EVALUATION OF THE EFFECTS OF A COSMETIC CREAM ON IRRITANT CONTACT DERMATITIS: RESULTS OF A MULTICENTRE OPEN TRIAL

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The symptoms of irritant contact dermatitis (ICD) are often controlled by topical corticosteroids, which, however, are not suitable for the long-term management owing to the risk of side effects. Moisturizers can be used to prevent ICD and to treat lesions of mild to moderate severity. In this study we want to assess the effectiveness and tolerability of a cosmetic cream (Efaderm® cream), containing a mixture of substances with moisturizing, anti-inflammatory and antioxidant effects (*borago officinalis* oil, soy sterol, urea, lithium glycyrrethinate, carbocysteine, tocopheryl acetate, coenzyme Q10, allantoin), in the treatment of ICD. Three hundred and twelve patients with ICD entered the study. ICD was induced by either occupational or non-occupational factors, affected various skin sites, especially the hands, and was characterized by a subacute, recurrent or chronic course in the majority of cases. The cream was applied on lesional skin twice a day, or more frequently if needed, for approximately 4 weeks. Most patients (n. 179) did not adopt preventive measures (e.g., irritant avoidance, suspension of working activities, use of protective gloves). After treatment, there was a significant improvement ($p<0.001$) of symptoms and signs of ICD (erythema, scaling/dryness, oozing/crusting, excoriations/fissuring, pruritus/burning), independently on the use of prevention. Patient's assessment of overall effectiveness was positive in the majority of cases.

Irritant contact dermatitis (ICD) is a common inflammatory skin disorder and also a major problem in occupational medicine (1). Most cases of ICD follow the repeated exposure to physical or chemical factors, even if characterized by a relatively weak irritating potential, which cause inflammation and damage of the epidermal barrier, thus creating the premises for a self-perpetuating cycle if effective measures are not taken. The development of ICD depends on the nature, concentration and duration of contact with the irritant, although other environmental and individual factors may be contributory. Prevention plays a primary role in the treatment of ICD (2), but, unfortunately, there are cases in which the identification and avoidance of causative factors is difficult. Topical corticosteroids can be used to suppress relevant signs of inflammation, but they are not suitable for the long-term management owing to the risk of side effects. Cosmetic preparations, containing anti-inflammatory and moisturizing substances, can be a reasonably useful and safe approach to mild to moderate forms of ICD. The aim of this study was to assess the effects of a cosmetic cream in the management of ICD.

MATERIALS AND METHODS

The study population consisted of 312 patients,

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175 female and 137 male, aged between 2 and 85 years (mean age 36.8), fulfilling the criteria for ICD. The following conditions were excluded: skin infections, allergic contact dermatitis, hypersensitivity to any ingredients of the study cream, nummular eczema, atopic dermatitis, pompholyx, psoriasis, and severe hyperkeratotic lesions. The occupational characteristics and risk factors of the study population are shown in Table I, along with the irritants possibly involved. ICD had a recurrent or chronic course in most cases and was variably localized, with the hands being the most affected areas (Table II).

After an adequate wash-out period from active treatments, a cosmetic cream containing various substances with moisturizing and lenitive properties (Efaderm® cream, Pergam, Italy) was applied twice a day (b.i.d.) on the affected skin areas for approximately 4 weeks; patients could increase the frequency of daily applications as needed. Any treatment apt to influence ICD was prohibited during the study and, anyway, should have been reported. At the same time, the use of any kind of prevention during the observational period had to be specified.

The severity of skin lesions was evaluated at baseline and after treatment, using a four-score rating scale (0= absent; 1= mild; 2= moderate; 3= notable) for the following items: erythema, scaling/dryness, oozing/crusting, excoriations/fissuring, and burning/pruritus. Wilcoxon's test was used for statistical evaluation at the post-treatment visit versus baseline; the comparison of the median values on the differences observed between patients who used preventive measures and those without prevention was performed using *t*-test for independent data. Statistical significance was defined as $p<0.05$. Patients and physicians expressed independently their opinion on the efficacy of the treatment, rating it as absent, poor, fair, good or excellent. Patients were also requested to give a judgement on treatment acceptability.

