Original Research Article

A clinico-epidemiological study of acne vulgaris conducted at a tertiary care hospital, Tamil Nadu

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Abstract

Background: Acne is a chronic, self-limiting inflammatory disease of pilosebaceous unit. It is multifactorial, of which Propionibacterium acne and Sebum play an important role in etiopathogenesis. **Aim:** To study the clinico-epidemiological characteristics of patients with acne vulgaris attending the Out Patient Department of Dermatology at a tertiary care hospital, in Tamil Nadu state of India. **Material and Methods:** This is a Cross sectional study conducted in patients who are attending to the Outpatient Department of Dermatology in Meenakshi Medical College and Research Institute, Tamil Nadu. A total of 50 apparently healthy male and non-pregnant females aged between 12 years and 35 years with clinical diagnosis of acne grade 1 and 2 with facial lesions only are selected and recruited for the study. Pregnant and lactating women, patients who are hypersensitive to retinoids and presented with any other skin condition that would interfere with diagnosis or assessment of acne were excluded from the study. Study subjects were divided into two groups. One groups was treated with Adapalene and the other group was treated with Tretinoin. Both the groups were compared for the clinico-epidemiological characteristics. **Results:** A total of 50 patients were recruited for the study (n=50). Out of the 50 patients, 20 were males (40%) and 30 were females; 28 patients were students (that is 56%) and 22 (that is 44%) were completed their studies or not going to school or college for studies. Among the 50 patients 32 were unmarried and 18 were married. Based on the duration of Acne, subjects were divided into three groups: - below 1 year, 1-2 year and above 2 years. All the clinico-epidemiological parameters were compared for analysis. **Conclusion:** It was observed that 24% of the study population showed a positive family history of acne and diet is the major precipitating factor for the development of Acne among all the affected patients. So suggestions of change in dietary habits to be given to Acne patients for better outcome.
Keywords: Acne, Retinoids, Adapalene, Tretinoin, Epidemiological factors, Grade 1 Acne, Grade 2 Acne

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INTRODUCTION

Acne is a chronic, self-limiting inflammatory disease of pilosebaceous unit.[1] It is multifactorial, of which Propionibacterium acne and Sebum play an important role in etiopathogenesis.[2] Acne vulgaris is more common and severe in males than in females. The age of incidence is between 14 to 17 years in women and 16 to 19 years in men. The incidence of the condition decreases with increasing age.[3] The disease is seen in all the races affecting almost 90% of people.[1,4] American population is more affected compared to other races. Cystic acne is more common among the whites. The susceptibility to acne is

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determined by genetic factors.[2] In many cases, children with the condition have one or both parents with acne vulgaris. Genetics is estimated to be the cause of 80% of the cases.[5-7] The role of diet as a cause is unclear.[8, 9] Hormonal activity such as menstrual cycles and puberty, may contribute to the formation of acne.[6,9,10] Increase in sex hormone called androgen causes follicular gland to grow larger and make more sebum.[8,9] Similar condition is seen in pregnancy, leading to increased sebum production.[9] Cigarette smoking does increase the risk of developing acne and worsens its severity.[11] Acne mostly affects skin with a greater number of oil glands including the face, upper part of the chest and back.[8-10] Acne vulgaris has a greater psychological impact on the patient and his/her lifestyle and the resulting appearance may lead to anxiety, reduced self-esteem, and in extreme cases depression and suicidal thoughts. Aim of the study is to compare the clinico-epidemiological characteristics of patients with acne vulgaris and its comparison among the groups based on the retinoids used for the treatment of Acne.

MATERIALS AND METHODS

This is a Cross sectional study with sample size of 50 patients (n=50) with Acne Garde I and Grade II, who are attending the Outpatient Department of Dermatology in Meenakshi Medical College and Research Institute (MMCHandRI), Kanchipuram, Tamil Nadu. Sample size was calculated using convenient sampling method with 95% of confidence interval. All the study subjects were divided into two groups, based on the type of Retinoids used for their treatment of Acne. Group I consist of patients with Acne Grade 1 or Grade 2 lesions who are treated with Adapalene and Group II includes patients with Acne Grade 1 and Grade 2 who are treated with Tretinoin considered for the study. The study was approved by institutional ethics committee present in the institution where the study was carried out.

