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CLINICAL REPORT

Acne Itch: Do Acne Patients Suffer From Itching?

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Patients with acne often scratch their lesions. As scratching is also a part of the response to pruritic stimuli, this study aimed to determine whether itching accompanies acne. A total of 108 teenagers (mean age 15.8±1.8 years) with acne were included in the study. All participants completed a specially designed questionnaire on demographic and clinical data. Itching accompanying acne lesions was noted in half of the patients, including 15 (13.8%) teenagers reporting pruritus at the time of examination and 39 (36.1%) who reported experiencing itching in the past. Itching episodes were of short duration in most subjects (<1 min: 51.9%; up to 10 min: 38.9%) and occurred infrequently (several times a week: 24.5%; at least once a month: 30.2%; less than once a month: 37.7%). However, 31.5% of patients reported that they had used medical treatment to reduce itching due to acne lesions. We conclude that itching of mild to moderate severity is a relatively common concomitant symptom of acne lesions. *Key words: pruritus; itching; acne; teenagers.*

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Itch is defined as an unpleasant sensation provoking the desire to scratch (1). Itching is an expression of tension, and scratching is a means of alleviating it (2). Itching is a very common dermatological symptom, which can occur with or without concomitant, visible skin lesions. Several studies have demonstrated that itching can greatly alter the well-being of patients, and that subjects with chronic pruritus may have significantly impaired quality of life, depression and anxiety (3–5).

Acne is one of the most common skin diseases, affecting mainly teenagers and young adults. Many patients have acne lesions on the face, which causes significant cosmetic and psychosocial problems for young people (6). In order to remove skin abnormalities some patients try to squeeze or scratch away the comedones and inflammatory acne lesions. In extreme situations this may lead to the development of acne excoriée (7). Because picking of acne lesions may be responsible for secondary bacterial infections and subsequent scarring and hypo- or hyper-pigmentation of the involved skin, patients should be advised not to scratch acne lesions. However, as scratching is also an important part of the pruritic reaction, we aimed to determine whether scratching of acne lesions is, at least in part, provoked by an underlying itching. The aim of this study was therefore to analyse the frequency and intensity of pruritus among teenagers with acne and to determine which factors influence its severity.

MATERIALS AND METHODS

The study was carried out among teenagers attending one of the secondary schools and one of the high schools in the Lower Silesia region of Poland during a specifically arranged visit of researchers to these schools. The study concept was accepted by the directors of the schools and parents, and all patients agreed to participate in the research. All patients underwent careful dermatological examination in order to confirm the diagnosis of acne on the face and to evaluate its severity. The severity of acne was assessed according to the Global Alliance to Improve Outcomes in Acne (8): mild acne=comedonic acne (solitary inflammatory lesions were allowed), moderate acne=papulopustular acne (numerous inflammatory lesions), severe acne=nodulocystic or conglobate acne with or without scarring. Patients with other pruritic skin diseases were excluded from the study.

All included participants were asked to complete a specially designed questionnaire on demographic and clinical information regarding acne and itching within acne lesions. The questions about itch were based on the itch questionnaire proposed by Yosipovitch et al. (9). The intensity of pruritus was assessed using a 10-point visual analogue scale (VAS), where 0 referred to no itching and 10 referred to the worst itching.

A total of 108 teenagers (mean age 15.8±1.8 years) with acne limited to the face were included in the study. There were 53 (49.1%) boys and 55 (50.9%) girls. Seventy-one (65.7%) participants were living in rural areas, the remaining 37 (34.3%) in cities. A positive family history of acne was found in 71 (65.7%) subjects. Sixty-four (59.3%) participants had mild, 36 (33.3%) moderate and the remaining 8 (7.4%) severe acne. Eighteen (16.7%) subjects were actively treated for acne during the examination.

