

Original Research Article

Clinical profile of acne vulgaris in semiurban patients

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ABSTRACT

Background: Acne is a chronic inflammatory disease of the pilosebaceous unit, mainly affecting face and frequently followed by scarring. It is the most common skin disease in an urban dermatology clinic in India. Adult acne is more common in women and may be a marker of hyperandrogenism. The present study was carried out to study the clinical profile of acne vulgaris in semiurban patients.

Methods: The study was conducted for 1 year on all eligible patients of acne vulgaris attending dermatology OPD of a hospital catering to semiurban patients. Data including grade of acne, markers of androgenicity and post-acne scarring was collected. Statistical analysis was done using SPSS 15 software.

Results: Frequency of acne vulgaris patients in the dermatology OPD was 2.8% with 429 acne patients out of 15,322 new patients. Female to male ratio was 1.44:1. The mean age of onset in males was 16.24 and in females, 14.84 years. Grade 2 acne (66%) was commonest followed by grade 3 (5.1%) and grade 4 (3.7%). Associated conditions seen were seborrhea (60.8%), alopecia (18.9%), acanthosis (4.9%) and PCOD (2.3%). Markers of androgenicity were more frequently seen in grade 2 acne which was statistically significant. Atrophic scars were commonest including icepick scars (80.2%), rolling scars (67.4%) and box scars (57.8%).

Conclusions: In our study females had an earlier onset and closed comedones were the most common acne lesion. Grade 2 acne vulgaris formed majority of patients. Grade 4 acne vulgaris was more common in males.

Keywords: Acne vulgaris, Semiurban, Clinical profile, Markers of androgenicity, Scarring

INTRODUCTION

Acne is a chronic inflammatory disease of the pilosebaceous units; it is characterized by seborrhoea, the formation of open and closed comedones, erythematous papules and pustules and in more severe cases nodules, deep pustules and pseudocysts. Inflammatory lesions are followed by scarring.¹ It is stated that 90% of individuals, male and female, between puberty and age of 30 years, experience some degree of acne and is reported by Kubba et al to be the most common skin disease, in an urban

dermatology clinic in India. There are estimated 200-300 million acne sufferers in the country.²

Acne vulgaris develops earlier in females than in males. Occasionally, it may start at age 7 or 8 years (adrenarche) and when it does, it portends severe acne. Less commonly, acne may make its first appearance in mature adults- after 25 years of age (adult acne). Adult acne is more common in women and is often, a part of cutaneous hyperandrogenism. Acne waxes and wanes through adolescent years and early adult life, rarely it may persist

well into the fifth and the sixth decade (persistent acne). The most severe forms of acne vulgaris occur more frequently in males, but the disease tends to be more persistent in females. Severity of the disease varies markedly from one individual to the other depending upon the interplay of various factors involved in the development of acne vulgaris.¹⁻⁴

Acne may ruin beauty and it may result in scars for life. Sufferers often have significantly impaired psychological development. The patient develops reduced self-esteem, and reduced career prospects caused by perceived disfigurement. These effects can be less related to the severity of the disease than to the patient's own perception.^{2,5}

The present study on acne vulgaris was carried out to study age of onset, gender predilection, body site involved, severity, association of seborrhea, alopecia, and markers of androgenicity in females.

METHODS

A cross sectional, observational study on acne vulgaris was conducted between January 2011 to December 2011 in the dermatology outpatient department of a medical college hospital at Lucknow, after obtaining permission of Institutional Ethics Committee. A total of 429 consecutive, eligible patients of either gender were included as subjects. Acneiform eruptions, drug and cosmetic induced acne were excluded.

The data was collected in a predesigned case record form which included age, gender, marital status, age of onset, duration of acne, body site involved, number and severity of acne lesions, relation to menstrual cycle, markers of androgenicity, post-acne hyperpigmentation and scarring. The severity of acne vulgaris was graded into four grades using a simple grading system, taking into account the predominant lesion.⁶

- Grade 1: Comedones, occasional papules
- Grade 2: Papules, comedones, few pustules
- Grade 3: Predominant pustules, nodules, abscesses
- Grade 4: Mainly cysts, abscesses, widespread scarring

Statistical analysis was done using SPSS 15 software (SPSS, Chicago, IL, USA).

RESULTS

A total of 15,322 new patients attended the dermatology OPD, during the study period of one year, 429 patients presented for acne vulgaris, giving a frequency of 2.8%.

A total of 253 (59%) were females and 176 (41%) were males, giving female to male ratio of 1.44:1. Mean age of male patient was 19.20 (± 3.16) years and female 21.68

(± 4.29) years (Table 1). All male and 90.9% of female patients were unmarried.