RESULTS

The average period of treatment was 4.5 weeks (range: 3-6 weeks). Most patients (223) applied the cream b.i.d.; instead, the number of daily applications was 1 or 2 in 10 cases, 2 up to 3 in 63 cases and 4 in 16 patients. The need of a higher frequency in the applications was registered in chronic forms with severe dryness, scaling and fissuring. Overall compliance to treatment appeared to be satisfactory in all cases but 5.

Tab. I. *Occupational characteristics, risk factors and irritants presumably involved in the study population.*

	N. of patients (Total: 312)
Occupations	
Housewives	79
Clerks	33
Students	31
Bricklayers	17
Nurses/physiotherapists	15
School teachers	14
Factory workers (not further specified)	14
Hairdressers	13
Farmers	11
Cleaners/domestics	9
Mechanics	8
Lawyers	6
Physicians	5
Traders	5
Dental/laboratory technicians	4
Entrepreneurs	4
Unemployed	4
Cooks	3
Greengrocers	3
Petrol station attendants	3
Shop assistants	3
Fishermen	2
Pharmacists	2
Pharmaceutical representatives	2
Postmen	2
Other jobs	16
None (children)	4
Irritant factors	
Cleansings/detergents/soaps	132
Cosmetic products/fragrances	34
Physical (heat, cold, humidity, rubbing, trauma, laser-therapy)	32
Cement, lime, parget materials	11
Disinfectants	11
Metals	11
Rubber gloves	11
Hairdressing products	10
Cutting oils, petrol, lubricants	9
Dyes, temperas, pastels	9
Blackboard chalk	8
Fertilizers/pesticides	8
Textile dyes and fibres	8
Vegetables	8
Plants	6
Shoes	5
Varnishes	5
Adhesives	4
Solvents/thinners	4
Latex	3
Abrasives	3
Dust	3
Alcoholic products	2
Drugs	2
Not known/not specified	30
Risk factors	
Occupational activity	143
Absent/not known	123
Atopy	41
Hobbies	5
Senile skin	4
Psychic stress	3
Acrocyanosis	1

Tab. II. *Localization and clinical course of ICD in the study population.*

	N. of patients (Total: 312)
Localization	
Hands	199
Face	44
Forearms	30
Chest/décolleté	13
Legs	12
Neck	10
Feet	9
Lower limbs	8
Wrists	8
Eyelids/periorbitary area	7
Lips/perioral area	6
Upper limbs	4
Trunk	4
Thighs	3
Groins	3
Others	5
Clinical course	
Acute	54
Subacute or progressively worsening	57
Chronic-recurrent	92
Chronic (stable)	109

During the study period, only 6 patients used prohibited drugs (e.g., H1-receptor antagonists); these cases were however included in the final analysis as the administration of antihistamines occurred sporadically (maximum for three times) within the first week and was considered unlikely to have induced relevant effects on ICD. One hundred and seventy-nine patients did not use any preventive measures during treatment whereas at least a type of measure was reported by 133 patients, namely protective gloves in 85 patients, irritant avoidance in 61 cases, and temporary cessation of work in 11.

After treatment, disease severity notably improved, with a variation of the total average score to 2.9 from 8.2 of baseline and a significant reduction of the intensity of symptoms and signs ($p<0.001$) (Fig. 1). The overall effectiveness was considered mostly positive by both patients and investigators (Tab. III); the acceptability of the cream was rated as good or excellent by 251 (80%)

Tab. III. *Opinion on treatment's efficacy and acceptability.*

	Absent	Poor	Fair	Good	Excellent
Patient's opinion on efficacy					
N. (%)	0	11 (3.5)	74 (24)	180 (57.5)	47 (15)
Investigator's opinion on efficacy					
N. (%)	0	6 (2)	64 (20.5)	201 (64.5)	41 (13)
Patient's opinion on acceptability					
N. (%)	0	7 (2)	54 (17.5)	178 (57.2)	73 (23.3)

Tab. IV. *Response rate in dependence onthe use of preventional measures.*

Response rate*	Patients (%) with prevention (Total N. 133)	Patients (%) without prevention (Total N. 179)
Poor	1 (0.8)	3 (1.6)
Poor/fair	4 (3)	5 (2.8)
Fair	18 (13.5)	19 (10.6)
Fair/good	14 (10.5)	41 (23)
Good	68 (51.2)	64 (35.7)
Good/excellent	24 (18)	38 (21.3)
Excellent	4 (3)	9 (5)

