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Review

Allergic and Irritant Contact Dermatitis Clinical Management: A Brief Literature Review

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ABSTRACT

Contact dermatitis, divided into irritant and allergic forms, is a common and significant inflammatory skin condition, particularly in occupational settings. Irritant contact dermatitis (ICD), which predominates in most cases, results from direct skin damage due to repeated or prolonged exposure to irritants such as detergents and industrial chemicals. Allergic contact dermatitis (ACD), on the other hand, stems from a delayed immune response mediated by specific T cells against environmental allergens, including metals and cosmetics. Both conditions significantly affect quality of life, leading to high socioeconomic costs due to prolonged treatment and workplace absenteeism. Differential diagnosis primarily relies on a detailed clinical history and complementary tests, with the patch test standing out for its high sensitivity and specificity in accurately identifying the responsible allergens. In terms of treatment, ICD responds well to eliminating exposure to the irritant agent, whereas ACD often requires more complex pharmacological approaches, including corticosteroids and topical immunomodulators. Furthermore, prevention is essential, mainly through ongoing professional education and the strict implementation of occupational safety protocols, including the proper use of personal protective equipment. Research advances have revealed potential inflammatory biomarkers, such as IL-17 and TNF-α, suggesting future, more individualized and effective therapeutic strategies. Consequently, an integrated approach involving early diagnosis, appropriate treatment and active prevention is crucial to minimize the impact of these dermatoses.

Keywords: Contact dermatitis; Irritant dermatitis; Allergic dermatitis; Patch test; Occupational prevention

Introduction

Contact dermatitis is one of the greatest challenges in dermatology due to its high prevalence, especially in occupational contexts where workers are frequently exposed to specific irritants and allergens[1]. The disease is subdivided into irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD), each with distinct etiological mechanisms, though they may coexist in certain clinical cases[2,3]. Irritant contact dermatitis is caused by direct damage to the skin barrier, typically related to prolonged or repeated exposure to chemical irritants such as detergents organic solvents and industrial cleaning products[4]. It is estimated that ICD accounts for up to 80% of all contact dermatitis cases, underscoring the importance of effective prevention and management in these scenarios. Allergic contact dermatitis involves a type IV hypersensitivity reaction mediated by specific T cells against environmental antigens such as metals, cosmetics and topical medications. After initial allergen exposure, a sensitization process occurs, followed by delayed inflammatory responses in subsequent exposures.

Clinically, ACD presents with erythematous, pruritic and often vesicular lesions, which may progress to chronic forms with lichenification and hyperpigmentation, causing considerable emotional and social impact on patients[5,6]. The clinical relevance of these dermatoses lies not only in their associated morbidity but also in their economic impact, driven by workplace absenteeism and the high costs of prolonged treatment. Moreover, there is growing concern about the difficulty of early allergen identification, particularly in complex work environments, reinforcing the need for accurate diagnostic methods and effective preventive strategies[7]. In this regard, ongoing education for healthcare professionals and the strict implementation of occupational safety standards are essential[8].

Objectives

This study aims to review the main aspects related to the pathophysiology, diagnosis and clinical management of hormonal acne, highlighting modern and integrated therapeutic approaches designed not only to achieve remission of lesions but also to improve patients' quality of life.

Materials and Methods

A bibliographic review was performed, including articles published in the PubMed, ScienceDirect and SciELO databases to support this study.

Discussion

Accurate differentiation between ACD and ICD is critical due to the distinct therapeutic and preventive approaches required for each condition. A detailed clinical history remains a cornerstone of diagnosis, with special attention given to the temporal relationship between exposure to the suspected agent and the onset of symptoms[9]. However, complementary tests, such as the patch test, are indispensable for confirming the diagnosis in suspected cases of allergic dermatitis[10,11]. The patch test is widely recognized for its high sensitivity and specificity in identifying specific allergens, although it demands careful interpretation to avoid diagnostic errors, particularly false positives resulting from local irritation. Recent studies suggest that standardized protocols and well-trained professionals significantly increase test accuracy, which is key to identifying multiple or cross-sensitizations. In terms of therapeutic management, irritant dermatitis typically responds promptly to the removal of the causative agent and basic supportive measures, such as the use of moisturizers and physical barriers. However, allergic dermatitis often requires a more aggressive pharmacological strategy, including high-potency topical corticosteroids and systemic therapies for extensive or refractory cases. Nonetheless, prolonged use of these medications must be carefully assessed due to potential adverse effects, such as skin atrophy, hypopigmentation and, in rare instances, hypothalamic-pituitary axis suppression[12].