Table 1: Age wise distribution.

Age in years	Male	Female
	No.	No.
10-15	21	16
16-20	101	100
21-25	47	85
26-30	7	47
>30	0	5
Total	176	253

$\chi^2=33.1$; $p<0.001$

Table 2: Age of onset of acne vulgaris.

Age onset	Male (n=176) (%)	Female (n=253) (%)
10-15	64 (36.4)	176 (69.6)
16-20	105 (59.6)	76 (30.0)
21-25	7 (4.0)	1 (0.4)
Mean\pmSD	16.24\pm2.05	14.84\pm1.58

$\chi^2=49.18$; $p<0.0001$.

Age of onset in 240 (55.9%) patients was between 10 to 15 years of age, with a mean of 15.41 (± 1) years. Age of onset in males 105 (59.6%) was between 16 to 20 years of age, with a mean of 16.24 (± 2.05) years; age of onset in females was 176 (69.6%) between 10-15 years of age, at the mean age of 14.84 (± 1.58) years (Table 2). Family history of acne was observed in 225 (52.5%) patients.

In a majority (40.3%) of patients, the total duration of acne, was more than 60 months. The duration of acne ranged from 1 week to 24 years, with an average duration of 39.81 months. Out of a total of 286 (66.7%) patients, 186 (43.4%) patients complained of itching and post inflammatory hyper pigmentation. A total of 204 (80.6%) female patients gave history of habitual picking of acne, as compared to 122 (69.3%) male.

The mean age of menarche was 13.99 (± 1.80) years. Menstrual cycle was regular in 73 (28.9%) patients. History of premenstrual flare was present in 159 (37.2%) patients.

Table 3: Body site affected.

Site of acne lesions	No (n=429) (%)
Face	429 (100)
Arms	83 (19.3)
Back	110 (25.6)
Chest	75 (17.5)
Neck	32 (7.5)

A total of 288 (67.1%) patients presented with acne of 'face alone.' As such face was involved in all (100%) patients, followed by back 110 (25.6%), arms in 83

(19.3%), chest 75 (17.5%) and neck in 32 (7.5%) patients (Table 3).

Table 4: Morphology of lesions.

Types of lesions	No (n=429) (%)
Open comedones	223 (52)
Closed comedones	416 (97)
Papules	321 (74.8)
Pustules	112 (26.1)
Nodules	38 (8.9)
Abscesses	29 (6.8)
Pseudocyst	16 (3.7)

Closed comedones were observed in 416 (97%) patients had, followed by papules in 321 (74.8%), open comedones in 223 (52%), pustules in 112 (26.1%), nodules in 38 (8.9%), abscesses in 29 (6.8%) and pseudocyst in 16 (3.7%) (Table 4).

Table 5: Grade of acne vulgaris.

Acne grade	Male (n=176) (%)	Female (n=253) (%)	No. (n=429) (%)
1	27 (15.3)	81(32)	108 (25.2)
2	122 (69.4)	161(63.6)	283 (66)
3	15 (8.5)	7 (2.8)	22 (5.1)
4	12 (6.8)	4 (1.6)	16 (3.7)

$\chi^2=26.31$; $p<0.0001$.

Grade 2 acne was observed in 283 (66%) patients, followed by grade 1 in 108 (25.2%) patients, grade 3 in 22 (5.1%) patients and grade 4 in 16 (3.7%) patients (Table 5). Male 122 (69.4%) patients and female 161 (63.6%) patients had grade 2 acne vulgaris (Table 5). In our study, patients having acne more than 60 months duration had grade 3 or grade 4 acne.

Table 6: Markers of androgenicity in the female (n=253).

Marker	Present (%)	Absent (%)
Hirsutism	67 (26.5)	186 (73.5)
Acanthosis nigricans	13 (5.1)	240 (94.9)
Seborrhea	95 (37.5)	158(62.5)
Increased muscle mass	0	0
Deepening of voice	0	0

In the study, seborrhea was observed in 95 (37.5%) female patients, followed by hirsutism in 67 (26.5%) and acanthosis nigricans in 13 (5.1%). None of the patient had increased muscle mass or deepening of voice. In female subjects, markers of androgenicity – such as hirsutism, acanthosis nigricans and seborrhea were more frequently seen in grade 2 acne and the association between them was statistically significant ($p=0.045$, $p<0.0001$, p value <0.0001 respectively) (Table 6).

Table 7: Associated cutaneous and systemic conditions.