Inclusion Criteria

Apparently healthy male and non-pregnant females aged between 12 years and 35 years with clinical diagnosis of Acne Grade 1 and Grade 2 facial lesions only were included for the study.

Exclusion Criteria

Pregnant women, lactating mothers, women with polycystic ovaries were excluded from the study. Patients with known retinoid hypersensitivity, any other skin condition that would interfere with diagnosis or assessment of acne were also excluded from the study.

Informed consent was obtained from all the study subjects prior to enrolment into the study. Clinico-epidemiological factors like age, sex, occupation, marital status, duration of illness, family history, factors like diet, stress, menstruation were studied in all the patients recruited for the study. The subjects were randomly divided into two groups to treat with different retinoids. Group I was given with Adapalene while group II was treated with Tretinoin. And these epidemiological factors were compared among the two groups.

STATISTICAL ANALYSIS

All the results were tabulated and expressed in percentages. Statistical data was analysed using SPSS version 14.0. Unpaired Student t test was used to calculate the p value significance among the groups. Statistically, a p value of <0.05 (95% of Confidence Interval) was considered as significant.

RESULTS

The subjects were randomly divided into two groups to treat with different retinoids. Group I was given with Adapalene while group II was treated with Tretinoin. And epidemiological factors influencing Acne development were noted and compared among the two groups. Clinico-epidemiological factors influencing Acne were studied in all the patients (n=50). **The observations of the present were as follows:**

Age Distribution: The minimum age of the study population was 15 and the maximum age was 35. The study population was divided into four age groups and the maximum numbers of patients are in the age group 21 -25 years with a maximum percentage of 42% (Table 1).

Sex distribution: The following observations were made in the present study. Of the 50 patients 20 were males (out of which 12 males were given adapalene and 8 males were given tretinoin) and 30 were females (13 were given adapalene and 17 were given tretinoin). The total study population consisted of 60 % females and 40% males (Table 2).

Occupation: Patients were grouped into two occupations, students, and others, for most of the patients were in 15 - 25 years age out of 50 patients, 28 were students (that is 56%) and 22 were others (that is 44%) (Table 3).

Marital status: Among the 50 patients included in the study 32 were unmarried and 18 were married (Table 4).

Duration of illness: Duration of Acne is divided into three groups: - below 1 years, 1-2 years and above 2 yrs. 29 patients (58%) were in the group of below 1 year, 18 patients (36%) were in the group of 1 -2 years and 3 patients (6 %) were in the group of above 2 years (Table 5).

Family history: Family history was considered positive if any of the parents, siblings or kids are also having the disease. Out of 50 patients 12 patients (24%) had a positive family history and 38 patients (76%) had a negative family history of acne (Table 6).

Precipitating factors: The following are the precipitating factors for acne. Diet is major precipitating factor, which included 14 patients (28%) (Table 7).

Associated illness: Following are the dermatological conditions associated with acne, of which pityriasis capitis accounts for maximum number of 14 patients (28 %) (Table 8).

The minimum age of the study population was 15 and the maximum age was 35. Out of 50 patients, 28 were students (that is 56%) and 22 were others (that is 44%). Among the 50 patients included in the study 32 were unmarried and 18 were married. In the study 29 patients (58%) were in the group of below 1 year, 18 patients (36%) were in the group of 1 -2 years and 3 patients (6 %) were in the group of above 2 years. 12 patients (24%) had a positive family history and 38 patients (76%) had a negative family history of acne. In our study, Diet is major precipitating factor, which included 14 patients (28 %).

