

# Clinical Features of Adult Male Acne in a Tropical Country: A Prospective Cross-sectional Study

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## ABSTRACT

**Objective:** To evaluate the characteristics of post-adolescent male patients with acne in terms of the onset of the condition, its clinical course and severity, and the behaviors associated with its severity.

**Materials and Methods:** A prospective, cross-sectional study was conducted on adult males with acne who visited Siriraj Hospital, Thailand. All male acne patients aged 21 years and older were enrolled. Diagnoses and physical examinations were performed by dermatologists.

**Results:** Seventy-two patients (mean age, 26.9 [ $\pm$  4.3] years) were included. Persistent acne, relapse acne, and late-onset acne (onset at age  $\geq$  21 years) were reported in 62.5%, 33.3%, and 4.2% cases, respectively. Persistent acne tended to subside at 26 years of age, whereas late-onset acne tended to start at 28 years of age. The acne severity was mild in most cases. Pimple-picking, followed by frequent face washing, were common habits among male acne patients. Shaving influenced the severity in some adult male with acne.

**Conclusion:** Adult male acne commonly presented as inflammatory lesions and comedones on the cheeks. They commonly had an onset earlier than 21 years old and continued into adulthood, but the post-adolescent severity tended to be mild. While several factors have been reported elsewhere to be involved in the severity of acne, this study found that only shaving influenced severity.

**Keywords:** Acne vulgaris; adult acne; male (Siriraj Med J 2023; 75: 85-91)

## INTRODUCTION

Acne vulgaris is chronic inflammatory skin disease characterized by open and closed comedones, inflammatory papules, pustules, and nodules in seborrheic areas.<sup>1,2</sup> It is one of the most troublesome skin diseases. The pathogenesis of acne involves the colonization and proliferation of *Corynebacterium acnes*, resulting in the inflammatory process, hyperkeratinization, and sebum hyperproduction.<sup>2,3</sup> The negative effects of acne vulgaris include depression, antisocial behavior, and even unemployment. The prevalence of acne vulgaris is 90%-95% of the population.<sup>3,4</sup> Acne commonly occurs

during adolescence, and it is found less often during the pre- and post-adolescent periods.<sup>3</sup>

Adolescent acne predominantly occurs in males, while post-adolescent acne is usually found in females.<sup>5</sup> However, post-adolescent acne or adult acne can also affect male patients. Adult patients with acne have many challenging problems. For instance, the acne may develop therapeutic resistance or respond slowly to treatment; the skin can also easily become allergic to topical treatments, leading to drug discontinuation. Previous studies have identified a wide variety of factors related to acne severity in adolescent acne rather than post-adolescent acne.<sup>3-5</sup>

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Based on our literature review, data from prospective studies focusing on post-adolescent male patients with acne is limited. The present study aimed to evaluate the characteristics of post-adolescent male patients with acne in terms of its onset, clinical course, and severity, and the behaviors associated with the severity of acne.

## MATERIAL AND METHODS

This study was ethically approved by the Institutional Review Board SIRB 796/2018 (EC4), COA no Si 018/2019. Adult male patients were recruited if they had acne, were aged 21 years or older,<sup>6</sup> and attended the Outpatient Dermatologic Clinic, Siriraj Hospital, between January 2019 and June 2020. Informed consent was obtained from all of the patients. The demographic data collected included the patients' present ages, their age at acne onset, and aggravating factors. The acne was classified into 3 types: persistent, late-onset, and relapse. Persistent acne was defined as acne that had an onset earlier than 21 years of age and which continued into adult life. Late-onset acne was defined as acne with an onset of  $\geq 21$  years of age (usually between 21 and 25 years of age). Relapse acne referred to acne that had an onset earlier than 21 years of age, but subsequently subsided before recurring sometime after remission.<sup>6</sup>