Statistics

All data were analysed statistically using Statistica 7.0 Pl (Statsoft, Krakow, Poland). The following statistical tests were used for analysis: Student's *t*-test, χ^2 test, and Scheffé *post hoc* test in a univariate analysis of variance setting, where appropriate. *p*-values less than 0.05 were considered significant.

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RESULTS

Frequency and severity of itching among acne patients

Fifteen (13.9%) participants reported that their acne lesions were pruritic at the time of examination and a further 39 (36.1%) subjects reported that they had felt pruritus within the acne lesions in the past. A total of 54 (50%) patients reported the presence of itching within acne lesions. The presence of itching was unrelated to age, gender, where they lived, positive family history or acne severity (Table I).

The intensity of pruritus in patients with acne at the time of examination according to the VAS was 3.1±1.9 points and the maximal intensity of pruritus within acne lesions at any time in the past was 4.0±2.5 points. Comparing the severity of acne itch with the intensity of itching perceived after mosquito bite (5.9±3.4 points), it was revealed that the itching sensation within acne lesions assessed at the time of examination as well as the maximal acne itch intensity experienced in the past were significantly less intensive than the pruritic sensation following mosquito bite (p=0.02 and p <0.001, respectively). The intensity of itching was not influenced by age, gender, where they lived or acne severity (Table I). Interestingly, patients with a negative family history of acne reported significantly more intense pruritus than patients with a positive family history of acne, both at the time of examination (4.4±1.4 points vs. 2.1±1.7 points, respectively, p=0.02), as well as when comparing the most intensive itching experienced at any time in the past (5.6±2.2 points vs. 3.2±2.2 points, respectively, p <0.001).

Clinical characteristics of acne itch

Regarding the frequency and duration of itch episodes in patients with acne, in most patients pruritus appeared relatively infrequently and for a short period of time: only 4 (7.4%) participants reported itching every day, 13 (24.1%) felt itching within acne lesions on a weekly basis, 16 (29.6%) at least once a month, and 20 (37.7%) even less frequently. One (1.9%) subject did not indicate the frequency of pruritus. In 28 (51.9%) individuals itch episodes lasted less than 1 min, in 20 (37.0%) less than 10 min, and in only 5 (9.3%) participants more than 10 min. One (1.8%) patient did not describe the duration of pruritus. However, 17 (31.5%) patients declared that they had used medical treatment to reduce pruritus of acne lesions: among them one mentioned the usage of antihistaminic drugs to treat itching and 9 subjects indicated the use of different topical preparations, mainly cleaning agents (tonics, masks) or anti-acne preparations. The remaining 7 teenagers did not report the type of treatment modalities applied for pruritus. Considering the frequency of itching, it seemed that itching was present with approximately the same frequency during the whole day, with only a slight increase in the evening (Table II).

Difficulties in falling asleep due to itching of acne lesions were noted nearly always by one (1.8%) patient and sometimes by a further 8 (14.8%) subjects. Awakening due to itching was reported nearly always by one (1.8%) participant and from time to time by 3 (5.6%) participants. Three (5.6%) participants also mentioned that they sometimes had to use sleeping medication due to intense itching.

Table II. *Frequency of itching appearance during the day*

Frequency of itching appearance	Part of the day, *n* (%)			
	Morning	Noon	Evening	Night
Not at all	25 (46.3)	24 (44.4)	21 (38.9)	31 (57.4)
Occasional	23 (42.6)	25 (46.3)	23 (42.6)	19 (35.2)
Often	5 (9.3)	5 (9.3)	10 (18.5)	2 (3.7)
Always present	1 (1.8)	0 (0)	0 (0)	2 (3.7)

Table I. *Comparison of frequency and intensity of itching between different subgroups of patients*

