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Beauty and the Rash: The Hidden Risks of Cosmetics in Contact Dermatitis

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ABSTRACT

Contact dermatitis is an inflammatory condition of the skin that occurs when it comes into contact with specific substances or irritants. Cosmetics have been identified as a common cause of contact dermatitis. This research will review previous studies on the relationship between cosmetics and contact dermatitis. Research identifying the most common allergens and irritants present in cosmetic products will be analysed, as well as patch tests used to detect possible allergic reactions. The results of studies that have demonstrated the presence of allergens and irritants in cosmetics, as well as the associated skin reactions, will be presented. Contact dermatitis prevention and management strategies will also be discussed, including identification and avoidance of specific allergens, patch testing, and skin care guidelines. The discussion will focus on the importance of education for both consumers and healthcare professionals about the risks of cosmetics in contact dermatitis. In conclusion, cosmetics pose a hidden risk for the development of contact dermatitis. It is critical that both consumers and healthcare professionals are aware of the common allergens and irritants present in cosmetic products, and take appropriate steps to prevent and manage this condition.

KEYWORDS: dermatitis, inflammation, skin, irritants.

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METHODOLOGY

This review aims to examine the relationship between cosmetics and contact dermatitis, as well as discuss prevention and management strategies for this condition.

We conducted an extensive search of scientific databases, such as PubMed, MEDLINE, Embase and Cochrane Library. Keywords related to "cosmetics", "contact dermatitis", "allergens", "irritants", "allergic reactions", "patch tests", "prevention" and "management" were used. Boolean operators (AND, OR) were used to combine the keywords and expand the search coverage. The search covered studies published from the start date of the databases to the date of the review.

The selected studies were those that addressed the relationship between cosmetics and contact dermatitis. We included research that identified the most common allergens and irritants present in cosmetic products, evaluated patch tests used to detect possible allergic reactions, and discussed strategies for the prevention and management of cosmetic-related contact dermatitis. We excluded studies that were not available in English or Spanish, and those that did not present information relevant to the objectives of the review.

We extracted relevant data from selected studies, such as allergens and irritants identified, associated skin reactions, recommended prevention and management strategies, and patch test results. Data were analyzed and summarized descriptively, identifying trends, patterns, and discrepancies in study findings.

We assessed the methodological quality of included studies using specific criteria according to the type of study. We took into account study design, sample size, validity of tests used, and clear presentation of results. We considered high-quality studies to support the conclusions and recommendations of the review.

It is important to note that the literature search may have missed some relevant studies, despite efforts to include

various sources of information. In addition, the quality and availability of selected studies may influence the results and conclusions of the review.

This methodology allowed an exhaustive review of the literature on the relationship between cosmetics and contact dermatitis. The findings and conclusions derived from this review will provide relevant information for the understanding, prevention and management of this dermatological condition associated with the use of cosmetics.

INTRODUCTION

Contact dermatitis is an inflammatory skin condition that occurs when the skin comes into contact with a specific substance or irritant. It can be irritant contact dermatitis (ICN) or allergic contact dermatitis (ABI).

INN is a non-specific reaction to an irritant, such as chemicals, soaps or detergents. It can affect anyone who comes into contact with these irritants. The prevalence of ICD in the general population is unclear, but represents a significant portion of occupational skin diseases [1].

On the other hand, DCA is an immune-mediated reaction to an allergenic substance. It occurs when the immune system becomes sensitized to a specific allergen, such as fragrances, metals (such as nickel), rubber chemicals, or certain preservatives. A person may not develop DCA after initial exposure, but subsequent exposures may trigger an allergic reaction. DCA is more common in people with a history of atopy or allergic tendencies. The patch test is typically used to identify the specific allergens that cause DCA. [1].

Common triggers of contact dermatitis include certain cosmetics, fragrances, metals (such as nickel), rubber or latex, detergents, soaps, cleaning products, plants (such as poison ivy or poison oak), and certain medications (such as antibiotics or topical creams). Specific triggers may vary depending on the person and their sensitivities [2], [3], [4], [5].

