

Factors believed by Jordanian acne patients to affect their acne condition

Z. El-Akawi,¹ N. Abdel-Latif Nemr,² K. Abdul-Razzak³ and M. Al-Aboosi⁴

العوامل التي يعتقد مرضى حب الشباب الأردنيون أنها تؤثر على حالة حب الشباب لديهم

زياد جلال العكاوي، نسرين عبد اللطيف نمر، خالد خليل عبد الرزاق، مصطفى محمد العبوسي

الخلاصة: تناول هذه الدراسة بالوصف نمط حب الشباب لدى 166 من مرضى حب الشباب غير المعالجين، في الفئة العمرية 13-42 عاماً، ممن يترددون على عيادات الأمراض الجلدية، كما تقيّم إدراك المرضى للعوامل التي لها تأثير على حالة حب الشباب لديهم. وبيّنت الدراسة وجود تاريخ عائلي من الإصابة بحب الشباب لدى 69.3% من المرضى. ويُعتقد أن الإجهاد العاطفي، والطقس الحار، والتعرُّق، من العوامل التي تؤدي إلى تفاقم حالة حب الشباب لدى المرضى من الجنسين، وأن العوامل السابقة للحيض ومستحضرات التجميل هي العوامل التي تؤدي إلى تفاقم الحالة لدى النساء. ويعتقد العديد من مرضى حب الشباب أن حالتهم تتفاقم من جراء تناول أطعمة معينة، مثل المكسرات، والشوكولاتة، والأغذية الدهنية، والأغذية السميكة، والبيض، والكعك، والبسكويت، والتوابل، والقهوة، والشاي.

ABSTRACT This study in Jordan described the pattern of acne in 166 untreated acne patients aged 13-42 years attending dermatology clinics and assessed patients' perceptions of factors that have an effect on their acne condition. Family history of acne was positive in 69.3% of acne patients. Emotional stress, hot weather and sweating were believed to be aggravating factors by acne patients of both sexes, and premenstrual factors and cosmetics were factors among women. Many acne patients believed that their acne was exacerbated by certain aspects of diet including nuts, chocolate, fatty food, fried food, eggs, cakes and biscuits, spices and coffee and tea.

Facteurs considérés par les patients acnéiques jordaniens comme ayant un impact sur leur état acnéique

RÉSUMÉ La présente étude réalisée en Jordanie a décrit les caractéristiques de l'acné chez 166 patients acnéiques non traités âgés de 13 à 42 ans qui se sont présentés dans des services de consultations dermatologiques et a évalué les perceptions par les patients des facteurs qui ont un effet sur leur état acnéique. Il y avait des antécédents familiaux positifs d'acné chez 69,3 % des patients acnéiques. Le stress émotionnel, le temps chaud et la transpiration étaient considérés comme des facteurs aggravants par les patients acnéiques des deux sexes, et les syndromes prémenstruels et les produits cosmétiques étaient d'autres facteurs chez les femmes. De nombreux patients acnéiques croyaient que leur acné était aggravé par certains éléments de l'alimentation comprenant les noix, le chocolat, les aliments gras, les aliments frits, les œufs, les gâteaux et les biscuits, les épices ainsi que le café et le thé.

¹Department of Biochemistry and Molecular Biology; ²Department of Applied Medical Sciences; ³Department of Clinical Pharmacy; ⁴Department of Internal Medicine; Jordan University of Science and Technology, School of Medicine, Irbid, Jordan (Correspondence to Z. El-Akawi: zakawi@just.edu.jo).

Received: 24/10/04; accepted: 09/03/05

Introduction

Acne is a common skin disease; studies report that it affects 91% of male and 79% of female adolescents, and 3% of male and 12% of female adults [1,2]. It is a chronic inflammatory disease of the pilosebaceous glands located on the face, chest, and upper back. It is characterized by the formation of comedones, non-inflammatory acne lesions and inflammatory lesions: papules, pustules and nodules. Scarring and hyperpigmentation are also found in addition to the typical lesions of acne [3]. Acne can occur around puberty and thereafter it gradually improves in the late teens or early twenties, but it may remain a clinical problem up to the age of 40 years or even older ages [4,5].

The etiology and pathogenesis of acne are multi-factorial, including increased sebum production [3,6–9], abnormal follicular differentiation [6,7], *Propionibacterium* acne infection [6,7,10,11], inflammatory mediators [6,7,11,12], immunological status [11,13] and genetic and hormonal factors [3,8,14–16]. Many other factors might be considered as contributing factors to acne prevalence and severity including: physiological factors such as the menstrual cycle, pregnancy and anxiety and depression [3–5,17,18] and external factors such as hot and humid weather, lack of skin cleanliness, cosmetics, mechanical skin irritation from excessive washing, diet and smoking [1,3,19–22].