	Patients with itching *n* (%)	Patients without itching *n* (%)	*p*	Itching intensity at the time of examination Mean±SD*	*p*	Maximal itching intensity whenever in the past Mean±SD*	*p*
All subjects	54 (50)	54 (50)	–	3.1±1.9	–	4.0±2.5	–
Gender							
Boys	26 (49.1)	27 (50.9)		3.1±1.9		3.4±2.0	
Girls	28 (50.9)	27 (49.1)	1.0	3.1±2.0	0.99	4.4±2.9	0.17
Where they lived							
Rural areas	37 (52.1)	34 (47.9)		3.2±1.9		4.2±2.7	
City	17 (45.9)	20 (54.1)	0.69	2.7±2.5	0.71	3.6±2.1	0.45
Family history of acne							
Positive	38 (53.5)	33 (46.5)		2.1±1.7		3.2±2.2	
Negative	16 (43.2)	21 (56.8)	0.42	4.4±1.4	0.02	5.6±2.2	<0.001
Severity of acne							
Mild	28 (43.8)	36 (56.2)		3.1±1.7		3.7±1.9	
Moderate	23 (63.9)	13 (36.1)		3.0±2.3		4.4±3.1	
Severe	3 (37.5)	5 (62.5)	0.12	–	0.94	2.4±0.9	0.49

*Scoring according to visual analogue scale.
SD: standard deviation.

The teenagers described the perceived itching as a feeling of tickling (21 subjects; 38.9%), stinging (11 subjects; 20.4%), pinching (14 subjects; 25.9%), burning (13 subjects; 24.1%) and crawling (5 subjects; 9.3%). Pruritus was annoying for 30 (55.5%) patients, bothersome for 13 (24.1%) patients, unbearable for 7 (13.0%) patients and worrisome for 4 (7.4%) patients. Moreover, pruritus made 16 (29.6%) patients depressed and one (1.8%) anxious, and in 3 (5.6%) subjects it was responsible for difficulty in concentrating. Comparing these patients with the remaining ones, we noted that patients with anxiety, difficulty in concentrating, or with depressive symptoms experienced significantly more intense itching within acne lesions than the rest of the patients (mean maximal intensity of pruritus 5.0±2.8 vs. 3.2±2.2, respectively; p=0.02) and significantly more commonly had longer episodes of itching: 25% perceived itching for less than 1 min, 50% for less than 10 min, and 25% for more than 10 min compared with the rest of the subjects, where 67.6% reported an itching duration of less than 1 min, 29.4% of less than 10 min and only 2.9% noted pruritus lasting more than 10 min (p <0.01).

Table III gives a comparison between patients with frequent (at least once a week) and seldom (less frequent than once a week) itching episodes within acne lesions. Patients who frequently experienced pruritus rated this symptom as a more severe one compared with subjects who perceived itching infrequently (p <0.05). Other characteristics of acne and pruritus were similar in both groups (Table III).

Factors influencing itching in acne patients

The most important factors aggravating the intensity of itching within acne lesions were sweat (61.1% of patients), stress (33.3%), physical effort (31.5%), heat (27.8%), fatigue (20.4%) and dry air (16.7%). Pruritus was improved mostly by cold water (20.4%), hot water (16.7%) and cold (16.7%) (Table IV). No significant

Table III. *Comparison of itching and acne characteristics between patients with frequent and infrequent pruritic sensations*