It is important to note that contact dermatitis can occur in various occupations, such as cleaning industry workers, textile industry workers, construction workers, and healthcare professionals, due to their exposure to specific substances or irritants related to their work. [3], [4], [6], [7]. It is crucial to avoid the triggers and irritants that cause the condition to manage and prevent it. [1], (Saarland et al., 2005).

RESULTS

Contact dermatitis is a common skin condition that can affect both the general population and cosmetic users. The prevalence of this condition varies depending on the specific population studied and the allergens involved. In the general population, the incidence of contact dermatitis remains uncertain, but is estimated to account for a significant proportion of all occupational skin diseases, reaching up to 90-95% of cases [1]. It is especially common in industries where workers are exposed to various irritants and allergens, such as the cleaning industry. [3].

Several studies have shown that cosmetic products can cause contact dermatitis. For example, in a study with 310 patients with common contact dermatitis, 115 were found to have allergic contact dermatitis caused by cosmetics. [2]. Another study in India found that the top cosmetic products causing contact dermatitis were bindi/kumkum, hair dyes and deodorants/perfumes [9].

The prevalence of contact dermatitis in cosmetic users may be influenced by factors such as the quality of the cosmetics used. It has been observed that there is a higher incidence of cosmetic dermatitis in adult women, aggravated by the use of substandard cosmetics [9].

The components of cosmetic products can cause the appearance of contact dermatitis in several ways. Contact dermatitis is an allergic or irritant skin reaction that occurs when the skin comes into contact with certain substances.

Cosmetic allergy can happen when the immune system reacts to specific ingredients in cosmetic products. Fragrances are common allergens found in cosmetics, often responsible for allergic reactions, including lichen extracts and compounds, have been identified as frequent sensitizers [2]. [10]. Other common allergens in cosmetics include preservatives such as methylisothiazolinone and chloroisothiazolinone, and emulsifiers [11]. Sensitivity to these allergens can cause contact dermatitis.

Irritant contact dermatitis can also be caused by components of cosmetic products. Ingredients such as preservatives, fragrances and emulsifiers can irritate the skin and cause inflammation and skin damage [10]. In addition, exposure to certain chemicals found in cosmetics, such as toluenesulfonamide resin/formaldehyde, can cause irritant contact dermatitis. [11].

Importantly, the prevalence of contact dermatitis due to cosmetics can vary between different populations and regions. Factors such as the quality of cosmetics and cultural practices can influence the incidence of contact dermatitis [9].

To prevent contact dermatitis, it is essential to identify and avoid specific allergens or irritants in cosmetic products. A patch test may be done to determine substances that may be causing the allergic reaction [12]. Using hypoallergenic or fragrance-free products and following good skin care routines can also help reduce the risk of contact dermatitis.

Preservatives such as Kathon CG have also been implicated in cosmetic-related allergic reactions. [11]. Other common allergens in cosmetics include toluenesulfonamide/formaldehyde resin in nail products and oleamidopropyl dimethylamine in baby body lotions. [11]. It is important to note that there may be regional variations in the prevalence of contact dermatitis due to different cosmetics, as certain cosmetics specific to Indian culture have been found to cause severe skin inflammation. [9].

In addition, benzalkonium chloride, thimerosal, and methylchloroisothiazolinone/methylisothiazolinone

(MCI/MI) mixture are preservatives with high rates of positive tests. [13]. Sensitization to nickel sulfate, potassium

dichromate, and cobalt chloride, commonly found in cosmetics, can also cause contact dermatitis. [14].

It is essential to delve into the correlation between the use of cosmetics and the appearance of contact dermatitis. This is a common skin condition that can significantly affect people's quality of life and can be caused by various factors, including exposure to allergens in cosmetics.

