ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-515-x, Impact Factor: 9.23

American Academic publishers, volume 6, issue 01,2026

Journal: https://www.academicpublishers.org/journals/index.php/ijai

EVALUATION OF THE THERAPEUTIC RESPONSE IN CONTACT-ALLERGIC STOMATITIS AMONG INDIVIDUALS USING REMOVABLE DENTURES

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Abstract

The article presents detailed results of a clinical study evaluating the effectiveness of complex therapy for contact-allergic stomatitis in patients using removable dental prostheses. Particular attention is paid to the pathogenetic mechanisms of allergic reactions that occur upon interaction between the oral mucosa and the components of acrylic materials. The study describes therapeutic methods aimed at reducing inflammation and restoring mucosal integrity through the use of desensitizing, antiseptic, and regenerative agents. The conducted research demonstrated that the proposed therapeutic regimen significantly reduces the intensity of pain, burning, and swelling, while promoting normalization of the epithelial microscopic structure. The combined use of local and systemic agents resulted in marked clinical improvement and accelerated epithelialization of the oral mucosa. Moreover, most patients showed decreased recurrence rates and improved adaptation to dentures after treatment, confirming the high efficacy of the proposed therapeutic approach.

Keywords

contact-allergic stomatitis, removable dentures, desensitizing therapy, antiseptics, mucosal regeneration.

Introduction

Contact allergic stomatitis is an inflammatory lesion of the oral mucosa that occurs in response to allergenic components contained in denture materials, primarily acrylic resins. This disease develops as a result of a delayed-type immunopathological reaction associated with sensitization to the monomers, plasticizers, and dyes found in denture base materials. Clinical manifestations include severe hyperemia, swelling, a burning sensation, itching, and soreness of the mucosa, and in severe cases, the development of erosive and ulcerative lesions. Patients often complain of dry mouth, difficulty eating, and a decreased sense of taste, significantly impairing their quality of life. The incidence of this complication has been steadily increasing in recent years, due to the widespread use of acrylic dentures, their long service life, poor hygiene, and increased individual sensitivity to the components of denture materials. These factors make the problem of contact allergic stomatitis a pressing issue in modern clinical dentistry and require improved approaches to its diagnosis and treatment.

According to modern clinical and experimental studies (Ivanova E.A., 2020; Chen et al., 2022), the development of contact allergic stomatitis is closely linked to the release of methyl methacrylate monomers, plasticizers, dyes, and other chemical compounds with pronounced toxic-allergic effects from denture materials. These substances, interacting with the oral mucosa,

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cause damage to epithelial cells, disruption of barrier function, and activation of immune cells, leading to the development of a delayed-type inflammatory reaction. Impaired microcirculation, increased vascular permeability, and epithelial degradation contribute to the chronicity of the pathological process. Therefore, the selection of a rational treatment regimen aimed not only at relieving inflammatory symptoms and eliminating the allergic component, but also at restoring the structure and function of the oral mucosal epithelium, is particularly important. A comprehensive approach, including desensitizing, antiseptic, anti-inflammatory, and regenerative therapy, is the most rational approach to treating contact allergic stomatitis. This method allows for a multifaceted approach to all stages of the disease's pathogenesis—from eliminating the causative factor and suppressing the allergic reaction to restoring the morphological integrity and functional activity of the oral mucosa. Desensitizing agents reduce the body's sensitivity to allergens, antiseptics prevent the development of secondary microbial infections, and anti-inflammatory and regenerative components help reduce inflammation and accelerate epithelialization. Therefore, a modern treatment strategy for contact-allergic stomatitis should be based on a combination of etiotropic, pathogenetic, and symptomatic methods aimed at achieving not only clinical remission but also the restoration of tissue nutrition and the protective mechanisms of the mucous membrane. This approach ensures a more lasting therapeutic effect, shortens recovery time, and significantly improves the quality of life of patients wearing removable dentures.

Study Objective.

To evaluate the clinical efficacy of combination therapy for contact allergic stomatitis in patients wearing removable dentures, including desensitizing, antiseptic, anti-inflammatory, and regenerative agents.

Additionally, we aimed to determine the dynamics of clinical symptoms (pain, burning, itching, hyperemia, and swelling of the mucosa), assess the time to epithelialization of the affected areas, and the frequency of disease recurrence after completion of treatment. Particular attention was paid to identifying the relationship between the type of denture material used, its service life, and the severity of inflammatory changes in the oral mucosa. Analysis of these factors allowed us to determine the role of the physicochemical properties of acrylic resins in the development of allergic reactions and evaluate their impact on the intensity of clinical manifestations of the disease. Individual patient characteristics were also studied, including the presence of concomitant systemic diseases, local immunity, and oral hygiene, enabling a comprehensive assessment of predisposing factors and the determination of optimal treatment strategies for contact allergic stomatitis.