This study in Jordan was designed to describe the pattern of acne in patients attending dermatology clinics and assess patients' perceptions of factors that have an effect on their acne condition.

Methods

A total of 166 untreated acne patients (83 males and 83 females) aged 13–42 years

were enrolled in the study. Patients were attending the Dermatology Clinic in Princess Basma Teaching Hospital or King Abdullah Teaching Hospital in Irbid during the period March to July 2002.

All patients were interviewed and completed a written consent and a questionnaire form that contained information about their sex, age, age of acne onset, body weight and personal or family history of acne. The questionnaire also asked about their beliefs about the effect of diet and other factors on the severity of their acne and on their consumption of fruits and vegetables in their diet.

Each patient was examined and the severity of their acne was graded based on the global acne grading system (GAGS) [22, 23]. This system considers 6 locations on the face, chest and upper back, with a factor for each location based roughly on the affected surface area, distribution and density of pilosebaceous units. Each grade was calculated as the sum of the local scores for the face, chest and upper back. To be consistent, acne grading was performed by only one researcher. Skin character (normal, oily or dry) was also recorded for all patients.

The chi-squared test was used to test the difference in severity of acne between males and females.

Results

The age of acne patients who were included in this study ranged from 13–42 years with a mean of 21 years, while the range of body weight was from 42–110 kg with a mean of 64.5 kg. The age and weight of female patients were lower than those of males as shown in Table 1. The age at onset of acne ranged from 11–25 years for both sexes, but female patients developed acne at an earlier age than males: 13.2 years versus 14.6

Table 1 Age and weight analysis of acne patients

Variable	Males (n = 83)	Females (n = 83)
Age range (years)	14–42	13–34
Weight range (kg)	42–110	42–95
Age at acne onset (%)		
13–20 years	96.4	91.6
≥ 21 years	3.6	8.4

n = total number of patients

years. Late-onset acne (acne that developed after age 21 years) was noticed only in 2 females and in 1 male, 2.4% and 1.2% of the cases respectively (Table 1). The duration of acne ranged from 1 month to 10 years with a mean of 5.6 years (5.4 years for males and 5.8 years for females). A family history of acne was present in 69.3% of acne patients (66.3% males and 72.3% females).

Seborrhoea (oily skin) was found in 92.8% of acne patients and the percentage of oily skin in females was higher than in male acne patients (Table 2). In addition, all patients with the severe grade of acne were found to have seborrhoea. The percentage of normal skin was 6.0% in acne patients and very few patients with acne had dry skin (1.2%).

Acne patients were divided into 3 groups according to the severity of their acne condition using the GAGS system. Overall, 67 acne patients (40.4%) had mild acne, 74 (44.6%) had moderate acne and 25 (15.0%) had severe acne. There were no significant differences in the mild or the moderate grades of acne between males and females ($P = 0.54$), whereas the severe grade of acne was more common among male than female acne patients (Table 2). The face was the

Table 2 Severity of acne and skin characteristics of acne patients

Variable	Males (n = 83)	Females (n = 83)	Total (n = 166)
Severity of acne			
Severe	18.0	12.0	15.0
Moderate	42.2	47.0	44.6
Mild	39.8	41.0	40.4
Skin type			
Dry	1.2	1.2	1.2
Normal	7.2	4.8	6.0
Oily	91.6	94.0	92.8

n = total number of patients.

common site of acne in mild and moderate grades, while the upper back and the chest were the common sites in the severe grade of acne. Comedones, papules and pustules were distributed over all these areas, but nodules were seen on the back and the chest more than the face.

Many factors were mentioned by acne patients as aggravating their acne condition. Emotional factors such as stress and worry were mentioned by 86.1% of acne patients (81.9% males and 90.4% females). Also, exposure to sunlight and excessive heat during summer time were believed to aggravate acne in 77.7% of patients (79.5% males and 75.9% females). Two-thirds of patients (65.7%) stated that their acne became better during winter time, (68.7% males and 62.7% females). Many acne patients (68.7%) claimed that excessive sweating was an exacerbating factor for their acne (72.3% males and 65.1% females) (Table 3).