A record was made of each patient's skin type (oily; normal; dry; and mixed [oily nose, and normal-to-dry skin on the cheeks]), which was determined by a combination of history taking and physical examination. All of the physical examinations were conducted by the one dermatologist (CL). Severity of acne was recorded throughout all affected areas such as the whole face, neck, chest and back. The severity of the acne, and its location and characteristics were characterized using the Investigator's Global Assessment (IGA) severity scale. IGA offers a composite score to define acne severity, and the tool has been accepted by the U.S. Food and Drug Administration. The acne severity can be assessed using two methods. With the first method, the acne severity is classed as "mild", "moderate", or "severe", depending on the number of comedones, inflammatory lesions, lesions, and pseudocysts. Mild acne has  $< 20$  comedones,  $< 15$  inflammatory papules, a total lesion count of  $< 30$ , and no pseudocysts. Moderate acne has 20–100 comedones, 15–50 inflammatory lesions, a total lesion count of 30–125, and no pseudocysts. Severe acne has  $> 100$  comedones,  $> 50$  inflammatory lesions, a total lesion count of  $> 125$ , and  $> 5$  pseudocysts. The second classification method utilizes a five-point scale: 0 = "clear", 1 = "almost clear", 2 = "mild", 3 = "moderate", and 4 = "severe". Clear acne means that there are no lesions,

while almost-clear acne describes the condition in which there are rare noninflammatory lesions and only one inflammatory lesion. Mild acne has some noninflammatory lesions and 2–3 inflammatory lesions. Moderate acne has many noninflammatory lesions, some inflammatory lesions, and one nodular lesion. Severe acne has many noninflammatory and inflammatory lesions, as well as 2–3 nodular lesions.<sup>7</sup>

An evaluation was made of the patients' acne complications, such as post-inflammatory hypo/hyperpigmentation, pitted (atrophic) scarring, and hypertrophic scarring. Additionally, the Global Scale for Acne Scar Severity (SCAR-S) system was used to categorize the severity of scars as "macular", "mild", "moderate", and "severe". A macular scar is defined as an erythematous, post-inflammatory hypo/hyperpigmentation scar without any textural change. A mild scar presents a mild atrophic appearance, and the scar can be covered by makeup or facial hair. A moderate scar can be covered by manually stretching the skin, but not by makeup. A severe scar is a permanent scar that cannot be removed by stretching the skin.<sup>8</sup>

Data were analyzed using PASW Statistics for Windows (version 18.0; SPSS Inc., Chicago, Ill., USA). *P*-values less than 0.05 indicates statistical significance.

## RESULTS

Seventy-two male patients with acne were enrolled. Their mean age was  $26.9 \pm 4.3$  years, and their mean body mass index was  $21.9 \pm 3.0$  kilogram/m<sup>2</sup>. The mean age of acne onset was  $15.3 \pm 2.5$  years. Onset of the patients' secondary sex characteristics occurred between 12 and 18 years of age, with the mean age of onset of voice cracks, shin-hair growth, and beard growth being  $14.4 \pm 1.6$ ,  $15.1 \pm 2.3$ , and  $15.6 \pm 2.1$  years, respectively. Seventy-two percent had a positive family history of acne; of those, 94.2% had first-degree relatives with acne while the rest (5.8%) had second-degree relatives with acne. [Table 1](#) details the skin and acne types, acne severities, habits related to acne, and previous treatments. Over half of the patients (55.6%) had the oily skin type, while 37.5% had the mixed type. Most cases were of the persistent acne type, followed by relapse acne and then late-onset acne. With the persistent acne group, the condition first developed at the mean age of  $15.1 \pm 1.9$  years, continued to  $26.4 \pm 5.7$  years of age, and then subsided. As to the relapse group, the acne first appeared at the mean age of  $15.4 \pm 1.9$  years; it subsequently subsided for a duration of  $9.7 \pm 8.2$  years before recurring at the age of  $24.3 \pm 4.4$  years. The late-onset acne commenced at  $27.7 \pm 2.5$  years of age.