Table 1: Shows the age distribution of studied patients among the two groups

Age Group in years		Group I Adapalene	Group II Tretinoin	Total	P value
15-20	Count	7	7	14	
	% Within Age Group in years	50.0%	50.0%	100.0%	
	% Within Group	28.0%	28.0%	28.0%	
21-25	Count	12	9	21	
	% Within Age Group in years	57.1%	42.9%	100.0%	
	%Within Group	48.0%	36.0%	42.0%	
26-30	Count	6	8	14	
	% Within Age Group in years	42.9%	57.1%	100.0%	
	% Within Group	24.0%	32.0%	28.0%	
31-35	Count	0	1	1	
	% Within Age Group in years	.0%	100.0%	100.0%	
	% Within Group	.0%	4.0%	2.0%	
	Count	25	25	50	0.643
Total	% Within Age Group in years	50.0%	50.0%	100.0%	
	% Within Group	100.0%	100.0%	100.0%	

Table 2: Shows the details of sex distribution of the studied subjects

Sex		Group I Adapalene	Group II Tretinoin	Total	P value
Male	Count	12	8	20	
	% Within Sex	60.0%	40.0%	100. 0%	
	% Within Group	48.0%	32.0%	40.0%	
Female	Count	13	17	30	0.248
	% Within Sex	43.3%	56.7%	100. 0%	
	% Within Group	52.0%	68.0%	60.0%	
	Count	25	25	50	
Total	% Within Sex	50.0%	50.0%	100. 0%	
	% Within Group	100. 0%	100. 0%	100. 0%	

Table 3: Shows details of occupation of the study participants

Occupation		Group I Adapalene	Group II Tretinoin	Total	P value
Student	Count	16	12	28	
	% Within Occupation	57.1%	42.9%	100.0%	
	% Within Group	64.0%	48.0%	56.0%	
Others	Count	9	13	22	
	% Within Occupation	40.9%	59.1%	100.0%	0.254
	% Within Group	36.0%	52.0%	44.0%	
	Count	25	25	50	
Total	% Within Occupation	50.0%	50.0%	100.0%	
	% Within Group	100.0%	100.0%	100.0%	

Table 4: Shows details of marital status in the study participants

Marital Status		Group I Adapalene	Group II Tretinoin	Total	P value
Married	Count	7	11	18	
	% Within Marital Status	38.9%	61.1%	100.0%	
	% Within Group	28.0%	44.0%	36.0%	
Unmarried	Count	18	14	32	0.239
	% Within Marital Status	56.3%	43.8%	100.0%	
	% Within Group	72.0%	56.0%	64.0%	
Total	Count	25	25	50	
	% Within Marital Status	50.0%	50.0%	100.0%	
	% Within Group	100.0%	100.0%	100.0%	

Table 5: Shows the details of duration of illness in the participants

Duration of Illness in years		Group I Adapalene	Group II Tretinoin	Total	P value
Below 1	Count	14	15	29	
	% Within Duration of Illness in years	48.3%	51.7%	100.0%	
	% Within Group	56.0%	60.0%	58.0%	
1-2	Count	10	8	18	
	% Within Duration of Illness in years	55.6%	44.4%	100.0%	
	% Within Group	40.0%	32.0%	36.0%	
Above 2	Count	1	2	3	0.745
	% Within Duration of Illness in years	33.3%	66.7%	100.0%	
	% Within Group	4.0%	8.0%	6.0%	
Total	Count	25	25	50	
	% Within Duration of Illness in years	50.0%	50.0%	100.0%	
	% Within Group	100.0%	100.0%	100.0%	

Table 6: Shows the comparative details of family history in both the groups of the study participants

Family History		Group I Adapalene	Group II Tretinoin	Total	P value
Present	Count	7	5	12	
	% Within Family History	58.3%	41.7%	100.0%	
	% Within Group	28.0%	20.0%	24.0%	
Absent	Count	18	20	38	
	% Within Family History	47.4%	52.6%	100.0%	0.508
	% Within Group	72.0%	80.0%	76.0%	
Total	Count	25	25	50	
	% Within Family History	50.0%	50.0%	100.0%	
	% Within Group	100.0%	100.0%	100.0%	

Table 7: Comparison of precipitating factors in both the groups of patients with Acne

Precipitating Factors		Group I Adapalene	Group II Tretinoin	Total	P value
*NA	Count	5	6	11	
	% Within Precipitating Factors	45.5%	54.5%	100.0%	
	% Within Group	20.0%	24.0%	22.0%	
Diet	Count	7	7	14	
	% Within Precipitating Factors	50.0%	50.0%	100.0%	
	% Within Group	28.0%	28.0%	28.0%	
Stress	Count	4	2	6	
	% Within Precipitating Factors	66.7%	33.3%	100.0%	
	% Within Group	16.0%	8.0%	12.0%	
*PMF	Count	4	3	7	
	% Within Precipitating Factors	57.1%	42.9%	100.0%	
	% Within Group	16.0%	12.0%	14.0%	
Diet + Stress	Count	3	4	7	

