



Steroid-induced dermatoses: a challenge for modern dermatology

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The aim of this work is to determine the variability and significance of motivating and provoking factors associated with the uncontrolled use of topical glucocorticosteroids, psychological features of this condition.

Materials and methods. 50 patients with exacerbation of inflammatory dermatoses after long-term topical application of drugs with glucocorticosteroids as an active substance were examined. The key diagnostic measures were a clinical examination, an anamnesis collection with clarification of the activity class of the used agent, duration and potential reason for its systematic or periodic use. Assessment of the psycho-emotional state in relation to self-perception of one's own body was carried out using the dermatological version of the dysmorphic disorder questionnaire – BDDQ-DV.

Results. The main pathology for which patients of both sexes used this group of drugs were rosacea, perioral dermatitis, and seborrheic dermatitis. Taking into account anamnestic data, the mean duration of application of topical corticosteroids in creams, ointments or lotions was 10.25 ± 3.50 months for women and 8.3 ± 1.6 months for the male cohort. Most patients received information about the need to use a topical steroid from acquaintances / friends and pharmacists. The most frequent pharmacological agent was betamethasone dipropionate.

Analyzing the psychopathological aspect of the studied group, dysmorphic manifestations are prevalent and the most well argued. 32 individuals (64 %) from the cohort met the criteria for concern about the body or its parts.

Conclusions. Regional clinical features of steroid-induced dermatoses, which are mostly represented by chronic inflammatory conditions located in aesthetically significant areas, have been determined. 64 % of patients with steroid-induced dermatoses develop a psychopathological profile. An important aspect remains the necessity to raise the awareness of medical, pharmaceutical workers, and the public about the need and correct use of topical corticosteroids.

Keywords: glucocorticosteroids, inflammation, dermatoses, dermatitis, body dysmorphic disorder, diagnosis, treatment.

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Глюкокортикостероїд-залежні дерматози: виклик для сучасної дерматології

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Мета роботи – визначення варіабельності та значущості мотиваційних і провокаційних факторів, асоційованих із неконтрольованим використанням топічних глюкокортикостероїдів, психологічних особливостей цього стану.

Матеріали і методи. Обстежили 50 пацієнтів із загостренням запальних дерматозів після тривалого місцевого нанесення лікарських засобів із глюкокортикостероїдами як діючою речовиною.

Ключові діагностичні заходи – клінічний огляд, збір анамнезу з уточненням класу активності використаного засобу, тривалості та потенційної причини систематичного або періодичного його використання. Психоемоційний стан щодо самосприйняття власного тіла оцінювали за допомогою дерматологічної версії опитувальника дисморфічного розладу – BDDQ-DV.

Результати. Основні патології, внаслідок яких пацієнти обох статей використовували препарати цієї групи, – розацеа, періоральний дерматит і себорейний дерматит. Згідно з анамнестичними даними, середня тривалість нанесення місцевих кортикостероїдів у формі кремів, мазей або лосьйонів становила $10,25 \pm 3,5$ місяця для жінок і $8,3 \pm 1,6$ місяця для чоловіків. Інформацію про необхідність використання топічного стероїду більшість пацієнтів отримали від знайомих / друзів і фармацевтів-провізорів. Найчастіший активний фармакологічний компонент – бетаметазону дипропіонат.

Проаналізувавши психопатологічний аспект обстежених, встановили: дисморфічні прояви превалюють і є найбільш аргументованими. Із загальної когорти 32 (64 %) особи відповідали критеріям стурбованості щодо тіла або окремих його частин.

Висновки. Визначено регіональні клінічні особливості стероїд-залежних дерматозів, які здебільшого є хронічними запальними станами, виникають на естетично значущих ділянках. У 64 % пацієнтів зі стероїд-залежними дерматозами формується психопато-

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Keywords: glucocorticosteroids, inflammation, dermatoses, dermatitis, body dysmorphic disorder, diagnosis, treatment.

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логічний профіль. Нагальною залишається потреба у підвищенні обізнаності медичних, фармацевтичних працівників і населення щодо необхідності й коректного використання топічних кортикостероїдів.

Ключові слова: глюкокортикостероїди, запальні дерматози, дисморфічний розлад, діагностика, лікування.