Among dietary factors, most acne patients believed that their acne was exacerbated by eating fatty food, butter, eggs, nuts, fried food, sweets and spices. Table

Table 3 Factors believed by acne patients to affect their acne condition (n = 166)

Variable	Effect on acne condition (% of patients)		
	No effect	Worse	Better
Menstrual cycle (females) (n = 83)	2.4	97.6	–
Emotional stress and worry	13.9	86.1	–
Hot weather (sunlight and heat)	22.3	77.7	–
Excessive sweating	31.3	68.7	–
Cosmetic use (females) (n = 30)	70.0	30.0	–
Cold weather	34.3	–	65.7
Foods			
Nuts	10.8	89.2	–
Chocolate	15.1	84.9	–
Cakes and biscuits	42.8	57.2	–
Oily food	47.0	53.0	–
Fried food	48.2	51.8	–
Eggs	57.8	42.2	–
Milk, yogurt and cheese	77.1	22.9	–
Butter and margarine	78.9	21.1	–
Cream	79.5	20.5	–
Coffee and tea	87.9	12.1	–
Spices	89.2	10.8	–
Seeds	98.2	1.8	–
Vegetables and fruits	80.7	–	19.3

n = total number of patients.

3 shows the types of food that were most often believed by acne patients to aggravate their acne condition: nuts (89.2% of patients), chocolate (84.9%), biscuits and cakes (57.2%), oily food (53.0%), fried foods (51.8%) and eggs (42.2%). Patients reported the exacerbation of their acne after eating the following kind of foods: butter and margarine (21.1%), milk, yogurt and cheese (22.9%), cream (20.5%) and spices (10.8%). In addition, 1.8% of acne patients noticed that their acne condition became worse after eating seeds and 12.1%

after drinking coffee and tea. Acne patients believed that their acne condition became better when they eat vegetables and fruits. From the interviews with patients we noted that most acne patients in Jordan consume snacks and sweets, especially chocolate, and nuts, olive oil and fried food. They do not eat good quantities of vegetables and fruits; 81% of patients said that they usually have low to moderate and only 19% consume a good amount of fruits and vegetables in their diet.

Premenstrual exacerbation of acne was experienced by 97.6% of female acne patients, while 2.4% of them had noticed no effect of menstruation on their acne. Of the 30 females with acne who used cosmetics, 10 (30.0%) claimed that their acne becomes worse by using cosmetics especially foundations and oily creams, while 20 noticed no effect (Table 3).

Discussion

The age at acne onset in Jordanian patients was found to be earlier in females (13.2 years) than males (14.6 years), which might reflect the earlier onset of puberty in females. These results were similar to those reported in the Turkish study of collage students aged from 14 to 20 years. They found that the mean ages at acne onset in girls and boys were 13.4 and 14.1 years respectively [21].

Acne is not only a disease of adolescence, it also presents in adults of both sexes [1-4,6,24]. Late-onset acne has been shown to be the result of abnormalities in plasma androgens [4,8]. In our work we found less than 2% of acne cases with late-onset acne which highlights the lower percentage of the adult population that experience this kind of disturbance in sex hormones. Acne is also a chronic skin disease that can last for many years [2,3,11,18,24]. Our study supports this concept as we found that the mean duration of acne in this group of patients was over 5 years. Genetic factors are very important in determining individual susceptibility to acne. Over two-thirds of our patients (69.3%) mentioned a family history of acne. The role of genetic factors is also reported by other researchers [3,24].

Mild and moderate grades of acne were more frequent (40.4% and 44.6%,

respectively) than the severe grade (15.0%) among Jordanian acne patients. Although the GAGS scores in males and females were similar, we found that severe acne was more common in males than in females (18.0% versus 12.0%). These findings are consistent with reports by many investigators that relate the severity of acne to the role of androgen hormones, which are potent stimuli to the sebum secretion that contributes to the pathogenesis of acne [7-9,11].

Acne lesions comedones, papules, pustules and nodules were distributed all over the face, the upper back and the chest of our patients. These areas are known to be enriched with sebaceous glands that provide a lipid-rich environment for the proliferation of *P. acnes* bacteria, which contribute to the inflammatory process of acne [18]. We found seborrhoea in (92.8%) of the acne patients; dry skin was found in only 1.2%. These findings are expected because acne mostly affects people with oily skin. This is in accordance with the finding that people with acne have higher rates of sebum production than the healthy population [3]. Moreover, seborrhoea was found in all patients with severe acne, suggesting that the severity of acne condition is related to the amount of sebum production. These results confirmed the observations that have been reported by many investigators that the severity of acne correlates with the amount of sebum production [8,9].

Acne, like others skin diseases, might be influenced by the nutritional status of the patient. It has been found that shortage in the essential fatty acids linoleic acid and linolenic acid causes follicular hyperkeratosis in the pilosebaceous duct, and increases the transepidermal water loss in the skin of acne patients [25,26]. This supports the suggestion that acne vulgaris might be ag-

gravated by the consumption of a diet rich in saturated fats and monosaturated acids and low in polyunsaturated fatty acids. We found that most acne patients in Jordan report consuming food that is high in saturated fats and carbohydrates such as snacks and sweets especially chocolate; they also consume nuts, olive oil and fried food. They do not report eating a lot of vegetables and fruits that contain vitamins that may be beneficial for improving and modifying acne [20,26]. It is not surprising, therefore, that many of the Jordanian acne patients

involved in this study attributed the exacerbation of their acne to the types of food they ate.