Several studies have highlighted the increased incidence of allergic contact dermatitis (ACD) to cosmetics in the general population [15]. The prevalence of ACD to cosmetics has been found to have increased over time, possibly due to the increasing use, proliferation and diversification of cosmetic products. [15]

A questionnaire study in Israel found that 3.1% of randomly selected clients from pharmacies and beauty salons presented CAD to cosmetics proven with patch testing [16]. Another study in Spain reported a mean prevalence of CAD to cosmetics of 13.9% among patients undergoing patch testing [15].The types of cosmetic products most frequently associated with cases of contact dermatitis are skin care products, hair preparations (including dyes) and facial makeup products. [17], [18], [10]. These products have been identified as the main culprits in causing allergic reactions and dermatitis. Fragrances, preservatives, lanolin and its derivatives, p-phenylenediamine and propylene glycol are some of the common ingredients found responsible for these reactions. [18], [11].Based on the available literature, variations in the prevalence of contact dermatitis have been observed among users of different categories of cosmetics. A study conducted in India [9] identified bindi/kumkum, hair dye and deodorant/perfume as leading causes of contact dermatitis. Another study in the cleaning industry [3] He highlighted specific cleaning products, such as rubber chemicals and disinfectants, as contributors to occupational contact dermatitis. In addition, a study focused on atopic individuals [19] It found that substances present in topical dermatological products were more likely to be associated with contact allergy in individuals with atopic dermatitis. However, it is important to note that these studies focus on specific populations and may not provide a comprehensive understanding of the prevalence of contact dermatitis across all categories of cosmetics.Factors such as age, sex, and skin type can influence the likelihood of developing contact dermatitis among cosmetic users. In terms of age, contact dermatitis is prevalent among pediatric, adolescent, and young adult populations. [20]. In terms of sex, women tend to have a higher incidence of cosmetic dermatitis, possibly due to the use of inferior quality cosmetics. [9]. On the other hand, men may have a higher risk of developing contact allergy to specific allergens found in cosmetic glues. [21]. Skin type also plays a role, with certain dermatological conditions being more common in occupation or complexion groups. [22], [23]. Considering these factors is crucial when assessing risk and managing contact dermatitis in individuals. [24].

The impact of the frequency and duration of cosmetic use on the prevalence of contact dermatitis has been investigated in several studies. A study conducted in northern India found that frequent use of substandard cosmetics was associated with a higher incidence of cosmetic dermatitis, especially in adult women [9]. Another study by the North American Contact Dermatitis Group found that women were more likely to experience allergic reactions associated with cosmetic sources compared to men. [25].

In addition, research focused on adolescents revealed that contact dermatitis was more prevalent in white girls, with nickel sulfate and tosylamide-formaldehyde resin being common sensitizers. [26]. Moreover, a retrospective study comparing individuals with atopic dermatitis with those without it found a lower likelihood of contact allergy to nickel, cobalt, and primin in the atopic dermatitis group. [19].

The management of contact dermatitis caused by cosmetics involves several strategies. The first is the identification and avoidance of specific allergens or irritants through patch testing. [9]. Once identified, products containing such ingredients should be avoided. It is advisable to minimize the number of cosmetic products used and simplify the skin care routine. For symptom management, topical corticosteroids or prescribed medications are often used to relieve inflammation and itching. During flare-ups, cold compresses and over-the-counter antihistamines can provide relief. It is essential to educate individuals about contact dermatitis and possible allergens in cosmetic products for its prevention. Patch testing is encouraged before using new products and keeping a record of products that have caused previous reactions. A combination of allergen avoidance, proper skin care, and medical management can effectively manage and treat contact dermatitis caused by cosmetic products, always with regular follow-up with a healthcare professional. [27], [2].

In addition, some extra precautions should be considered, such as reading product labels carefully before purchasing, choosing hypoallergenic and fragrance-free products, avoiding sharing cosmetics, practicing good hygiene, and being aware of cosmetic expiration dates. Some individuals find that using natural or organic cosmetics reduces their risk of contact dermatitis [28].