**TABLE 1.** Demographic data and previous treatments of adult male acne patients.

Characteristics	N/72 (%)
<b>Skin type</b>	
Oily	40 (55.6)
Mixed	27 (37.5)
Normal	5 (6.9)
<b>Type of adult male acne</b>	
Persistent	45 (62.5)
Relapse	24 (33.3)
Late-onset	3 (4.2)
<b>Severity based on IGA-scale</b>	
Mild	60 (83.3)
Moderate	11 (15.3)
Severe	1 (1.4)
<b>Severity based on 5-scale IGA</b>	
0 = clear	0 (0)
1 = almost clear	21 (29.2)
2 = mild	33 (45.8)
3 = moderate	17 (23.6)
4 = severe	1 (1.4)
<b>Behavior during acne period</b>	
Picking pimples	50 (69.4)
Frequent face washing	17 (23.6)
Using facial sheet masks	3 (4.2)
<b>Previous treatment</b>	
Topical medications	
2.5%-5% benzoyl peroxide	35 (48.6)
1% clindamycin	30 (41.7)
Adapalene	13 (18.1)
0.025%-0.05% tretinoin	12 (16.7)
4% erythromycin	8 (11.1)
Azaleic acid	6 (8.3)
Systemic medications	
Antibiotics	20 (27.8)
Isotretinoin	16 (22.2)

**Abbreviation:** IGA, Investigator's Global Assessment

According to the IGA-scale severity assessments, the majority of our patients had mild acne. Pimple picking, followed by frequent facial washing, were common habits during the acne period of the male patients. The advice of dermatologists was sought by 45.8% of the 72 patients, and a comparable proportion (43.0%) consulted general practitioners. A sizeable minority (19.4%) bought over-the-counter medications, but very few patients

(1.4%) sought treatment at beauty salons. Most used several therapies for their acne. The most common topical treatment was benzoyl peroxide in conjunction with topical antibiotics. Doxycycline was the most frequently used antibiotic; the 2 antibiotics, sulfamethoxazole and trimethoprim, were used in combination by a minority of patients.

The most common locations on the face were the

cheeks (100%), the chin (68.1%), and the forehead (54.7%). The most frequently observed clinical presentation was inflammatory lesions, followed by whitehead comedones, blackhead comedones, and nodular lesions. Our study revealed the types of acne lesions that were present at various locations of the face. (Fig 1) Inflammatory acne was usually found around the cheeks and perioral areas, whereas whitehead comedones typically occurred on the forehead. One-third of the patients had acne on both facial and non facial areas (such as the chest and back).

Post-inflammatory hypo/hyperpigmentation (75%) and pitted (atrophic) scarring (72.2%) were common complications, but hypertrophic scarring was found in only 12.5% of the cohort. Based on the SCAR-S system, 40.3%, 29.2%, 29.2%, and 1.3% had macular, mild, moderate, and severe scarring, respectively. One patient with severe scarring had a history of anabolic steroid use for body building during the acne period. Table 2 lists the factors that were deemed to be potentially associated with acne severity. The proportion of patients who frequently shaved their beard was significantly higher for patients with moderate-to-severe acne than patients with mild acne. However, it should be noted that of the 29 patients who frequently shaved their beard, 20 (69%) had acne lesions on the chin.

## DISCUSSION

Acne is a chronic inflammatory skin disease affecting all generations of the population. The results of our study are consistent with those of previous studies on females in that persistent acne was found to be the most common type of post-adolescent acne.<sup>6</sup> However, the common acne locations in our male patients (the forehead and both cheeks) differed from those reported for post-adolescent females (the lower face: chin, jawline, and neck).<sup>9,10</sup> The data on the predominant type of lesions found in female acne are controversial. A review by Holzmann et al. showed that comedones were usually minimal or absent, yet Bagatin et al. reported that comedones were the most common type. Our study showed that inflammatory papules and comedones were common types of acne in post-adolescent male patients, which is similar to the adolescent-acne patterns found for both genders.<sup>6,9-10</sup>

Regarding acne complications, an Indian study by Khunger et al. claimed that post-acne scarring is more frequent in adults than adolescents due to treatment resistance and delayed therapy.<sup>14</sup> It has also been reported elsewhere that adult male patients tend to have more acne scarring than adult female patients.<sup>3</sup> The acne complications found by Khunger and colleagues were-in descending order of frequency-pigmentary changes, icepicks, rolling,