Актуальні питання фармацевтичної і медичної науки та практики. 2024. Т. 17, № 2(45). С. 176-181

In recent years, the widespread use of glucocorticosteroids in dermatological practice was marked not only by the opening of new horizons in the treatment of inflammatory dermatoses but also by several challenges that are increasingly difficult to overcome in modern conditions. Indeed, a significant advantage of these drugs in systemic and topical forms is the rapid elimination of inflammatory lesions on the skin. On the other hand, their uncontrolled use led to the emergence of a new nosological unit – steroid-induced dermatoses. The problem's urgency is discussed not only on the sidelines of the medical community. Thus, when evaluating social networks, S. Bowe et al. determined that mentions of the hashtag “withdrawal of topical corticosteroids” increased by 274 % in 2020 compared to 2016 [1].

In researching this topic, one may encounter a wide array of synonymous definitions, such as withdrawal phenomenon, addiction syndrome, or ‘red skin,’ of the concept of steroid-induced dermatoses. But despite this, the context is constant and uncompromising. Steroid-induced dermatoses refer to pathological changes in the skin resulting from uncontrolled, long-term, and inadequate use of systemic and/or topical corticosteroids. Clinical manifestations will vary depending on the primary condition of the skin (such as psoriasis, rosacea, and acne), unifying signs are the simultaneous increase of both subjective (such as itching, burning, and sleep disturbances) and objective manifestations (such as active involvement in of the pathological process of larger areas, pronounced exudative outbreaks of exacerbation, tolerance to previous treatment) [2].

It's important to note the classic expected side effects of long-term corticosteroid use, including hypertrichosis, acneiform rash, telangiectasia, and skin atrophy. Identifying a single dominant factor that triggers this condition is challenging, as it typically involves a combination of contributing factors. First of all, social conditions are a catalyst not only for the activity of exacerbations of dermatoses, but also for the formation of difficulties in obtaining medical care. Insufficient economic levels, natural disasters, and wars pose a significant danger to the medical system and the recipients of medical services, ordinary patients. In such circumstances, individuals may lack access to in-person consultations and resort to self-treatment or follow advice from acquaintances when selecting medications.

Among dermatological patients, glucocorticosteroids often serve as a “lifeline” due to their rapid action. However, without a proper understanding of prescribing tactics, this treatment approach can lead patients to a “dead end” from which it's difficult to escape without qualified assistance. The beginning of a full-scale war in Ukraine demonstrated this trend among dermatological patients. The progression of the “snowball effect” in patients is quite telling: skin appearance

or exacerbation of the condition → prolonged uncontrolled corticosteroid use → drug withdrawal with initial improvement → rapid and aggressive exacerbation of the condition → lack of response to previous therapy, necessitating increased steroid dosage → emergence of concurrent topical / systemic side effects.

The second, but no less important reason for the increase in the number of steroid-dependent dermatoses is uncontrolled over-the-counter access to these drugs.

Therefore, the medical community must establish a unified approach to the appropriate prescription of hormonal therapy and the development of management protocols for patients exhibiting pathological resistance to glucocorticosteroid medications.

Aim

The aim of this work is to determine the variability and significance of motivating and provoking factors associated with the uncontrolled use of topical glucocorticosteroids, psychological features of this condition.

Materials and methods

Based on the Department of Dermatovenerology and Aesthetic Medicine of Zaporizhzhia State Medical and Pharmaceutical University, 50 patients with exacerbation of inflammatory dermatoses after long-term topical application of drugs with glucocorticosteroids as an active substance were examined.

The exacerbation was characterized by active inflammation resistant to previous therapy, extending beyond the boundaries of the existing dermatosis. In addition to clinical assessment of the skin condition, key diagnostic measures included gathering anamnestic data to determine the potency class of the agent used, its duration, and the potential reasons for systematic or periodic use.

Assessment of the psycho-emotional state of self-perception of the appearance of one's own body and appearance defects was carried out using the dermatological version of the dysmorphic disorder questionnaire – BDDQ-DV (The Body Dysmorphic Disorder Questionnaire – Dermatology Version).

Statistical processing of the obtained results was carried out on a personal computer in the program Statistica® for Windows 13.0 (StatSoft Inc., license No. JPZ804I382130ARCN10-J).