*indicates the opinion on efficacy of both the patient and the investigator

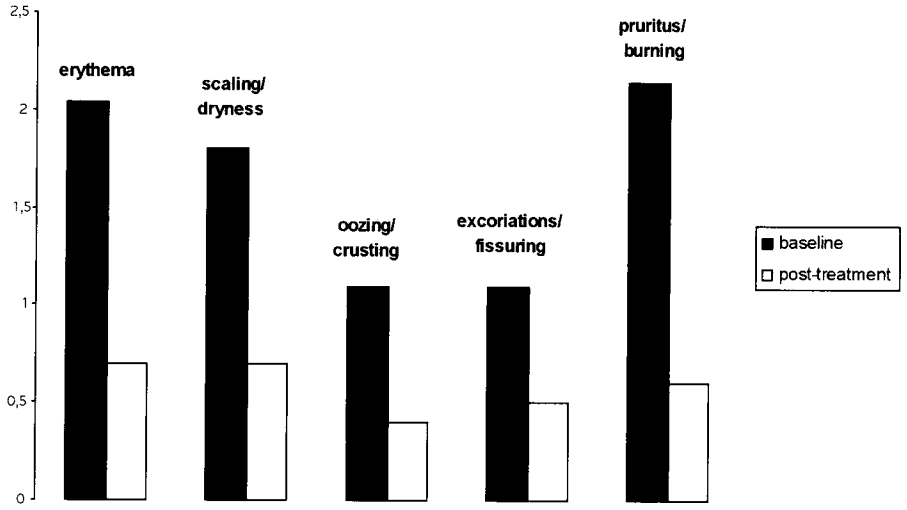

Fig. 1. *Variations of clinical score during treatment.*

patients (Tab. III). The addition of prevention did not cause substantial differences in the extent of clinical response ($p>0.05$) and in the distribution of response rating (Tab. IV).

No relevant adverse effects were noted; only three patients complained of mild and transient burning at the sites of application in the first days of treatment.

DISCUSSION

In ICD the avoidance of irritants is crucial and mandatory. Unfortunately, the identification of causative factors may be not simple, and it can be hard to carry out and put into practice a regular prevention. The role of protective "barrier" creams in minimizing the impact of irritant exposure has been questioned and is still under debate (3,4). During active phases of the disease, topical corticosteroids are often used to suppress inflammation. Anyway, these agents can not be recommended in the long-term owing to the risk of local adverse effects; after cessation of treatment with corticosteroids, it is almost common to observe an exacerbation of the inflammatory lesions. Moreover, it should be stressed that the skin thinning caused by long-term treatment with topical corticosteroids gives the premises for increased percutaneous absorption of exogenous substances and impairment of skin barrier functions. Cosmetic preparations, containing anti-inflammatory and emollient compounds, are an alternative approach to ICD, at least in mild to moderate cases, and have the advantage that can be used for long periods without essential safety concerns. Although moisturizers are usually accepted and often recommended in common practice, there are scanty evidences of their actual therapeutic role in ICD (5-8).

This report shows the feasibility of a cosmetic cream in the management of ICD. This preparation leads to a significant improvement not only of skin xerosis, but also of pruritus and signs of inflammation (Fig. 1). The entity of improvement appeared to be independent on the use of prevention measures, highlighting the actual therapeutic potential of the product.

Moisturizing agents may have a therapeutic and preventive role in ICD as they can restore the skin barrier function and decrease the trans-epidermal water loss (5,8-11). The addition of anti-inflammatory and antioxidant substance (soy sterol, lithium glycyrrethinate, carbocysteine, tocopheryl acetate, coenzyme Q10) in the cream may contribute to interrupt and suppress the inflammatory cycle (12-16).

In conclusion, our results demonstrate the effectiveness, tolerability and acceptability of a cosmetic cream in the treatment of ICD. The absence of jatrogenic adverse events of a cosmetic preparation suggests the possibility of a safe use also in the long-term with steroid-sparing effects.

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