

The knowledge of issues associated with topical corticosteroids using in patients with atopic dermatitis

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Atopic dermatitis (AD) is the most common inflammatory dermatitis, always accompanied by the pruritus. First line treatment comprise of topical steroids, however, there is a particular concern among patients with atopic dermatitis – „steroid phobia”, which results in lack of efficacy of the therapy. Steroid phobia arises usually from insufficient knowledge of these drugs.

The aim of the study was to evaluate the knowledge of topical corticosteroids (TCS) and familiarity with so called safe therapy methods among atopic dermatitis patients.

Materials and methods. In the study participated 143 adult patients with AD diagnosis made by a specialist dermatologist-venereologist and allergist in accordance with Hanifin and Rajka's diagnostic criteria. Patients filled anonymously authorial survey which included questions concerning disease duration, severity of pruritus, frequency of skin lubrication, understanding of topical steroid therapy and practical aspects of safe TCS application.

Results. Correct answers responding incidence to questions related to TCS diminished with the patients age, while on the other hand, it increased statistically significantly with the level of education. What responders were afraid of most frequently were the skin atrophy (56,6%), cataract (52,4%) and teleangiectasias (44,8%), in opposite to neoplasms (16,8%) and obesity (22,4%). Concerns were dependent to the treating physician- patients under the care of dermatologists more often were worried about the skin atrophy, teleangiectasias and cataract. Among participating patients just 3,5% of them (5 patients) knew the finger tip unit term, whereas the majority (56%) had been informed about safe TCS therapy methods. Amidst respondents who answered questions about TCS correctly statistically significantly lower pruritus intensity was observed.

Conclusions. Results of our study indicate on necessity of taking action to improve cooperation between patients and doctors insofar as topical therapy of atopic dermatitis.

Key words: atopic dermatitis, topical steroids, steroid phobia, safe therapy methods, pruritus

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Znajomość zagadnień związanych ze stosowaniem miejscowych glikokortykosteroidów u chorych na atopowe zapalenie skóry

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Atopowe zapalenie skóry (AZS) jest najczęściej spotykaną dermatozą zapalną, której zawsze towarzyszy świąd. Lekami pierwszego rzutu są miejscowe glikokortykosteroidy (mGKS), jednak wśród chorych istnieje szczególna obawa przed stosowaniem tych leków (sterydofobia), której skutkiem jest brak efektywności terapii. Sterydofobia wynika najczęściej z niewystarczającej wiedzy na temat tych leków.

Celem badania jest ocena wiedzy o mGKS oraz tzw. bezpiecznych metodach terapii w grupie chorych na AZS.

Materiał i metody. W badaniu brało udział 143 dorosłych chorych, u których rozpoznanie AZS ustalono przez specjalistę dermatologa-wenerologa i alergologa w oparciu o kryteria Hanifina i Rajki. Chorzy wypełniali anonimowo autorską ankietę, która zawierała pytania dotyczące czasu trwania choroby, stopnia nasilenia świądu częstotliwości natłuszczenia skóry, znajomości zagadnień miejscowej glikokortykosteroidoterapii oraz praktycznych aspektów bezpiecznego stosowania mGKS.

Wyniki. Częstość udzielania prawidłowych odpowiedzi na pytania dotyczące mGKS malała wraz z wiekiem chorych, natomiast wzrastała istotnie statystycznie wraz z poziomem wykształcenia. Ankietowani najczęściej obawiali się atrofii skóry (56,6%), zaćmy (52,4%) i teleangiektazji (44,8%), najrzadziej nowotworów (16,8%) oraz otyłości (22,4%). Obawy zależne były od prowadzącego pacjenta specjalisty: pozostający pod opieką dermatologów częściej obawiali się wystąpienia zaniku skóry, teleangiektazji i zaćmy. Wśród ankietowanych chorych zaledwie 3,5% badanej próby (5 chorych) знаło pojęcie jednostki opuszki palca (FTU – finger tip unit), natomiast większość (56% chorych) zostało poinformowanych o bezpiecznych metodach terapii mGKS. Wśród chorych udzielających poprawnych odpowiedzi na pytania dotyczące mGKS występowało istotnie statystycznie niższe natężenie świądu skóry.

Wnioski. Wyniki naszych badań wskazują na konieczność podjęcia działań mających poprawić współpracę na linii chory – lekarz w zakresie terapii miejscowej AZS.