Results

The gender distribution of the studied sample shows a slight female predominance, with 28 women and 22 men examined, constituting 56 % and 44 % of the total number, respectively. This suggests a tendency towards frequent and uncontrolled use of topical steroids in both sexes. It is noteworthy that the average age among women was 28.7 ± 9.2 years, while among

Table 1. Distribution of the main nosologies among patients of different genders

| The initial reason | Men (n = 22) | Women (n = 28) |
|--|--------------|----------------|
| Rosacea | 10 (45.5 %) | 9 (32.1 %) |
| Perioral dermatitis | 2 (9.1 %) | 8 (28.6 %) |
| Psoriasis | 2 (9.1 %) | 4 (14.3 %) |
| Balanitis/eczema of the scrotum (in men), eczema of the hands (in women) | 2 (9.1 %) | 2 (7.1 %) |
| Seborrheic dermatitis | 6 (27.2 %) | 3 (10.8 %) |
| Hyperpigmentation | – | 2 (7.1 %) |



Fig. 1. The result of uncontrolled use of topical steroids. **a:** steroid-induced perioral dermatitis; **b:** eczema.

men it was 39.5 ± 15.0 years. These findings may suggest an earlier initiation of effective cosmetic or medical products among women, partially explaining the earlier exposure to corticosteroids.

The main pathology for which patients of both sexes used this group of drugs was the presence of a skin disease with a tendency to facial localization – rosacea, perioral dermatitis and seborrheic dermatitis (Table 1).

Both papules with silver-white peeling on the surface in psoriasis and pustules in acneiform diseases are highly stigmatizing among dermatological patients. Moreover, the appearance of a relatively stable clinical picture, characterized by a recurrent rash on visibly exposed areas of the body, often leads to despondency among our patients, prompting them to constantly seek changes in treatment tactics. This search inevitably leads to the use of topical corticosteroids due to their accessibility and rapid anti-inflammatory effects. As seen in Table 1, there are cases of men with genital lesions and a history of steroid addiction. For instance, one patient in the observation group reported using a combined remedy after each intercourse for two years, eventually leading to the appearance of the “red scrotum” sign.

The duration of the development of addiction is a rather individualized concept that is challenging to accurately quantify. Clinical manifestations such as abnormally altered skin reactivity to previous therapy and difficulties in controlling persistent remission serve as the main indicators. Based on the anamnestic data, the average duration of topical corticosteroid application in the form of creams, ointments, or lotions was 10.25 ± 3.5 months for women and 8.3 ± 1.6 months for the male cohort. For instance, among the studied sample, the patient with perioral dermatitis held the record for the longest duration of product application, using a steroid cream daily or every other day for 2 years (Fig. 1a), while the highest frequency of use was observed in a patient with eczema, who applied the active agent 5 times a day for 7 days (Fig. 1b).

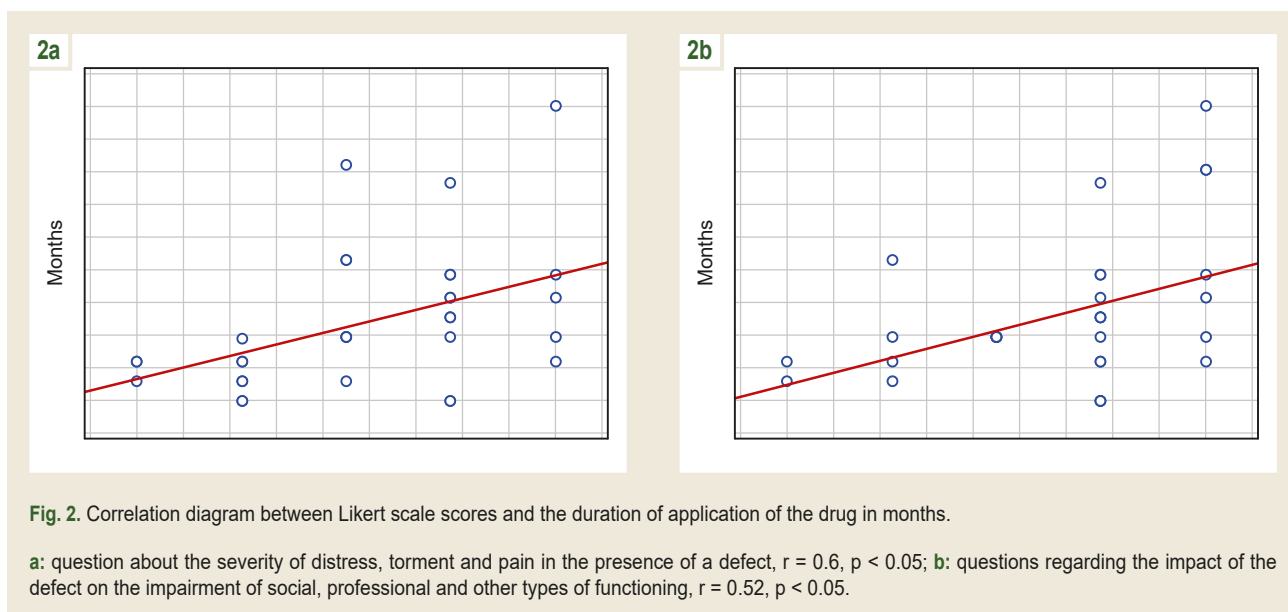
Table 2 illustrates that betamethasone dipropionate emerged as the most commonly used pharmacological agent. This trend can be attributed to its widespread popularity among family physicians and its inclusion in official combined formulations (antimycotic-antibiotic-steroid). Unfortunately, there is a concerning tendency towards the prolonged and unverified use of the potent clobetasol, even on the sensitive skin of the face and genitals. The relatively lower cost of