	Patients with itching episodes experienced at least once a week n=17	Patients with itching episodes experiences less frequently than once a week n=36	p
	mean±SD	mean±SD	
Itching intensity (VAS) at the time of examination	2.0±2.3	1.7±1.8	0.62
Maximal itching intensity (VAS) within acne lesions at any time in the past	4.9±2.7	3.4±2.3	<0.05
Itching intensity (VAS) perceived after mosquito bite	6.0±3.1	5.9±3.5	0.9
Severity of acne	*n* (%)	*n* (%)	
Mild	6 (35.3)	23 (63.9)	
Moderate	9 (52.9)	12 (33.3)	0.11
Severe	2 (11.8)	1 (2.8)	
Family history of acne			
Positive	5 (29.4)	11 (30.6)	
Negative	12 (70.6)	25 (69.4)	0.81
Duration of itching episodes			
<1 min	9 (52.9)	19 (51.4)	
1–10 min	6 (35.3)	14 (40)	
>10 min	2 (11.8)	3 (8.6)	0.91
Difficulty falling asleep because of itching			
Nearly always	0 (0)	1 (3)	
Sometimes	4 (23.5)	4 (12.1)	
Never	13 (76.5)	31 (84.9)	0.41
Awakening due to itching			
Nearly always	1 (5.9)	0 (0)	
Sometimes	2 (11.8)	1 (2.8)	
Never	14 (82.3)	35 (97.2)	0.13
Sleeping medication usage			
Nearly always	0 (0)	0 (0)	
Sometimes	2 (11.8)	1 (2.8)	
Never	15 (88.2)	35 (97.2)	0.24
Any kind of anti-pruritic treatment			
Yes	6 (35.3)	11 (30.6)	
No	11 (64.7)	25 (69.4)	0.98
Psychosocial problems due to pruritus			
Anxiety	0 (0)	1 (2.8)	
Depression	7 (41.2)	8 (22.2)	
Difficulty concentrating	2 (11.8)	1 (2.8)	
No problems	8 (47)	26 (72.2)	0.19

VAS: visual analogue scale.

Table IV. *Factors influencing the intensity of acne itch*

Factor	Relieves *n* (%)	Does not affect *n* (%)	Increases *n* (%)	No data *n* (%)
Sleep	6 (11.1)	41 (75.9)	2 (3.7)	5 (9.3)
Physical effort	5 (9.3)	27 (50)	17 (31.5)	5 (9.3)
Stress	3 (5.6)	28 (51.8)	18 (33.3)	5 (9.3)
Fatigue	5 (9.3)	33 (61.1)	11 (20.4)	5 (9.3)
Diet	6 (11.1)	34 (63)	8 (14.8)	6 (11.1)
Hot water	9 (16.7)	33 (61.1)	7 (13.0)	5 (9.3)
Cold water	11 (20.4)	37 (68.5)	1 (1.8)	5 (9.3)
Dry air	4 (7.4)	35 (64.8)	9 (16.7)	6 (11.1)
Sweat	0 (0)	16 (29.6)	33 (61.1)	5 (9.3)
Cold	9 (16.7)	36 (66.7)	4 (7.4)	5 (9.3)
Heat	3 (5.6)	31 (57.4)	15 (27.8)	5 (9.3)

differences regarding the factors influencing the intensity of acne itch were stated between patients of different ages, gender, place of residence, or acne severity, or in subjects with positive vs. negative family history of acne (data not shown).

DISCUSSION

Acne is a very common skin disease in patients younger than 20 years, and has a large negative influence on patients' psychosocial well-being (10, 11). It is well known that patients with acne are more likely to be depressive and anxious, and that they have increased risk of suicide (12). Interestingly, many patients with acne scratch their skin lesions, but acne is not usually considered to be a pruritic skin disease. Although scratching *per se* does not necessarily mean that the patient has pruritus, it must be emphasized that scratching is the most common and important objective symptom of itching. However, on searching literature databases we could not find any study investigating whether itching accompanies acne lesions in this large patient population. Surprisingly, on performing such a study we found that approximately half of the included teenagers with facial acne experienced itching within acne lesions and, remarkably, that this phenomenon was independent of the severity of acne. Itching in acne seems to be of mild to moderate intensity. However, as shown by McEvoy et al. (13), young patients with acne usually overestimate the severity of this disease and even itching of mild intensity might be perceived as a very bothersome or disturbing symptom. This phenomenon could be responsible for our observation that despite only mild to moderate intensity and frequency of itching, a relatively high percentage of pruritic patients reported problems with sleeping and the need to use anti-pruritic agents. Based on the results of this study, it could be suggested that itching may, at least in part, provoke scratching in acne patients.