	No (n=429)	%
Seborrhoea	261	60.8
Alopecia	81	18.9
Folliculitis	32	7.5
Acanthosis nigricans	21	4.9
PCOD	10	2.3

Seborrhoea was the most common dermatological association as seen in 261 (60.8%) followed by folliculitis in 32 (7.5%), acanthosis nigricans in 21 (4.9%), melasma in 9 (2.1%) and alopecia in 81 (18.9%). Polycystic ovarian disease (PCOD) was seen in 10 (2.3%) patients. According to BMI, 8 out of 10 PCOD patients were overweight, and 2 were obese. USG findings in all 10 patients were suggestive of PCOD. Seven patients of PCOD had diabetes mellitus and none of them gave a positive family history of PCOD. Clinical findings were irregular menses and hirsutism in 10 patients, Seborrhea in 6 patients and acanthosis nigricans in 8 patients (Table 7).

Table 8: Types of acne scars.

Types of acne scars	No (n=429) (%)
Atrophic scars	
Icepick	344 (80.2)
Rolling	289 (67.4)
Boxscar	248 (57.8)
Hypertrophic	5 (1.2)
Keloid	1 (0.23)

Atrophic scars were commonest: icepick scars in 344 (80.2%), rolling scars in 289 (67.4%) and boxcar scar in 248 (57.8%) patients. Hypertrophic scar were present in 5 (1.2%) and keloids in 1 (0.23%) patient (Table 8).

DISCUSSION

The present study was done to study the clinical profile of patients of acne vulgaris in the Dermatology OPD of a medical college hospital and a possible correlation between acne vulgaris and markers of androgenicity in females. Acne vulgaris constituted 2.8% of all new patients attending Dermatology OPD. Other hospital based studies done in Asian population have reported acne vulgaris patients to be 1.06% to 19.6%.^{7,8} The mean age of a patient of acne vulgaris was 20.66 (± 4.05) years confirming acne vulgaris to be a primarily, a problem of the adolescent.

In the present study, female patients (59%) outnumbered male (41%) in the ratio of 1.44:1 with a mean age 21.68 (± 4.29) years, a marriageable age group. The majority (90.9%) female patients were unmarried. These observations confirm the report of Al-Ameer et al and Tallab.^{8,9} However Adityan et al have reported a larger

number of male patients in their study.⁷ Similar finding were observed by Kane et al indicating the greater concern of facial appearance in female patients, of younger and marriageable age group.¹⁰

In the present study the mean age of onset in was 15.41 (± 1.92) years, confirming observations of Adityan et al.⁷ The age of onset in female was about 1.5 years earlier than in males and the difference was statistically significant ($p < 0.0001$). Association between age of onset and age of puberty in our study was significant ($p < 0.0001$). The observations confirm reports that acne develop earlier in females as compared to males due to an earlier onset of puberty.^{1,11,12}

In the present study, the average mean duration of acne vulgaris was 39.81 months and severe acne were associated with a longer duration. Adityan et al had reported mean duration of acne as 45.55 months and patients with longer duration of the disease had more severe acne vulgaris.⁷

History of itching was noted in 186 (43.4%) patients and post inflammatory hyperpigmentation (PIH) in 286 (66.7%) of patients. Reich et al in their study reported itching in 50% and Lim et al in 70% of their patients.^{13,14} Post-inflammatory hyperpigmentation is a common sequel in acne patients.¹⁵ History of picking was noted in 326 (76%) patients and it was more common in female 204 (80.6%) as compared to male 122 (69.3%) patients. On the contrary, Pandey observed picking of acne to be more common in males as compared to females.¹⁶

In our study, face was involved in all the patients of acne vulgaris (100%), back in 25.6%, arms in 19.3%, chest in 17.5% and neck 7.5%, whereas only face involvement was seen in 67.1%. These observations are in accordance with data from earlier literature.^{1,7} The primary and the pathognomonic lesion of acne vulgaris is a comedone, which may be open or closed.^{1,4,17} In the present study, closed comedones were observed in 97% of our patients whereas open comedones were seen in 52% of our patients. Similar results were noted by Adityan et al.⁷

Acne vulgaris is a disease with polymorphic eruptions.¹ In our study, the severity of acne vulgaris was graded using a simple and quick system of classification of four-grade system.⁶ Grade 2 acne was seen in 283 (66%) patients followed by grade 1 in 108 (25.2%), grade 3 in 22 (5.1%) and grade 4 in 16 (3.7%) patients. Patients with grade 2 acne vulgaris outnumbered patients with more severe inflammatory forms of the disease. Similar findings were noticed by Kane et al.¹⁰ However, Adityan et al observed grade 1 acne vulgaris to be 60.2% of patients.⁷ In the present study, grade 4 acne vulgaris was observed in 6.8% male patient as compared to 1.6% female patients ($p < 0.0001$). This observation is in accordance to studies of Tallab and Adityan et al.^{7,9}

