingival atrophy) and “Yayong” (gingival abscess), attributing unclean teeth and gums as external pathogenic factors, while internal pathogenesis involves stomach fire scorching the gingiva and kidney deficiency failing to nourish the gums. As a highly prevalent oral disease causing severe dental damage, early-stage periodontitis has been conventionally managed through scaling, root planing, topical medication, and oral metronidazole. With advancing medical standards, TCM applications in periodontitis treatment have become increasingly widespread, with herbal formulations evolving to include powders, pills, oral decoctions, and topical preparations. Through in-depth research and analysis, TCM employs syndrome differentiation-based therapies tailored to different pattern types, addressing both root causes and manifestations with favorable prognosis and low recurrence rates. In recent years, TCM has achieved remarkable results in periodontitis treatment, gaining recognition among medical professionals and patients alike. With its long historical tradition, TCM has been widely applied in clinical practice across various diseases with important therapeutic roles. Scaling procedures for periodontitis often cause varying degrees of pain, potentially inducing fear and leading to treatment delays or discontinuation. TCM treatment offers minimal pain, fewer adverse reactions, and significant efficacy, not only reducing suffering but also enhancing patient understanding and acceptance of TCM, thereby further expanding its application depth in periodontitis management.

Keywords: periodontitis; Traditional Chinese Medicine; treatment by syndrome differentiation; integrated Traditional Chinese and Western medicine

1 Current Status of Western Medicine Treatment for Periodontitis

With the development of medical standards, Western medicine treatment methods for periodontitis continue to evolve. Zhou et al. [?] proposed host modulation therapy (HMT) for periodontitis management, which primarily employs various biological mechanism-based drugs: sub-antimicrobial dose doxycycline, non-steroidal anti-inflammatory drugs, bisphosphonates, and various tissue cell receptors, histone deacetylase inhibitors, among others, to modulate the host immune-inflammatory response, connective tissue destruction, and bone resorption processes by regulating related mediators and signal transduction pathways as adjunctive periodontitis therapy. Cao et al. [?] divided 60 cases of severe periodontitis into control and study groups, with the control group receiving periodontal-endodontic treatment and the study group receiving combined periodontal-endodontic and semiconductor laser therapy. Observing treatment outcomes at 3 months, they concluded that both methods were effective, but the combined laser approach was more effective for severe periodontitis than conventional treatment alone. An and Zhou [?] randomly divided 100

chronic periodontitis patients into observation and control groups, with the control group receiving conventional curettage and the observation group receiving ornidazole periodontal strips combined with curettage. Results showed that the combined approach effectively improved periodontal conditions, reduced inflammation, protected cementum, and demonstrated significant therapeutic efficacy. She et al. [?] conducted a meta-analysis of randomized controlled trials on probiotics for periodontal disease, screening 1,268 articles and ultimately including 8 RCTs comprising 388 patients divided into probiotic and placebo groups. Meta-analysis results showed that beyond standard scaling, the probiotic group exhibited significantly superior treatment effects compared to the placebo group. Peng and Zhang [?] applied minocycline hydrochloride combined with metronidazole for periodontitis treatment, achieving an effective rate of 96.7%. Zhao [?] reported significant results using metronidazole combined with amoxicillin and omeprazole for periodontitis. The aforementioned studies demonstrate that Western treatment approaches primarily control periodontal inflammation through drugs like metronidazole, tinidazole, and Perioline (minocycline), combined with mechanical debridement to remove plaque and pathogenic bacteria, addressing etiological factors. However, frequent antibiotic application may lead to drug resistance and flora imbalance, affecting treatment outcomes, necessitating rational drug selection based on individual patient conditions.

2 Current Status of Traditional Chinese Medicine in Periodontitis Treatment

2.1 Progress in TCM Treatment of Periodontitis

Zhao et al. [?] employed Yinpu Jiedu mouthrinse for irrigation and gargling after basic treatment, showing reduced gingival index, plaque index, and periodontal probing depth after 2 weeks compared to pre-treatment levels. Han and Zhang [?] divided 86 chronic periodontitis patients into control and observation groups, both receiving conventional basic treatment, with the control group receiving minocycline hydrochloride ointment in periodontal pockets and the observation group receiving Qingre Xiaoyan Guchi (heat-clearing, anti-inflammatory, tooth-consolidating) sustained-release agents combined with a self-formulated herbal decoction. Results demonstrated that the sustained-release agent combined with oral herbs effectively improved periodontal conditions and reduced inflammatory factor levels. Shi and Shi [?] conducted a randomized controlled study on 60 acute periodontitis patients divided into observation and control groups, with the control group receiving artificial bezoar metronidazole capsules and the observation group receiving Qingwei Yishen Tongluo (stomach-clearing, kidney-nourishing, collateral-dredging) herbs both orally and topically. The oral formula consisted of Yunü Jian combined with Shengjiang San plus Weilingxian and Quaxie, while the topical preparation contained gypsum 30g, prepared Rehmannia 30g, turmeric slices 10g, white silkworm 10g, and Weilingxian 30g applied to both buccal regions for 7 days, showing significant clinical