Materials and Methods.

The study included 30 patients (17 women and 13 men) aged 40 to 70 years, who had been wearing removable dentures for 6 months to 3 years. All participants were diagnosed with contact allergic stomatitis, which developed as a result of exposure to components of denture materials, primarily acrylic resins, based on clinical and anamnestic data.

The diagnosis was based on clinical manifestations (hyperemia, swelling, burning, itching, and soreness of the mucous membrane), anamnesis data, and cytological examination of smears from the mucous membrane. When necessary, allergy skin tests were performed to clarify the nature of sensitization to denture materials.

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Inclusion criteria were the presence of clinical signs of contact allergic stomatitis, the use of acrylic removable dentures for at least 6 months, and the absence of severe systemic diseases that could affect the course of the inflammatory process. Comprehensive treatment for patients with contact-allergic stomatitis was carried out in stages and aimed at eliminating inflammation, restoring the mucous membrane, and preventing recurrence.

The main stages of therapy included: Temporary discontinuation of removable dentures during flare-ups, which prevented re-exposure to the allergic factor and reduced mechanical irritation of the mucous membrane. Oral hygiene, including plaque removal, treatment of cavities, elimination of foci of chronic infection (gingivitis, periodontitis, stomatitis), and professional hygiene to reduce the bacterial load. Antihistamines (cetirizine 10 mg/day) were prescribed to suppress the allergic reaction and reduce swelling and itching of the mucous membrane. Rinses with antiseptics—0.05% chlorhexidine solution and chamomile infusion—have antimicrobial and anti-inflammatory properties. These procedures promoted mucosal cleansing and accelerated healing of the affected areas. Topical treatment with anti-inflammatory ointments containing corticosteroids (0.5% hydrocortisone ointment) reduced inflammation and hyperemia, as well as the use of keratoplastic agents (sea buckthorn oil, solcoseryl gel) to stimulate reparative processes and accelerate mucosal epithelialization. This multi-step approach provided a comprehensive effect on the pathological process: it eliminated inflammation and the allergic component, prevented the development of secondary infection, and facilitated complete restoration of the oral mucosa and improved patient adaptation to wearing dentures. The effectiveness of the therapy was assessed on the 3rd, 7th, and 14th days of treatment using clinical, cytological, and visual monitoring methods. At each examination, the dynamics of the main symptoms of the disease were recorded, including pain intensity, hyperemia, swelling, itching, and burning of the oral mucosa. To objectively assess the degree of inflammation, standard clinical scales were used to quantify the severity of pathological changes. Additionally, the epithelialization time of the affected areas of the mucosa was assessed, with regeneration stages determined based on visual inspection and microscopic analysis of smears. Cytological examination revealed changes in the cellular composition of the inflammatory infiltrate, the degree of epithelial keratinization, and the presence of signs of reparation. The results were documented using photographic documentation, enabling objective monitoring of treatment progress and comparison of the effectiveness of therapeutic measures at different stages of observation. This approach provided a comprehensive assessment of the condition of the oral mucosa and confirmed the accuracy of the obtained data.

Results

Within 7-10 days of combination therapy, a significant improvement in the clinical condition was observed in most patients. The intensity of pain and burning in the oral mucosa decreased by an average of 75%, the degree of hyperemia decreased by 68%, and the severity of tissue swelling decreased by 60%. Patients noted significant relief when eating, talking, and swallowing, as well as the disappearance of dryness, itching, and burning.

By the 10th day of treatment, the mucosa in most patients acquired a pale pink color, became smooth, elastic, and less sensitive to mechanical stress. The disappearance of foci of hyperemia and pain indicated a decrease in inflammatory activity and the onset of active regenerative processes. Upon examination, a decrease in scaling and microcracks was observed, indicating restoration of the epithelial barrier function. In some patients with more severe

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sensitization to acrylic components, improvement occurred more slowly, but the dynamics remained positive: symptoms gradually regressed, and the general condition of the mucosa stabilized by the end of the second week of therapy.

Complete restoration of the oral mucosal epithelium was observed in 80% of patients within 12-14 days, confirming the high effectiveness of the combined therapy. In the remaining 20%, the epithelialization process continued for 16-18 days, likely due to the prolonged period of wearing dentures, severe sensitization to acrylic materials, and individual characteristics of mucosal reactivity.