**Fig 1.** Clinical presentation of adult male acne on different locations of the face.

**Abbreviations:** B, blackheads; C, closed comedones; I, inflammatory papules; N, nodular lesions

**TABLE 2.** Factors associated with the severity of male acne in this study.

Factors associated with severity of acne	Mild (n = 60) N (%)	Moderate-to-severe (n = 12) N (%)	P-value
Inadequate sleep	41 (68.3)	11 (91.7)	0.092
Stress	38 (63.3)	7 (58.3)	0.492
Exercise	8 (13.3)	4 (33.3)	0.106
Exposure to sunlight	18 (30)	5 (41.7)	0.318
Shaving	21 (35)	8 (66.7)	0.044*
Hormonal therapy	1 (1.7)	1 (8.3)	0.308
Smoking	5 (8.3)	2 (16.7)	0.330
Chocolate	11 (18.3)	2 (16.7)	0.629
Sugary diet	15 (9)	2 (16.7)	0.587
Dairy diet	5 (8.3)	2 (16.7)	0.330
Whey protein	4 (6.7)	0 (0)	0.474
Face massage	2 (3.3)	1 (8.3)	0.426
Face scrub	3 (5)	2 (16.7)	0.191
Hairspray/oil	4 (6.7)	0 (0)	0.357
Family history	39 (65.0)	11 (91.7)	0.185

**Remark:** a *p*-value less than 0.05 indicates statistical significance.

atrophic scarring, and keloidal scarring; this sequence is consistent with the findings of our study.<sup>14</sup> One Polish population-based observational study conducted by Chlebus et al. found that 53.9% of the adult patients with persistent acne had scarring.<sup>15</sup> Our study revealed a higher prevalence of scarring than that reported by Chlebus and colleagues. Rawling et al. reviewed that the Asian skin type has a thinner stratum corneum which is the epidermal outermost layer and protective layer, resulting in more skin barrier defects.<sup>16</sup> This may explain that the Asian skin type is more vulnerable to forming scar tissue than Caucasian skin. Thus, Asian skin may require different care methods.

Table 3 summarizes the factors identified by previous studies as being associated with acne severity in post-adolescent male and female patients. The likelihood of having the more severe forms of acne was reported to increase with family history of acne; the consumption of high-dairy, fatty, or sugary diets; the drinking of milk and sugary beverages; the presence of hirsutism, acanthosis

nigricans, or excessive seborrhea; chemical substance exposure; smoking; acne onset during adolescence; and the male gender.<sup>1,5,9,11-12,15,18,21,23-25</sup> Smoking has been shown to be able to increase and decrease acne severity, especially in male patients.<sup>1,13,16,19</sup> Due to the limited number of patients, our study did not find any significant differences between the mild and moderate-to-severe acne groups in terms of the aforementioned factors. However, shaving was significantly found more often in patients with the more severe forms of acne. We assumed that the shaving technique employed and the use, or non-use, of a shaving gel or cream might contribute to this finding. It should be noted that our study and the work by Klaz and colleague comprised only male patients.<sup>17</sup>

There are some limitations to our study. Firstly, a limited number of patients were enrolled. Moreover, this work was conducted at a tertiary hospital in Thailand, and not on the general population; the results may therefore not be generalizable. Lastly, this research did not include male-to-female transgender individuals, who may receive