As far as we know the current study is the first to evaluate itching in patients with acne. However, some previous literature data also suggest that itching might sometimes accompany acne lesions. It seems that patients with acne may experience itching because of subclinical dermographism (14, 15). These patients reported that their acne lesions produced symptoms of itching, burning, soreness and/or tenderness (14, 15). In most of these individuals itching resolved after antihistaminic therapy (14–16).

Itching may also be present in solar acne, which appears and relapses after sun exposure, and is localized preferably on the upper anterior chest, the deltoid regions and the shoulders (17). The use of greasy or oily sun protectors promotes the development of this condition (16, 17). However, in our population all patients suffered from acne vulgaris on the face, and solar acne was not diagnosed in any of the participants.

Pruritus may also be a complication of acne therapy or a consequence of the use of different cosmetics for acne. Yee & Cunliffe (18) reported 8 acne subjects, who experienced itching of acne lesions during therapy for acne. This symptom accompanied both systemic and topical acne treatments and usually appeared within 2–6 weeks of commencing effective acne therapy (18). In all described patients itch was of mild to moderate intensity and resolved within 4 weeks. Usually patients with this kind of itch do not require anti-pruritic treatment (16). Sometimes, non-sedative anti-histaminics may be helpful (18). The pathogenesis of this localized itch could be connected with the change in pH of the microenvironment of the acne follicle providing an optimal environment for the production of histamine or histamine-like products by *Propionibacterium acnes* (18). Increased awareness of this uncommon complication may be helpful in preventing the unnecessary discontinuation of effective acne therapy (18). As we did not address detailed questions regarding acne treatment and the possible relationship between acne treatment and itching, we can not exclude the possibility that in some patients the reported pruritus was due to therapy for acne lesions and not a primary phenomenon of acne. This fact seems to be the main limitation of the current study. It is, however, remarkable that in our study some individuals used anti-acne agents to reduce the intensity of itching. On the other hand, itching in acne was aggravated by the same factors as other pruritic skin diseases, such as atopic dermatitis or psoriasis (19, 20), suggesting that this symptom rather accompanies skin lesions and is not only a complication of treatment. Comparing the intensity of itching in acne with pruritus appearing in other skin diseases, it could be stated that this symptom in acne is far less severe than in atopic dermatitis or psoriasis (19, 20). However, it seems that approximately 10% of acne patients experience significantly more severe pruritus, and these patients have problems with sleeping and may take sleeping medication. Based on our observations that patients who mentioned symptoms of depression, anxiety or difficulty concentrating caused

by pruritus, experienced more intense itching and had longer episodes of itching, it could be suggested that pruritus in acne patients may provoke stress and other psychosocial problems, similarly to other itchy dermatoses such as atopic dermatitis or psoriasis (4, 5). However, we can not exclude the possibility that, in some of these subjects, the appearance of skin lesions was also responsible for psychosocial distress. It is notable that we did observe significant differences according to acne severity between patients with psychosocial problems and the rest of the analysed subjects. This hypothesis requires further research, focusing on whether those acne subjects who itch are more anxious or stressed than their peers who do not itch.

It is of interest that the presence and intensity of itching was not related to the severity of the acne. As the assessment of acne severity was based mainly on the type of acne lesions we could speculate that itching intensity is not related to one particular type of acne lesions; however, this hypothesis requires further investigation.

In summary, our data suggested that itching may accompany acne lesions and may have a significant negative influence on patients' well-being. Based on the results of this study and on our own experience it seems that, in some teenagers, acne itching should be considered an important target for anti-pruritic therapy. The use of antihistaminic agents has not been sufficiently proved; however, they seem to be of help in selected patients at least, especially those presenting with symptoms of dermographism. Further studies are required in order to better determine the clinical characteristics of itching in acne patients and to understand the underlying pathogenetic mechanism.

Conflicts of interest: None to declare.

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