Słowa kluczowe: atopowe zapalenie skóry, miejscowo stosowane glikokortykosteroidy, sterydofobia, bezpieczne metody terapii, świąd

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Atopic dermatitis (AD) is the most common chronic, recurrent dermatosis worldwide, characterized by the presence of eczematous skin lesions (acute, subacute, chronic) and localization depended on the patients' age. Differentiated phenotypically AD variants are each time accompanied by pruritus, which occurrence is essential to the diagnosis of the disorder

[11,15,21,27,33]. Due to the global disease's „epidemy” european, american and japanese scientific societies (allergic, dermatologic, paediatric) prepared therapeutic AD recommendations [9,18,25,34]. In all of these studies necessity of proper TCS application – the first line treatment in atopic eczema – was pointed out as a effective and safe treatment method. Regrettably,

many assays identify some particular concerns about these medications usage (commonly described in the literature as a steroid phobia) [1,2,5,13,24,29]. This phenomenon conducts to several implications among which the most significant one is the lack of the effectiveness of the instructed therapy, what is a result of failure to comply with doctors recommendations (compliance). The reluctance to TCS using stems from inadequate knowledge of these drugs and in the available literature there is surprisingly limited amount of reports regarding this extremely important clinical issue [17,19,31].

The main purpose of the present study was an attempt to asses AD patients' knowledge of TCS in terms of the potency, medium dependence and the influence on the pruritus. Additionally, patients' concerns about the treatment were analyzed and the awareness of safe treatment methods was evaluated.

METHODS AND MATERIALS

To participate in the assay 143 adult subjects were qualified – a group of patients treated in Outpatient Clinic, Department of Dermatology, The University Hospital in Cracow, within the period from July, 2016 to February, 2018, who were diagnosed with AD by a dermatologist-venereologist and an allergist in accordance with the *Hanifin* and *Rajka*'s diagnostic criteria. An exclusion criteria was the age beneath 18 years old or an existence of any other inflammatory skin disease. Each of the patients was asked to fill an anonymous authorial questionnaire (in conditions which ensured isolation and a possibility of focusing), which consists of 3 groups of questions.

In the first one, there were questions about age, education, disease lasting, pruritus intensity (last month; visual-analogue scale 0-5), frequency of skin lubrication (occasionally, 1x per day, 2 times per day, 3 times per day or more often), treating physician (dermatologist, allergist – non-dermatologist, general physician).

The second group comprised of 10 questions assessing familiarity with topical steroid therapy in investigated patients' group. In the third group there were 2 questions specifying understanding of practical aspects of the safe TCS application. The survey was prepared by specialists: dermatologists and allergists and its test version was trialed on a group of 10 patients with AD. All participants subjected to the study needed approximately 7 to 10 minutes to fill out the survey and its content was reviewed as „legible” or „highly legible”.

The statistical analysis was conducted with the use of IBM SPSS Statistics set, ver. 24. The descriptive analysis was presented in the form of mean values (along with standard deviation) and proportions in the case of categorized features. The relationship between qualitative features was investigated using χ^2 test, *Fischer's* exact test and a test of proportion. To compare the intensity of pruritus in the groups of correct and incorrect answers to questions regarding knowledge of topical steroid therapy and in groups of skin moisturizing, respectively, *t-Student* test and *Kruskal-Wallis* test was used. The statistical significance of all analyses was judged at the 0,05 significance level.

RESULTS

Investigated group's characteristics was presented in the tab. 1.

In the fig. 1 patients' answers to particular questions raised in the survey are presented.

Frequency of correct answers to questions related to TCS diminished with patients age, but this correlation was statistically significant only in the case of questions regarding obesity (question 3) and betamethasone (question 6). Correct answers to questions connected with topical steroid therapy was most frequently given by patients who have completed tertiary education (tab. 2). It was observed that incidence of giving correct answers increases statistically significantly with the level of

Table 1. Investigated group's characteristics

Tabela 1. Charakterystyka badanej grupy

Characteristics	Number of respondents (n=143)	%
Age		
18-40 y.o.	79	55.2
41-60 y.o.	52	36.4
>60 y.o.	12	8.4
Education		
elementary	16	11.2
secondary	73	51.0
tertiary	54	37.8
Duration of the disease		
<15 years	53	37.1
>15 years	90	62.9
Pruritus intensity scale (mean value 2.97; SD 1.27)		
0	2	1.4
1	18	12.6
2	34	23.8
3	36	25.2
4	35	24.5
5	18	12.6
Skin moisturizing frequency		
occasionally or 1 x per day	36	25.2
2 x per day	45	31.5
3 x per day	62	43.4
Treating sepcialist		
dermatologist	70	49.0
allergist	43	30.1
general physician	30	21.0