Table 2. Characteristics of a topical agent in the formation of a steroid-induced state

| Active ingredients | Number of patients, n = 50 |
|----------------------------|----------------------------|
| Betamethasone dipropionate | 16 (32 %) |
| Clobetasol propionate | 12 (24 %) |
| Fluticasone propionate | 6 (12 %) |
| Mometasone furoate | 9 (18 %) |
| Fluocinonide | 4 (8 %) |
| Fluocinolone acetonide | 3 (6 %) |

Table 3. Distribution of primary sources when providing advice on the need to prescribe topical corticosteroids

| Source of advice | Number of patients, n = 50 |
|--------------------------------------|----------------------------|
| Acquaintances / friends / colleagues | 27 (54 %) |
| Pharmacist | 11 (22 %) |
| Advertising in social networks | 9 (18 %) |
| Advice from a family physicians | 3 (6 %) |



fluorinated corticosteroids also contributes to their continued prominence in this ranking of drugs associated with the “withdrawal phenomenon”.

In the context of this topic, the source of recommendations regarding the safety, dosage regimen, and overall necessity of prescribing a topical corticosteroid is equally important. An analysis of the anamnestic data revealed that the majority of patients received information about the use of topical steroids from acquaintances / friends and pharmacists (Table 3). Such a selection process undermines the effective and safe management of patients with skin diseases. For instance, perioral dermatitis or rosacea, conditions prevalent in the majority of our studied sample, are generally contraindicated for treatment with corticosteroids, especially in the context of daily, routine application.

When trying to establish the main motive for the need to use topical glucocorticosteroids, the psychological profile of the studied patients comes to the fore. During the initial conversation, most of the recipients demonstrated physical dissatisfaction with their appearance, primarily due to the activity of the main dermatological disease. Topical corticosteroids were perceived as a means to achieve rapid clinical improvement, fulfilling this need for quick results.

Analyzing the psychopathological aspect of the studied sample, dysmorphic manifestations are prevalent and the most well-argued. 32 persons (64 %) from the general cohort met the criteria for concern about the body or its parts. Thus, for these patients, the affirmative answer was accompanied by questions not only about the immediate presence of body anxiety but also about regular thoughts around this problem.

It is worth noting that excessive attention is paid to those areas where there is the greatest concentration of rash elements. Also, the vast majority of those interviewed according to additional criteria defined their defect as stigmatizing: causes pronounced distress ($n = 21$) and affect quality social functioning ($n = 26$), corresponding to indicators on the Likert scale of more than 3 within the range BDDQ-DV. When studying Spearman's correlation, a noticeable relationship was found between the points on the above scale and the duration of application of the product (Fig. 2a, 2b). This, in turn, demonstrates the following behavioral pattern: the greater the impact of dysmorphic disorder, the longer the patient used topical corticosteroids.

Thus, the presence of dysmorphic disorder can serve as a modifying factor, prompting patients with initial dermatosis to more actively use topical corticosteroids to minimize the defect, hide it from the social environment, and mask it from themselves.

Discussion

Considering the estimation of individual analyst groups, the topical corticosteroid sales market, showing a compound annual growth rate of 6 % during 2021–2030, will reach USD 8.19 billion by the end of this period [3]. This rather indicative marketing assessment correlates with the real clinical need for these tools, particularly in dermatological practice. The objectively pronounced anti-inflammatory effect and speed of action ensure an increase in the level of popularity of this group of drugs. But the “cornerstone” in this case is precisely the correctness of their appointment: adequate in terms of duration, dosage, and suitability for one or another nosology. Therefore, it is important to focus on their correct use, without provoking polar states: steroid addiction and steroidophobia [4,5,6].