Although acne is not an inherited condition, there is an inherited predisposition.^{18,19} We observed family history of acne in 52.5% of our patients; 62.5% patients of grade 4 acne vulgaris had a positive family history of acne. Cunliffe and Gollnick reported family history in 40% and Kubota et al in 56.8% of their patients of acne vulgaris.^{20,21}

In our study, acne scarring was seen in 80.2% patients. Incidence of post acne scarring is observed to vary from 5.9% to 40.2%.^{4,7,10,22} We observed that patients with longer duration of disease were more likely to have post-acne scarring and the association between them was statistically significant ($p < 0.0001$) and this finding is in accordance with earlier studies.^{7,23}

Whereas, ice-pick scar was the most common type of post-acne scar and it was universally present in all patients of post acne scarring. Similar findings were noticed by Layton et al.²³ However, we observed a higher percentage of post acne scarring as this may be a phenomenon in the North Indian race or may be due to longer duration of disease which was present in majority of patients and habit of picking might have played its important role.

In our study, premenstrual flare was noticed in 62.8% of female patients. Incidence of premenstrual flare is reported to vary from 39.1% to 57.7% by Adityan et al, Stoll et al, Ikaraocha et al, and Kubota et al.^{7,24-26} In the present study, irregular menses was noted in 28.9% of female patients. Similarly, irregular menses noted in earlier studies varied from 10.2% to 48%.^{7,27}

Markers of androgenicity in female patients such as hirsutism was observed in 26.5% of patients. Similarly, in earlier studies it varied from 0% to 21%.^{7,27} Seborrhea was observed in 37.5% of female patients followed by acanthosis nigricans in 5.1% female patients. Seborrhea plays a central role in the pathogenesis of the disease.⁷ In the present study, seborrhoea was observed in 60.8% of patient and it was associated with severe grades of acne ($p < 0.0001$). Similar results were seen in Pandey study.¹⁶

Other associated conditions, seen in our study, were alopecia in 18.9% of patients, folliculitis in 7.5% of patients, acanthosis nigricans in 4.9% and melasma in 2.1% of patients. Most of the patients, having alopecia had traction alopecia and androgenic alopecia. Folliculitis is a known association of acne vulgaris. More over in our study, many of the patients were using hair oil which may be the underlying factor. Acanthosis nigricans was seen commonly in obese patients and polycystic ovarian disease patients. The only associated systemic disease was polycystic ovarian disease. Similarly, Adityan et al found polycystic ovarian disease as associated condition in 17 patients in their study.⁷

In our study, 10 patients were of PCOD, confirmed by USG of lower abdomen. However, 60% patients had

elevated luteinizing hormone (LH) level, 30% had normal and 10% had below normal level; 30% patients had elevated follicle stimulating hormone, 70% had normal; 90% patients had altered LH/FSH (that is above 2) and 10% patients had below 2; 40% patients had elevated testosterone level and 60% had normal level. Hormonal investigations were done as close to menses as possible. There may be some patients haven't had the exact idea of timing of their menses. Hence there may be slight variation in percentage as reported in earlier available literature.²⁸

CONCLUSION

Female patients of acne vulgaris outnumbered male in the ratio of 1.44:1 and belonged to the age group 16 to 25 years. Mean age of onset of acne was 15.41 (± 1.92) years with onset earlier in females. The average total duration of acne vulgaris was 39.81 months and those with longer duration of the disease had more severe form. Post-inflammatory hyperpigmentation was common and habitual picking is more frequent in females.

Face is the most common site and closed comedone the most common acne lesion (97%) followed by open comedone (52%). Patients with grade 2 acne vulgaris form the majority of patients. Grade 4 acne vulgaris is more common in males (6.8%) as compared to females (1.6%). Premenstrual flare of acne was seen in majority (62.8%) of female patients.

Seborrhoea (60.8% of patients) was the most common association followed by alopecia (18.9%), folliculitis (7.5% of patients) and acanthosis nigricans (4.9% of patients). Polycystic ovarian disease (2.3%) was the most common associated systemic disease. Common clinical markers of androgenicity in female patients; were hirsutism in (26.5%), acanthosis nigricans in (5.1%), seborrhea (37.5%). In female patients associated with PCOD, FSH, LH and testosterone level levels were normal but FSH-LH ratio was altered.

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