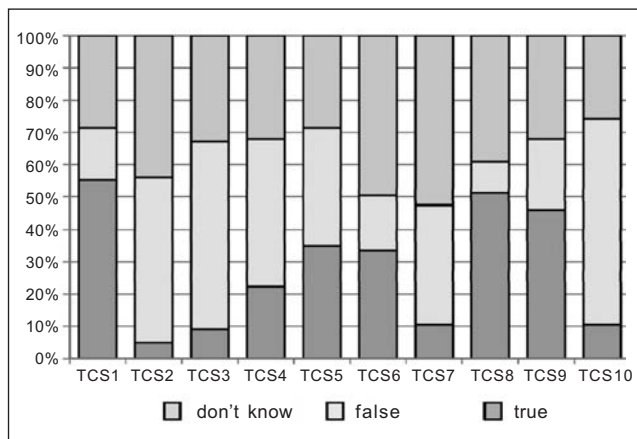


Figure 1. Patients' answers to the questions concerning TCS

Rycina 1. Odpowiedzi chorych na pytania dotyczące miejscowych GKS

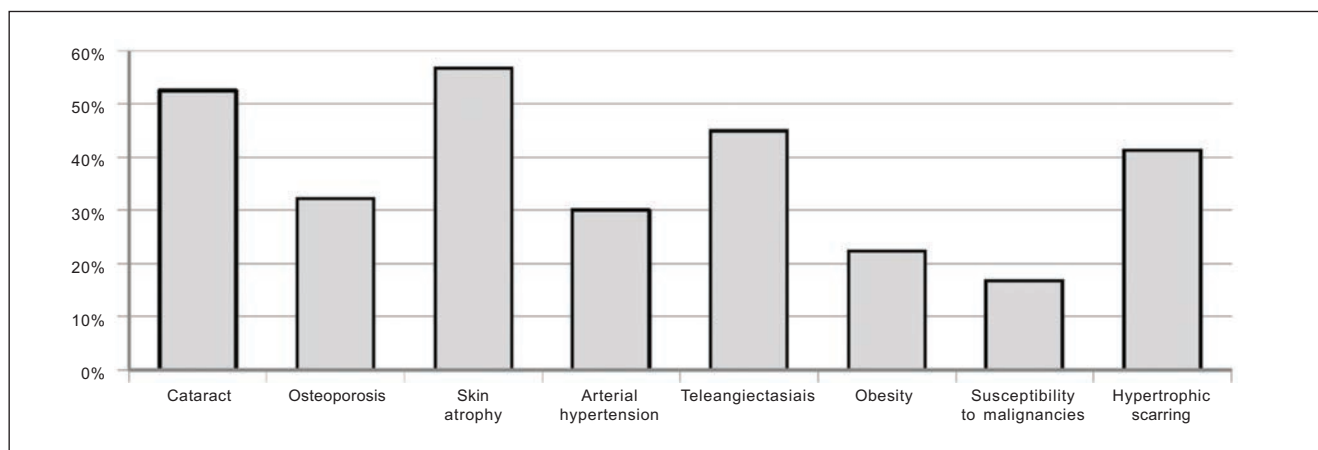
education. The only exception were answers to questions related to hydrocortisone (question 5) and the TCS influence on pruritus (question 10).

In the fig. 2 respondents' concerns related to TCS adverse effects were shown.

Respondents were most commonly afraid of skin atrophy (56,6%), cataract (52,4%) and teleangiectasias (44,8%), whereas TCS using had rarely been associated with the propensity for malignancies (16,8%) and the obesity (22,4%). Concerns regarding skin atrophy occurred statistically significantly more often ($p<0,001$) in subjects with the tertiary education (77,4%) comparing to the secondary education group (50%) and the primary education group (28,6%). Patients with tertiary education statistically significantly more rarely presented concerns associated with the osteoporosis or the arterial hypertension appearance, as adverse effects. Presented anxieties relevant to TCS using were significantly dependent on the continuously treating physician: patients remaining under the care of dermatologists were more frequently afraid of skin atrophy, tele-