**TABLE 3.** Comparison of previous studies on post-adolescent acne with our study.

Study	Goulden et al. 1999 <sup>11</sup>	Schafer et al. 2001 <sup>13</sup>	Klaz et al. 2006 <sup>17</sup>	Xu et al. 2007 <sup>20</sup>	Wei et al. 2010 <sup>18</sup>	Ismail et al. 2012 <sup>12</sup>	Khunger et al. 2012 <sup>14</sup>	Wolkenstein et al. 2015 <sup>21</sup>	Di Landro et al. 2017 <sup>22</sup>	Karadag et al. 2019 <sup>19</sup>	Wolkenstein et al. 2018 <sup>24</sup>	Aalemi et al. 2019 <sup>23</sup>	Kaminsky et al. 2019 <sup>9</sup>	Ibrahim et al. 2019 <sup>25</sup>	Penso et al. 2020 <sup>5</sup>	Our study
<b>Type of study</b>	Case-control	Cross-sectional	Cross-sectional	Cross-sectional	Cross-sectional, case-control	Case-control	Cross-sectional	Cross-sectional	Case-control	Prospective, case-control	Cross-sectional	Case-control	Observational study	Case-control	Cross-sectional	Prospective, cross-sectional
<b>Nationality</b>	British	German	Israeli	Chinese Han	Chinese	Malaysian (79.5%) Non-Malay (20.5%)	Indian	French	Italian	Turkish	Belgian, Czechian, Slovakian, French, Italian, Polish, Spanish	Afghan	Latin, American, Iberian	Egyptian	French	Thai
<b>No of cases</b>	204	896	27,083	975	2,920	44	280	2,266	205	3,826	6,063	279	1,384	100	24,452	72
<b>Male</b>	- N/A	- 49.2%	- 100%	- 51%	- 51.26%	- 34.1%	- 17.9%	- 41.2%	- 50.2%	- 31.4	- 50.42%	- 54.1%	- 20%	- 19%	- 25%	- 100%
<b>Female</b>	- N/A	- 50.8%	- 0%	- 49%	- 49.65%	- 65.9%	- 82.1%	- 58.8%	- 49.8%	- 68.6	- 49.58%	- 45.9%	- 80%	- 81%	- 75%	- 0%
<b>Age (yrs)</b>	- > 25	- 1 to 87	- 21 to 22	- 16 to 25	- 17 to 25	- 18 to 30	- > 25	- 15 to 24	- 10 to 24	- > 25	- 15 to 24	- 10 to 24	- 25 to 60	- N/A	- > 18	- > 21
<b>Mean age (yrs)</b>	N/A	42 (median)	21.85 ± 1.16	18.4 (median)	21.56 ± 1.57	18-30	30.5	19.0 ± 2.6	17.2 ± 3.1	20.4 ± 4.52	19.9 ± 2.8	18.7 ± 3.2	33.35 ± 8.42	19.4 ± 4.557 ± 14	26.9 ± 4.3	
<b>Age at acne onset (yrs)</b>	N/A	12-15 female < male	N/A	N/A	16.24 ± 2.32	N/A	N/A	N/A	N/A	15.92 ± 3.68	N/A	17.4 ± 2.9	N/A	N/A	N/A	15.3 ± 2.5
<b>Types</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Persistent</b>							- 73.2%						- 66%			- 62.5%
<b>Late-onset</b>							- 26.8%						- 32%			- 33.3%
<b>Relapse</b>							- N/A						- N/A			- 4.2 %
<b>Severity</b>	N/A			N/A	N/A	N/A			N/A		N/A	N/A			N/A	
<b>Mild</b>		- 75.4%	- N/A				- 61%	- 65.2%		- 12.6%			- 36.9%	- 35%		- 83.3%
<b>Moderate</b>		- 21.7%	- N/A				- 28%	- 31.2%		- 42.3%			- 48%	- 39%		- 15.3%
<b>Severe</b>		- 2.9%	- 0.88%				- 12%	- 3.6%		- 45.1%			- 15%	- 26%		- 1.4%
<b>Factors increasing acne severity</b>	Family history of acne	Active smoker	Number of cigarettes smoked per day was a protective factor of acne	Family history of acne	Family history; psychological disorders; insomnia; mental stress; high-caloric diets; oily skin	Family history; high glycemic load; ice-cream; milk	Topical steroid use; drug use	Cannabis; chocolate; sweets	Family history; milk; BMI (> 18.5)	Family history; smoking; high BMI; chocolate; fruit juice intake	Family history; chocolate intake	Family history; diet (milk, chocolate, eggs, low fat milk, potato chips)	Male	Family history; sun exposure	Milk; sugary beverages; sugary and fatty products	Shaving

**Abbreviations:** BMI, body mass index (kg/m<sup>2</sup>); EU, European; N/A, not applicable; yrs, years

estrogens and/or antiandrogens. Thus, our findings may not be applicable to this group of patients.

To summarize, in our tropical country, the male patients with post-adolescent acne usually presented with inflammatory lesions and comedones, which were predominantly located on the cheeks. They commonly had an onset earlier than 21 years of age and continued into adulthood, but the severity during the post-adolescent period tended to be mild. While several factors have been reported elsewhere to be involved in the severity of acne, this study found that only shaving influenced severity.

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