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Topical treatment of acne vulgaris: efficiency, side effects, and adherence rate

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Abstract

Objective: Adherence is a problem in the topical treatment of acne. This study was designed to evaluate the efficiency of current topical treatment and adherence in patients.

Methods: Patients with acne vulgaris who had recently been prescribed a topical therapy were selected. A dermatologist-directed questionnaire was completed. Demographic data, acne severity, treatment and the manner of use, side effects, and reason for discontinuation were recorded.

Results: A total 250 patients were included, 178 female (71.2%) and 72 male (28.8%) participants, mean age was 18.6 ± 2.8 years. Of 250 patients, 114 (45.6%) had given up therapy for two reasons: unresponsiveness in 71 (62.3%) and side effects in 43 (37.7%) patients. For antibacterial treatments, the rate of unresponsiveness was higher but the rate of side effects was lower. Discontinuation owing to unresponsiveness was higher in patients with severe acne. Side effects were higher in patients with comedonal-type acne. The lowest rates of side effects and discontinuation were among every-other-night users.

Conclusion: In this study, patients with acne gave up treatment owing to side effects and unresponsiveness, which reduced the treatment efficiency.

Keywords

Acne, topical therapy, adherence, side effects, dermatology, topical retinoids, benzoyl peroxide

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Introduction

Approximately 80% of young adults and adolescents have acne vulgaris, a chronic inflammatory disease of the skin. Acne vulgaris is characterized by open and closed comedones and lesions with inflammatory

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nodules, pustules, and papules, which typically affect the face, chest, and back.[1,2]

Acne vulgaris is a chronic disease that requires prolonged therapy for a satisfactory outcome. Treatment adherence in patients is a major problem, particularly for topical treatments, owing to side effects and the prolonged treatment time. Insufficient adherence leads to recurrence of acne, patient dissatisfaction, and increased medical costs. Numerous studies have reported low adherence rates for acne treatments, with the United States having the lowest rate of 11.74%.[3]

This study evaluated the choices in topical treatment for acne vulgaris and patient adherence to the prescribed treatment.

Patients and methods

This study included patients with acne vulgaris who were prescribed a topical therapy in the previous 6 months at outpatient clinics of Sakarya University Faculty of Medicine Training and Research Hospital, Department of Dermatology in Turkey. After verbally consenting to the study, the status of patients was evaluated; no further examination or investigation was done. Participants completed a dermatologist-directed questionnaire based on a mini questionnaire for topical therapies developed by Pawin et al.[4] The details presented were anonymized such that the identity of the patients cannot be ascertained. In this study, demographic data were collected for each participant, including the Fitzpatrick skin type, the duration and severity of acne, the most recently prescribed treatment, the manner in which the patient used the treatment, side effects or problems with the treatment, the reason for therapy discontinuation (if applicable), peeling applications, makeup use, and daily sun exposure. Approval was received from the Sakarya University Faculty of Medicine Ethics Committee for this study.

Statistical analyses

IBM SPSS ver. 24.0 (IBM Corp., Armonk, NY, USA) was used for the statistical analyses. The Mann–Whitney U test was used for comparisons of abnormally distributed data; the Kolmogorov–Smirnov test was applied for convenience in parameters with normal distribution before comparing continuous variables. The independent *t*-test was used to compare the descriptive statistics and quantitative data, and the chi-square test was used for the comparison of qualitative data.

Results

This study included 250 patients: 178 females (71.2%) and 72 males (28.8%) with a mean age 18.6 ± 2.8 years. The severity of acne was recorded at the first visit, according to the Global Acne Grading System; 104 (41.6%) patients had mild acne, 137 (54.8%) had moderate acne, and 9 (3.6%) patients had severe acne. No differences were noted in terms of the severity of acne among the treatment groups. Of the 250 patients, 114 (45.6%) discontinued therapy before the scheduled time, indicating an adherence rate of 54.4%. The reasons for discontinuation reported by patients included unresponsiveness (71/114; 62.3%) and side effects (43/114; 37.7%) such as irritation, erythema, scaling, itching, and stinging. We detected no differences in terms of discontinuation among the treatment groups. Side effects were reported by 83/250 (33.2%) patients. The rate of antibacterial use was highest in the unresponsive group ($p = 0.004$). The rate of side effects was significantly lower in patients using antibacterial treatments than in those using other drugs ($p = 0.002$). The discontinuation rate owing to unresponsiveness was highest in patients with severe acne ($p = 0.048$). The rate of side effects was significantly higher in patients with