Tabel 2. Connection between the knowledge of TCS and the level of education**Tabela 2.** Relacja między wiedzą na temat miejscowych GKS a poziomem edukacji

Correct answer to the question:	Level of education						p
	elementary		secondary		tertiary		
	n	%	n	%	n	%	
1. TCS cream acts weaker than TCS ointment	4	25	39	54	36	67	0,004
2. TCS cause arterial hypertension	4	25	37	50.7	32	59.3	0,027
3. TCS cause obesity	5	31.3	41	56.2	37	68.5	0,009
4. frequent TCS using potentiate their effects	2	12.5	30	41.1	33	61.1	<0,001
5. hydrocortisone is a very potent TCS	5	31.3	22	30.1	25	46.3	0,098
6. betamethasone acts stronger than hydrocortisone	2	12.5	22	30.1	24	44.4	0,012
7. mometasone is the most potent TCS available in Poland	2	12.5	25	34.2	26	48.1	0,008
8. TCS are absorbed better from the face's than from the wrist's area	6	37.5	32	43.8	35	64.8	0,013
9. TCS increase the susceptibility to skin infections	3	18.8	31	42.5	32	59.3	0,003
10. TCS do not affect pruritus	7	43.8	46	63	38	70.4	0,068

**Figure 2.** Patients' concerns related to TCS adverse effects**Rycina 2.** Obawy chorych związane z działaniami niepożądanymi miejscowych GKS

angiectasias and cataract comparing to those under the allergists' and general physicians' care. Particular attention must be paid to the fact, that fears of osteoporosis, arterial hypertension and ulosis occurrence were most commonly mentioned by patients permanently treated by general physicians. It was not observed, that concerns connected with the adverse effects appearance was related to the duration of the disease. In the evaluated group of patients, majority (56%) was informed about safe TCS therapy methods (alternate-day therapy, weekend therapy) and it was more often communicated by dermatologists (83% of informed patients) than by allergists (44%) or general physicians (10%)($p=0,001$). Also patients advised by dermatologists statistically significantly more often provided correct answers than patients remaining under allergists' or general physicians' care. Unfortunately, among 143 AD patients (including 90 over 15 years old) only 5 of them knew the finger tip unit expression, what forms only 3,5% of investigated subjects. Amidst patients moisturizing their skin 3 times per day or more often knowledge of TCS was significantly greater than in other groups (incidence of correct answers was increasing statistically significantly along with the frequency of skin moisturizing).

What is worth stressing, is that in patients who answered correctly to TCS concerning questions the intensity of pruritus was statistically significantly reduced. Also patients moisturizing skin 3 times per day or more were characterized by the stati-

stically significantly lower pruritus intensity, comparing to the group that moisturize skin occasionally or 1 time per day ($p=0,001$) and the group that moisturized skin 2 times per day ($p=0,005$).

DISCUSSION

Introduction of topical corticosteroids to treatment in 1953 revolutionized dermatology but only a few years later some adverse effects of their application in patients who used them improperly was observed. Especially in the case of early TCS formulations (such as I-III generation), adverse effects were particularly intensified and they dominated the perception of medications belonging to this group [12]. Subsequent, more and more modern drugs which were brought to the market (at present VI generation) became safer and more effective [4,16,22]. Simultaneously, the way of TCS recommending by dermatologists has changed: FTU concept was introduced, defined as an amount of the ointment/cream expressed from a tube with a 0,5 cm diameter nozzle, which fits within index finger's fingertip and which is estimated at 0,5 g. There were also some proper amount of FTU application patterns developed for the individual body areas in patients of different ages [3,14]. In the following years alternate-day and weekend therapy schemes, which reduced TCS adverse effects risk, were recommended [8].