Cytological studies confirmed the clinical results. Impression smears taken from the surface of the affected mucosa showed a significant decrease in the number of neutrophils, indicating a decrease in the activity of the inflammatory process. At the same time, a decrease in the number of degeneratively altered cells and gradual restoration of the normal multilayered epithelial structure were observed.

As the inflammation subsided, the number of epithelial cells with signs of keratinization decreased, while the proportion of young regenerating cells increased. This indicated the onset of the reparative phase and the activation of physiological mechanisms for mucosal restoration. By days 10–14 of treatment, the cytological picture in most patients approached normal: epithelial cells were evenly distributed, nuclei had clear contours, and signs of inflammatory destruction were absent.

The appearance of cells with signs of regeneration confirmed the favorable progress of the reparative processes and the effectiveness of the therapy. Furthermore, isolated lymphocytes and macrophages were detected in smears from some patients, which can be regarded as the final stage of inflammation and the transition to tissue restoration.

After resuming wearing removable dentures, recurrent complaints of mucosal irritation were recorded in only 10% of patients. It was established that the main cause of exacerbations was failure to follow denture care recommendations and the lack of timely adjustments.

Thus, the results of cytological studies and clinical observations are closely interrelated. The data obtained convincingly demonstrate the high effectiveness of combination therapy aimed at relieving inflammation, stimulating reparative processes, and restoring the integrity of the oral mucosal epithelium. These observations emphasize the need for a systemic approach that includes not only pharmacological treatment but also monitoring the quality of dentures, their hygiene, and the timing of adjustments.

Discussion.

The study results confirm that comprehensive treatment of contact-allergic stomatitis in patients wearing removable dentures, using desensitizing, antiseptic, and regenerating agents, promotes rapid regression of clinical symptoms and restoration of the morphological structure of the oral mucosa. Already in the first days of therapy, a noticeable reduction in pain, burning, hyperemia, and tissue swelling was observed, indicating a pronounced anti-inflammatory effect.

The combination of systemic and topical approaches provided a comprehensive effect on the pathological process, including suppression of the allergic component, sanitization of the microflora, and stimulation of epithelialization. This approach not only relieved acute

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inflammation but also promoted the activation of reparative processes, as confirmed by both clinical and cytological observations.

Similar data have been reported by foreign researchers. For example, Suresh et al. (2021) noted the high efficacy of topical corticosteroids in the treatment of allergic and inflammatory lesions of the oral mucosa, especially when combined with mild antiseptics. Pereira et al. (2023) also demonstrated the positive effect of plant regenerants, including sea buckthorn oil, on accelerating healing and reducing the recurrence of allergic stomatitis.

It should be emphasized that eliminating the etiologic factor remains the key to successful treatment. Replacement or correction of dentures made of acrylic materials that cause sensitization is a mandatory step in preventing recurrent exacerbations. Failure to adhere to this principle leads to chronicity of the process and reduced effectiveness of drug therapy.

Conclusions.

This study demonstrated that combination therapy for contact allergic stomatitis in patients wearing removable dentures is an effective method for restoring the oral mucosa. The use of desensitizing, antiseptic, and regenerating agents provides a pronounced anti-inflammatory effect, helps reduce hyperemia, swelling, and pain, and accelerates the healing of damaged tissues.

Dynamic monitoring of patients confirmed a significant reduction in the intensity of subjective complaints and a normalization of the mucosal appearance by 10-14 days of treatment. Cytological data indicate a decrease in inflammatory infiltration and activation of reparative processes in the epithelium. Thus, comprehensive treatment not only eliminates the clinical manifestations of the disease but also promotes the restoration of the functional state of the mucosa, which improves the comfort of wearing removable dentures. Complete restoration of the structure and function of the mucosa was observed in most patients within 12-14 days of treatment, demonstrating the high efficacy and good tolerability of the proposed combination therapy regimen.

Preventing recurrence of contact allergic stomatitis requires comprehensive elimination of the etiologic factors contributing to the development of inflammation of the oral mucosa. First and foremost, it is essential to promptly identify and eliminate contact with allergenic components of prosthetic materials by replacing or adjusting the prosthesis. It is also important to consider the patient's individual sensitivity to acrylic resins and use hypoallergenic materials when fabricating orthopedic structures.

Adherence to denture and oral hygiene rules, regular dental cleanings, and preventive dental checkups are also crucial. Regular clinical monitoring allows for the early detection of early signs of mucosal irritation, preventing the development of inflammation and recurrence of the condition.

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