Healthcare professionals provide valuable assistance in the management of cosmetic-induced contact dermatitis, including accurate diagnosis, allergen education and avoidance, recommendation of treatment options and skin care routine, follow-up and ongoing care, and potentially referrals to dermatologists or allergists for specialized care. They also empower patients by educating them on self-care measures, including identifying potential triggers and effectively managing outbreaks. [20], (Saarland et al., 2005).

Understanding the correlation between cosmetic use and the occurrence of contact dermatitis is crucial for several reasons. First, it helps healthcare professionals and consumers identify potential allergens and irritants in cosmetic products, allowing them to make informed decisions about the products

they use. This knowledge can contribute to the prevention and management of contact dermatitis [15].

DISCUSSION

Recent research has highlighted the prevalence and factors related to cosmetic-induced contact dermatitis. Contact dermatitis is a common skin condition that can be caused by allergens or irritants present in cosmetic products [1]. It has been observed that contact dermatitis is especially common in industries where workers are exposed to various irritants and allergens, such as the cleaning industry. [3].

In the general population, the exact incidence of contact dermatitis remains uncertain, but it is estimated to account for a significant proportion of all occupational skin diseases, reaching up to 90-95% of cases [1]. Several studies have shown that cosmetic products can trigger allergic contact dermatitis. For example, cosmetics have been found to be responsible for a considerable proportion of contact dermatitis cases in patients studied, such as in a study in which 115 out of 310 patients with common contact dermatitis were found to have allergic contact dermatitis caused by cosmetics. [2].Contact dermatitis can be caused by different ingredients present in cosmetic products. Common allergens include fragrances, preservatives, and emulsifiers [10], [11]. These ingredients can trigger allergic reactions in sensitive individuals, leading to the appearance of contact dermatitis. In addition, some components, such as preservatives, fragrances, and emulsifiers, can also cause irritant contact dermatitis by directly irritating the skin. [10].

The prevalence of cosmetic-related contact dermatitis can vary between different populations and regions. Factors such as the quality of cosmetics and cultural practices can influence the incidence of contact dermatitis [9]. For example, a higher incidence of cosmetic dermatitis has been observed in adult women, possibly due to the use of substandard cosmetics. [9].To prevent contact dermatitis, it is essential to identify and avoid specific allergens or irritants present in cosmetic products. Patch tests can be helpful in determining substances that may be causing the allergic reaction [12]. In addition, it is recommended to use hypoallergenic or fragrance-free products and follow good skin care routines to reduce the risk of contact dermatitis.

It is important to note that the prevalence of contact dermatitis and the ingredients involved may vary depending on geographical location, individual sensitivities and formulation of cosmetic products. [17]. Therefore, it is critical to conduct further research to better understand the relationship between cosmetic use and contact dermatitis in different populations and categories of cosmetic products.

In the management of cosmetic-induced contact dermatitis, identification and avoidance of specific allergens or irritants is crucial [9]. Topical corticosteroids or prescribed medications may be used to relieve inflammation and itching [27]. In addition, education about contact dermatitis and possible allergens in cosmetic products is essential to prevent future reactions. [27], [2]. Healthcare professionals play an important role in accurately diagnosing, educating the patient, and recommending appropriate treatment and skin care options. [20], (Saarland et al., 2005).

CONCLUSION

The study of cosmetic-induced contact dermatitis is of great importance due to its multiple implications. Understanding the allergens and irritants present in cosmetic products allows us to identify and avoid those ingredients that can trigger adverse skin reactions. This contributes to the prevention of contact dermatitis and the proper management of this condition. In addition, knowledge in this field improves the quality of life of people affected by contact dermatitis, by reducing bothersome symptoms and minimizing outbreaks. It also promotes education and awareness about the potential risks associated with cosmetic products, empowering consumers to make informed decisions about the products they use in their personal care routine. Ultimately, research into cosmetic-induced contact dermatitis has a significant impact on people's health and well-being, while encouraging safer and more responsible practices in the cosmetics industry. It is an ever-evolving field that seeks to ensure the safety and quality of cosmetic products, while promoting skin health and consumer confidence.

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