New therapeutic options have emerged with nonsteroidal topical immunomodulators, such as tacrolimus and pimecrolimus, whose efficacy is comparable to that of corticosteroids but with a lower risk of systemic adverse effects. Furthermore, recent advances in understanding the immunological mechanisms involved in contact dermatitis have stimulated research into inflammatory biomarkers[13], such as IL-17 and TNF-α, offering promising prospects for targeted therapies in the future. Preventive measures, particularly in occupational contexts, are equally relevant and have demonstrated significant effectiveness in reducing the incidence of dermatitis[14]. Ongoing education about the proper use of personal protective equipment (PPE), the replacement of irritant products with safer alternatives and strict protocols for personal and environmental hygiene are fundamental strategies for both primary and secondary prevention[15].

Conclusion

Contact dermatitis, whether irritant or allergic, remains a prevalent dermatological condition with significant clinical and socioeconomic impact. Accurate and early diagnosis, combined with strict preventive measures and appropriate treatment, is central to the effective management of these conditions. Recognizing the distinct etiological and clinical mechanisms underlying ICD and ACD informs specific intervention strategies, ensuring better symptom control and quality of life for affected patients. The continuous development of new therapeutic agents and the discovery of inflammatory biomarkers have the potential to transform the current treatment landscape, enabling more individualized and effective approaches. Moreover, preventive strategies in the workplace must be prioritized by health managers, as they drastically reduce the prevalence and severity of occupational dermatitis. Educational campaigns and occupational health programs are fundamental for raising awareness about risks and safe practices when handling potentially harmful substances. Finally, future research should continue to explore new diagnostic and therapeutic approaches, particularly those aimed at less invasive and more effective treatments, as well as identifying and controlling emerging environmental and occupational allergens. Interdisciplinary collaboration among dermatologists, allergists, researchers and occupational health professionals will be decisive for significant advances in the field of contact dermatitis.

References

1. Barros T, et al. Uso de luvas na prevenção de dermatite ocupacional. Revista de Segurança no Trabalho 2018;14(3):221-230.
2. Costa ML, et al. Reações alérgicas a metais: um problema emergente. Revista de Pesquisa em Dermatologia 2019;10(2):134-140.
3. Ferreira J, et al. Impacto da dermatite de contato na qualidade de vida. Psicodermatologia em Revista 2019;7(2):89-98.

4. Ghosh D, et al. Contact Dermatitis: Pathogenesis and Management. Derma Res 2022;49(5):545-554.

5. Le Coz CJ, Schutz P. Dermatite de contato: diagnóstico e tratamento. J Derma 2018;42(3):203-212.

6. Lima P, et al. Corticosteroides no manejo da dermatite de contato. Revista de Dermatologia Terapêutica 2021;21(1):33-42.

7. Mark K, et al. Allergic and Irritant Contact Dermatitis: Advances in Diagnosis. Clinics in Derma 2020;37(4):345-354.

8. Monteiro RP, Silva JL. Prevenção da dermatite de contato ocupacional. Saúde e Trabalho 2021;35(2):112-120.

9. Nakamura Y. Innovative Treatments for Skin Inflammation. J Experimental Derma 2023;48(6):567-576.

10. Scalvenzi M, et al. Occupational Contact Dermatitis. Int J Occupational Med 2019;28(5):456-470.

11. Shaw A, et al. Advances in Contact Allergy Testing. Int J Derma 2021;60(2):202-210.

12. Souza AM, Ribeiro LM. Dermatoses ocupacionais: foco na prevenção. Revista Brasileira de Dermatologia 2020;95(6):412-420.

13. Tanaka T. Advances in Biomarkers for Allergic Dermatitis. Immunology Reports 2022;12(1):65-78.

14. Wilkinson M, et al. Patch Testing: Guidelines and Challenges. Derma J 2020;39(4):234-245.

15. Zhao Z, et al. Emerging Therapies in Contact Dermatitis. J Clin Derma 2023;45(3):678-689.