The variety of initial dermatoses is quite heterogeneous and varies widely depending on the demographic and social characteristics of the studied sample. Thus, according to Jain et al. solving aesthetic problems to eliminate hyperpigmentation became the primary reason in the context of the need to use topical corticosteroids [7]. Other studies show the dominance of acne or dermatophytes [8,9]. The appearance of these nosologies in the list may be related to the peculiarities of the epidemiological distribution of diseases and traditional treatment schemes for each region. It is worth noting that in our work there is a significant advantage of acneiform diseases as the root cause of the start of steroid use. And such a trend in the modern dermatological discourse, regarding the registration of facial dermatoses, leads to the appearance of new nosological units – “topical steroid-induced perioral and rosacea-like dermatitis” [10,11]. Compared to our data, pigmentation disorders are not prevalent, which can be explained by the peculiarities of the phototype, the difference in exposure to ultraviolet radiation, and the choice of other, more often laser, methods in the treatment of melasma.

Analyzing the literature sources on the pharmacological characteristics of drugs that provoke steroid-induced con-

ditions, we have results quite similar to our work. After all, clobetasol, betamethasone, and mometasone are the most frequently used agents in skin diseases [7,9,12]. The frequent use of these agents in combinations and over-the-counter availability are the main reasons for their popularity among the population, which, according to various scientific studies, is more often guided by the advice of friends or not profile specialists [13,14].

The chronic course of the disease with an active skin rash on the one hand and the desire to meet the generally accepted norms of “beauty” on the other – often push our patients to take a rash step in listening to the advice of colleagues. Thus, the expediency and duration of corticosteroid use is not a reasoned professional point of view.

Indeed, the manifestation of a steroid-induced condition may not solely be attributed to a lack of qualified care or the patient's limited medical knowledge. A basic change in the psycho-emotional background can be one of the dominant factors. Brookes et al. show a certain tendency to register in patients with withdrawal syndrome anxiety, depression, and even suicidal thoughts [15]. Moreover, according to a systematic review, body dysmorphia is observed in 12.65 % of dermatological patients and 15.04 % of clients seeking plastic surgery services [16]. Considering the insufficient number of relevant literary sources regarding the influence of steroid-induced dermatoses on body self-perception, it is rather difficult to talk about the possibility of comparing their results with our own. But, at the same time, the quite indicative level of self-esteem violation in the studied sample indicates the prospects for further analysis of this topic, expanding the boundaries of clinical psychodermatological practice.

In addition to the above, another question arises, which, is another challenge for a modern specialist. What should be the tactics of treatment of patients with steroid-induced dermatosis? According to the literature, possible options are the appointment of a weaker steroid, antibiotics, or topical calcineurin inhibitors [10]. There are reports of the 10 % tranexamic acid and the JAK1 inhibitor abrocitinib in steroid-dependent manifestations of rosacea [17,18]. Undoubtedly, it is necessary to try to reduce the level of addiction, but there is no single regulated way.

Thus, given the rather long and undeniably effective history of topical corticosteroids in dermatological practice, there is still a need to increase awareness regarding the product for medical professionals and the public. The introduction of prescription dispensing of this group of drugs in the pharmacy network can play a significant role. Only their correct and appropriate use will be able to remove the “halo” of phobias and prejudices about steroids, leaving only evidence and effectiveness.

Conclusions

1. Regional clinical features of steroid-induced dermatoses, which are predominantly represented by chronic inflammatory conditions located in aesthetically significant areas, have been determined.

2. In 64 % of patients with steroid-induced dermatoses, a psychopathological profile is formed, which is represented by dysmorphic manifestations.

3. An important aspect remains the need to raise the awareness of medical, and pharmaceutical workers and the public about the need and correct use of topical corticosteroids. The recognition of the professional opinion of a healthcare worker should authoritatively surpass the statements of the mass media, consulting pharmacists, advertising integrations, or the “experience” of acquaintances due to the introduction of prescription dispensing of drugs of the specified group.

Prospects for further research. The obtained data will serve as the basis for the formation of a diagnostic and therapeutic algorithm for patients with steroid-induced conditions. The information on the psychopathological profile of patients will expand the limits of the examination of psychodermatological consultations.

Conflicts of interest: authors have no conflict of interest to declare.
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