In the European guidelines for AD treatment monthly amount of steroid medication which was considered as safe, was defined (15 g – infants, 30 g – children, 90 g – adults) [34]. The problematic issue of concerns associated with steroids using as well as the expression „steroid phobia” comes from Tuft's studies and it related originally only to patients with bronchial asthma [32]. Phrase „steroid phobia” is nosologically proper. Muller et al. [24] suggested more medically adequate term „topical corticosteroid concerns”. The problem of steroid phobia is widespread among AD patients [1,24]. Back at the beginning of XXI century Charman et al. [5] while evaluating the group of 200 patients, described in over 70% of respondents concerns associated with TCS using, which resulted in non-compliance with the doctors' recommendations in 30% of them. Among concerns, the fear of skin atrophy prevailed (similarly to our patients). About 30% of surveyed by Charman et al. patients incorrectly estimated TCS potency, whereas in our study the lack of the knowledge related to almost 60% of participants. In the Lee et al. research [20] steroid phobia problem involved as much as 67,5% of Korean AD children's parents. In this report also the most frequent concerns concentrated on skin atrophy. Korean authors highlighted the fact that in the half of the respondents the internet was a main source of knowledge of the TCS [20]. Professional patients education (provided by dermatologists or dermatological nurses) plays a massive role in the proper TCS application and obtaining effective treatment results, what was emphasized by Cork et al. [7]. Our outcomes confirm as well that patients remaining under the care of dermatologists (49% of the group investigated by us) were statistically significantly more often informed about safe TCS therapy methods, and concerns presented by them had reasonable grounds.

In studies conducted by us the knowledge of TCS were significantly deeper in patients with the tertiary education, while it decreased along with patients' ages, whereas in the study of French authors intensity of steroid phobia shown no dependence on age, sex, severity of lesions or treatment localization (private practice, outpatient clinic) [1]. Similarly, Korean assay showed no correlation between parents' fear of TCS using intensity and severity of skin lesions in children [19]. Rationalization of the concerns of TCS adverse effects among our patients corresponded to their education level. A reverse dependence was demonstrated by El Hachem et al. [10], who discovered statistically significant fear of TCS, associated with the belief that these medications could be dangerous, in the group of parents (80% of them completed tertiary education) of 300 sick children – apart from the well-known adverse effects. Moreover, majority of responding parents reported the confidence that positive effects of TCS are less important than possible adverse effects [10]. In our assay dermatologists were the specialists who appeared to be the most effective in AD patients long-term care. This group of doctors informed patients in the fullest way (for example, dermatologists statistically significantly more frequently informed about safe treatment methods, all patients familiar with FTU were treated by dermatologists). In Australian studies the knowledge of TCS therapy was analyzed among pharmacists – this group of healthcare professionals was particularly often the main source of knowledge for AD patients or their parents. It is worth underlining that about a half of respondents recommended other (more rare and shorter) dosage than the one prescribed by the dermatologist [28]. This observation was confirmed by Raffin's et al. [26] research outcomes. While evaluating a group of French pharmacists, they described the tendency to reduce duration of the therapy recommended by dermatologists. About 25% of pharmacists considered TCS using as more hazardous than a systemic treatment [26]. In the Jeziorkowska's et al. study conducted with the participation of 141 adult AD patients, none of them knew the FTU term (in our study it was 5 subjects) or had any knowledge of alternate-day therapy used in long-term topical steroid treatment. In contrast, a half of patients in our assay had this knowledge. What is interesting, as much as 46,1% of patients confirmed regular meetings with the treating physicians.

Despite the declared knowledge of TCS, only about one third of respondents knew the issue associated with potent and very potent TCS [17].

Results of our study indicates that patients who have a better knowledge of TCS are more commonly using emollients, what leads to statistically significant decrease in skin's pruritus. The significance of TCS application and systematic skin moisturizing in the pruritus therapy is highlighted in therapeutic recommendations [18,25,34]. Rapid onset of antipruritic activity appears to be particularly important [34]. In remarkably interesting study of Chrostowska-Ptak's et al. [6] in the group 89 adults with AD majority of them (72 persons; 80,9% respondents) reported that emollients application is the most common method used to reduce pruritus, whereas TCS are used to treat it (68,5% respondents). A commonly acceptable concerns intensity scale is still lacking, while the AD patients population grows. In 2009 Topical Corticosteroid Phobia (TOPICOP) form was designed. It consists of 12 parts representing patients' (or their parents') fear, knowledge and beliefs, and behaviours in relation to TCS application. To every of above mentioned parts researchers prepared answers in 4-grade Likert's scale [23]. In following years, during questionnaire validation (17 countries, population of 1796 patients) it turned out that it was 123 patients from Poland who dominates among patients experiencing the greatest number of concerns in every range of TOPICOP (fear – 69,3%; knowledge and beliefs 45,1%; behaviors 71,9%) [30].

CONCLUSIONS

This data, as well as results of our research, points to the necessity of taking an effort to improve patient-doctor cooperation within the range of the topical therapy of AD, in the broad sense.

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