In conclusion, our findings demonstrate that the age at onset of acne in female Jordanian patients is earlier than in males and acne is a chronic skin disease of adolescents and adults with a multi-factorial etiology where stress and worry, diet, genetic factors, seborrhoea, excessive exposure to sunlight and heat, excessive sweating, menstruation and cosmetics were believed by acne patients to affect their acne condition.

References

1. Tan JK, Vasey K, Fung KY. Beliefs and perceptions of patient with acne. *Journal of the American Academy of Dermatology*, 2001, 44:439-45.
2. Goulden V, Stables GI, Cunliffe WJ. Prevalence of facial acne in adults. *Journal of the American Academy of Dermatology*, 1999, 41:577-80.
3. Cunliffe WJ, ed. *Acne*, 1st ed. London, Dunitz, 1989:1-27.
4. Goulden V, Clark SM, Cunliffe WJ. Post-adolescent acne: a review of clinical features. *British journal of dermatology*, 1997, 136:66-70.
5. Seukeran DC, Cunliffe WJ. Acne vulgaris in the elderly: the response to low dose isotretinoin. *British journal of dermatology*, 1998, 139:99-101.
6. Healy E, Simpson N. Acne vulgaris. *British medical journal*, 1994, 308:831-3.
7. Webster GF. Acne vulgaris. *British medical journal*, 2002, 325:475-9.
8. Darley CR et al. Circulating testosterone, sex hormone binding globulin and prolactin in women with late onset or persistent acne vulgaris. *British journal of dermatology*, 1982, 106:517-22.
9. Ebling FG. The endocrine background to acne. In: Marks R, Plewig G, eds. *Acne and related disorders*. London, Dunitz, 1989:47-52.
10. Leeming JP, Holland KT, Cunliffe WJ. The microbial colonization of inflamed acne vulgaris lesions. *British journal of dermatology*, 1988, 118:203-8.
11. Till AE et al. The cutaneous microflora of adolescent, persistent and late-onset acne patients does not differ. *British journal of dermatology*, 2000, 142(5):885-92.
12. Cove H, Holland KT, Cunliffe WJ. An analysis of sebum excretion rate, bacterial population and the production rate of free fatty acids on human skin. *British journal of dermatology*, 1980, 103:383-6.
13. Holland DB et al. IgG subclasses in acne vulgaris. *British journal of dermatology*, 1986, 114:349-51.
14. Swale V et al. Heritability of common skin diseases using the twin model. A UK

- twin study. *British journal of dermatology*, 1998, 139:15–6 [abstract].
15. Marynick SP et al. Androgen excess in cystic acne. *New England journal of medicine*, 1983, 308:981–6.
 16. Reingold SB, Rosenfield RL. The relationship of mild hirsutism or acne in women to androgens. *Archives of dermatology*, 1987, 123:209–12.
 17. Stoll S et al. The effect of the menstrual cycle on acne. *Journal of the American Academy of Dermatology*, 2001, 45:957–60.
 18. Shaw JC, White LE. Persistent acne in adult women. *Archives of dermatology*, 2001, 137(9):1252–3.
 19. Rosenberg EW. Acne diet reconsidered. *Archives of dermatology*, 1981, 117:193–5.
 20. Ayres S Jr. Acne vulgaris: correcting pathophysiologic defects versus antibacterial therapy. *International journal of dermatology*, 1986, 5:335–6.
 21. Aktan S, Ozmen E, Sanli B. Anxiety, depression, and nature of acne vulgaris in adolescents. *International journal of dermatology*, 2000, 39:354–7.
 22. Schafer T et al. Epidemiology of acne in the general population: the risk of smoking. *British journal of dermatology*, 2001, 145:100–4.
 23. Doshi A, Zaheer A, Stiller MJ. A comparison of current acne grading systems and proposal of a novel system. *International journal of dermatology*, 1997, 36:416–8.
 24. Goulden V, McGowan CH, Cunliffe WJ. The familial risk of adult acne: a comparison between first-degree relatives of affected and unaffected individuals. *British journal of dermatology*, 1999, 141:297–300.
 25. Truswell AS. ABC of nutrition. Children and adolescents. *British medical journal*, 1985, 291:397–9.
 26. Ayres S Jr, Mihan R. Synergism of vitamin A and E in acne vulgaris. *International journal of dermatology*, 1981, 20:616.