effects warranting further promotion. Wu et al. [?] applied Guchi Erhuang Decoction (tooth-consolidating two-yellow decoction) based on basic periodontitis treatment, with composition including prepared Rehmannia, Phellodendron, Dioscorea, Drynaria, Moutan, Alisma, Poria, Schisandra, Caulis Spatholobi, Cinnamon, and Anemarrhena, following treatment principles of tonifying liver-kidney, nourishing yin and clearing fire, and strengthening the body's resistance. This formula improved total effective rate and periodontal parameters. Zhang [?] summarized that TCM syndrome differentiation therapy for periodontitis primarily employs ingredients for clearing stomach fire, supplementing qi and blood, and nourishing yin-kidney (mainly Liuwei Dihuang Wan combined with Salvia, Drynaria, prepared Rehmannia, etc.). Yang et al. [?] randomly divided 120 chronic periodontitis patients into control and observation groups, with the control group receiving conventional basic treatment and the observation group receiving additional TCM syndrome differentiation treatment for 30 days, concluding that TCM syndrome differentiation offers definitive efficacy with low recurrence. TCM treatment emphasizes holistic regulation, addressing both root and branch through syndrome differentiation, with core principles of strengthening healthy qi, dispelling pathogenic factors, regulating organ function, and balancing yin-yang, primarily focusing on regulating kidney, stomach, qi-blood, and spleen to achieve optimal therapeutic effects by enhancing immune function and stimulating the body's own disease resistance potential.

2.2 Progress in Integrative TCM-Western Medicine Treatment for Periodontitis

Li et al. [?] randomly divided 100 chronic periodontitis patients into treatment and control groups, with the control group receiving tinidazole capsules in addition to basic treatment and the treatment group receiving additional Sanhuang Jianchi Decoction for 3 months. Results showed that Sanhuang Jianchi Decoction combined with conventional Western therapy effectively improved chronic periodontitis symptoms, inhibited gingival crevicular fluid inflammatory responses, and reduced recurrence rates. Gao and Fu [?] provided basic treatment for 3 months to the control group before orthodontic treatment using straight-wire technique with banding on first molars and bracket bonding on remaining teeth, employing nickel-titanium wires for initial leveling with light force principles. The combined group additionally received Gegen Qinlian Decoction (Pueraria, Scutellaria, Coptis) orally, showing significantly higher total effective rate after 6 months. Liao and Liao [?] randomly divided patients into observation and control groups, both receiving basic treatment with the control group receiving tinidazole tablets and the observation group receiving additional Jiawei Qingwei Decoction (Coptis 6g, raw Rehmannia 15g, Moutan 10g, Angelica 10g) for one course, demonstrating significantly better periodontal parameter improvement in the observation group. Xu et al. [?] administered wild chrysanthemum and Drynaria compound preparation injections in periodontal pockets weekly combined with oral ornidazole for 4 weeks, showing substantial improvement in periodontal indices and inflammatory factors $\text{TNF-}\alpha$ and GE

in PISF. Integrative TCM-Western medicine treatment for chronic periodontitis demonstrates significant effects and represents a major development trend [?, ?], warranting further clinical research and promotion.

TCM emphasizes “treatment based on syndrome differentiation” and “three-factor appropriateness” (individual, seasonal, and geographical considerations), focusing on holistic cognition and temporal evolution, revealing disease patterns from systematic and macroscopic perspectives as an important means for disease treatment and health preservation. Periodontitis is a highly prevalent oral disease and major cause of tooth loss. This article summarizes the mechanisms of TCM action in periodontitis, where practitioners employ different formulas based on syndrome differentiation for individual patients, following fundamental principles of clearing stomach fire, supplementing qi and blood, and consolidating kidney to strengthen teeth. TCM theory correlates periodontitis closely with stomach and kidney function, belonging to the Foot-Yangming Stomach Meridian. TCM treatment should primarily regulate stomach, kidney, and qi-blood, with practitioners adding other herbs based on individual constitution and pattern types after syndrome differentiation to achieve optimal therapeutic effects through holistic regulation. TCM treatment for periodontitis emphasizes holistic therapy, addressing both root and branch with significant efficacy, low recurrence, and minimal adverse reactions. Integrative TCM-Western medicine treatment represents the current major clinical trend, not only rapidly relieving symptoms but also further enhancing therapeutic effects with high patient satisfaction. The authors believe TCM treatment for periodontitis holds promising prospects and room for advancement, advocating for continued in-depth research to explore TCM therapeutic methods, develop more targeted treatments, and provide patients with more standardized and higher-quality therapeutic services.

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