comedone-dominant acne ($p = 0.030$). Retinoid-containing topical drugs were prescribed more often for patients with comedone-dominant and mixed acne types ($p < 0.001$) (Table 1). Every-other-night users reported the fewest side effects and lowest discontinuation rates ($p = 0.014$ and $p < 0.001$) (Table 2).

Unresponsiveness was the most common reason for discontinuation among all patient types, with the highest significance in patients with severe acne ($p = 0.048$). Reasons for discontinuation were not correlated with the type of acne, makeup use, sun exposure, peeling habits, or Fitzpatrick skin type. Side effects were also not correlated with peeling habits, sun exposure, makeup use, severity of acne, or Fitzpatrick skin type.

Patients with comedonal-type acne had a significantly higher rate of side effects than those with other acne types ($p = 0.030$). Patients with comedonal and mixed acne types were treated most often with retinoid-containing topical medication, whereas patients with papulopustular-type acne were treated more frequently with antibacterial therapy ($p < 0.001$).

Treatment choice did not differ by sex. The most frequently prescribed drugs were antibacterial + benzoyl peroxide combinations (40.4% in females and 41.7% in males), followed by topical retinoids in females (33.7%), and antibacterial treatments in males (26.4%). Rates for discontinuation of therapy did not differ by sex (43.8% in females and 50% in males). Furthermore, the reasons for discontinuation did not differ by sex: discontinuation owing to side effects was reported by 38.5% of females and 36.1% of males, and unresponsiveness was reported by 61.5% of females and 63.9% of males.

Discussion

Most studies on the topical treatment of acne have focused on adherence to therapy, the reasons for adherence, and suggested solutions.[3–11] This study revealed that discontinuation occurred mostly with the use of retinoids (40%), benzoyl peroxide combinations (44.1%), and retinoid combinations (60%). Furthermore, the reasons for discontinuation of these treatments were reported as a result of side effects, with rates of 50%, 33.3%, and 65.7%, respectively. Tan et al.[3] reported similar findings: patients adhered less when using topical retinoids and oral antibacterial agents. Patients taking antibacterials (67.5%) and benzoyl peroxide combinations (60.7%) had higher discontinuation rates owing to acne unresponsiveness. Once-a-day or every-other-night users had lower rates of side effects, regardless of the therapy used. Twice-a-day users reported that side effects led to their discontinuation, whereas those who applied treatment less frequently (night time only or every-other-night users) discontinued treatment owing to unresponsiveness ($p = 0.001$). These findings indicate that side effects and unresponsiveness are the main reasons for discontinuation of topical treatment in patients with acne. A literature review by Park et al.[5] revealed that adherence was higher among patients with acne taking oral medication than in those using topical medication.

In an investigation of adherence and factors associated with adherence in patients with acne, Dréno et al.[6] reported a poor adherence rate worldwide (50%), with significantly worse rates in Europe than in Asia and the Americas (adherence rates of 58%, 48%, and 43%, respectively; $p < 0.0001$). The authors reported that poor adherence was independently correlated with young age (greatest correlation in those aged <15 years, but also in those aged 15–25 years), the occurrence of side effects, lack of improvement as evaluated by a dermatologist, previous systemic therapy, lack of knowledge about acne treatment, consultation with a primary care physician, and

Table 1. Comparison according to therapy groups.

	Retinoids (N = 75)	Antibacterialtreatment (N = 45)	Benzoyl peroxide + Antibacterialtreatment (N = 102)	Retinoids + Antibacterial treatment (N = 20)	Formula containing resorcin + salicylic acid (N = 8)	p
Side effects						
Yes	31 (41.3)	5 (11.1)	35 (34.3)	10 (50)	2 (25)	**0.002**
No	44 (58.7)	40 (88.9)	67 (66.7)	10 (50)	6 (75)	
Discontinuation rate	30 (40)	24 (53.3)	45 (44.1)	12 (60)	3 (37.5)	0.410
Reason for discontinuation (N = 114)						
Side effects	15 (50)	3 (12.5)	15 (33.3)	8 (66.7)	2 (66.7)	**0.004**
No response	15 (50)	21 (87.5)	30 (66.7)	4 (33.3)	1 (33.3)	
Acne severity						
Mild	31 (41.3)	27 (80)	35 (34.3)	8 (40)	3 (37.5)	0.205
Moderate	42 (56.0)	16 (35.6)	63 (61.8)	11 (55)	5 (62.5)	
Severe	2 (2.7)	2 (4.4)	4 (3.9)	5 (5)	0	
Manner of use						
Once at night	48 (64)	17 (37.8)	62 (60.8)	16 (80)	4 (50)	**<0.001**
Twice daily	13 (17.3)	27 (60)	19 (18.6)	2 (10)	2 (25)	
Every other day	10 (13.3)	0	5 (4.9)	1 (5)	2 (25)	
Irregularly	4 (5.2)	1 (2.2)	16 (15.7)	1 (5)	0	
Acne type						
Comedonal	31 (41.3)	6 (13.3)	24 (23.5)	9 (45)	5 (62.5)	**<0.001**
Papulo-pustular	9 (12)	24 (53.3)	28 (27.4)	2 (10)	3 (37.5)	
Mixed	35 (46.7)	15 (33.3)	50 (49)	9 (45)	0	

Note: Values in table are number (percent).
The statistical significance was committed as $P < 0.05$ and are in bold.

Table 2. Comparison according to manner of use.

	Once at night (N = 147)	Twice a day (N = 63)	Every other night (N = 18)	Irregularly/rarely (N = 22)	p
Side effects					0.014
Yes	46 (31.3)	27 (42.9)	1 (5.6)	9 (40.9)	
No	101 (68.7)	36 (57.1)	17 (94.4)	13 (59.1)	
Rate of discontinuation	57 (38.8)	40 (63.5)	3 (16.7)	14 (63.6)	<0.001
Reason for discontinuation					
Side effects	13 (22.8)	24 (60)	0	6 (42.9)	
No response	44 (77.2)	16 (40)	3 (100)	8 (57.1)	

Note: Values in table are number (percent).

lack of patient satisfaction with treatment. They also reported factors with a positive effect on adherence, including more severe acne, use of cosmetics (moisturizers, cleansers), use of either topical therapy alone or isotretinoin, good clinical improvement as evaluated by a dermatologist, patient satisfaction with therapy, and knowledge of acne treatment. Jones-Caballero et al.[6] reported that non-adherence in older patients was owing to side effects whereas that in younger patients was owing to forgetfulness. De Lucas et al.[8] suggested that adherence to treatment increases with a marked reduction in severity and higher rates ($\geq$50%) of improvement. Adherence is highest when the outcome is rapid and substantial.

Most patients in this study had moderate acne severity, although several had severe acne. Unresponsiveness, an important factor affecting adherence, may be owing to an inadequate choice of treatment if only topical medications are considered for these moderate and severe cases. Every-other-day users of topical medications reported the fewest side effects. In our study, some twice-a-day users discontinued treatment because of side effects whereas others discontinued because of unresponsiveness. More favorable outcomes might arise from choosing the optimal topical treatment by specifically targeting the acne type and using it in an optimal manner. We believe that a good relationship between the patient and dermatologist can help to provide a balance, minimizing the possibility of side effects and unresponsiveness. Understanding the necessity for a prolonged course of treatment for acne by the patient will also help to maintain good adherence. Further investigations regarding whether counseling or adjustment of the number and type of office visits make a difference in compliance will most likely strengthen these suggestions.

Declaration of conflicting interest

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