	% Within Precipitating Factors	42.9%	57.1%	100.0%	
	% Within Group	12.0%	16.0%	14.0%	
Diet +*PMF	Count	2	2	4	
	% Within Precipitating Factors	50.0%	50.0%	100.0%	0.916
	% Within Group	8.0%	8.0%	8.0%	
Stress + *PMF	Count	0	1	1	
	% Within Precipitating Factors	.0%	100.0%	100.0%	
	% Within Group	.0%	4.0%	2.0%	
Total	Count	25	25	50	
	% Within Precipitating Factors	50.0%	50.0%	100.0%	
	% Within Group	100.0%	100.0%	100.0%	

*PMF-Pre-Menstrual Flare; NA – Not Associated factors.

Table 8: Shows the comparison of associated illness between the two study groups.

Associated Illness		Group I Adapalene	Group II Tretinoin	Total	P value
*NA	Count	15	13	28	
	% Within Associated Illness	53.6%	46.4%	100.0%	
	% Within Group	60.0%	52.0%	56.0%	
*PC	Count	7	7	14	
	% Within Associated Illness	50.0%	50.0%	100.0%	
	% Within Group	28.0%	28.0%	28.0%	
Melasma	Count	1	3	4	
	% Within Associated Illness	25.0%	75.0%	100.0%	
	% Within Group	4.0%	12.0%	8.0%	
*TV	Count	1	1	2	
	% Within Associated Illness	50.0%	50.0%	100.0%	
	% Within Group	4.0%	4.0%	4.0%	
*PC +	Count	0	1	1	
Melasma	% Within Associated Illness	.0%	100.0%	100.0%	
	% Within Group	.0%	4.0%	2.0%	0.678
*TV +	Count	1	0	1	
Melasma	% Within Associated Illness	100.0%	.0%	100.0%	
	% Within Group	4.0%	.0%	2.0%	
	Count	25	25	50	
Total	% Within Associated Illness	50.0%	50.0%	100.0%	
	% Within Group	100.0%	100.0%	100.0%	

*PC-Pityriasis Capitis, TV-Tinea Versicolor, NA – No Associated illness.

DISCUSSION

In the current study which included 50 patients, the minimum age of the study population was 15 and the maximum age was 35. The maximum numbers of patients are in the age group 21 -25 years which included 21 patients, thus majority of the patients belonged to the second decade of life. The prevalence of acne in adolescents varies widely in different studies due to clinical features and methods used. In a study conducted by Khunger N[4] *et al.* 2012, Brazil, acne was predominantly seen in adolescent age group. In the study done by Kane *et al.*, 2007 was reported that the mean age of presentation of their patients was 25.58 years[5]. In another study[7,8] acne was not confined to adolescent age group alone but was predominant in late adolescence and in adults which is similar to our study. In the present study, out of the 50 patients 20 were males and 30 were females accounting for 60% of females and 40% of males. In a study conducted in Nigerian adolescents with acne by Yahya H 50.8 % were males while 49.2% were females[6]. In a study conducted by Del Rosso J in 2008, women were more commonly affected by acne vulgaris than men which is similar to our study.[7] In a study conducted by George RM, Sridharan R, 51 were males and 69 were females which is similar to our study.[11] In our study, out of 50 patients, 28 were students (that is 56%) and 22 were others (that is 44%). In a study conducted by Priya Cinna T Durai and Dhanya G Nair, majority of the patients were students accounting for 73. 6% which is in line with the present study.[9] Among the 50 patients included in the study 32 were unmarried and 18 were married. In a study carried out by Haritha Samanthula and Madhavi Kodali[13]. majority of the acne patients were unmarried. In another study performed by Ibrahim A. Al - Hoqail, in relation to marital status, 37.9% of the acne

patients were married, 53.9 % belonged to unmarried group which is also on par with the present study results.[12] Out of 50 patients, 29 patients (58%) were in the group of below 1 year, 18 patients (36%) were in the group of 1 -2 years and 3 patients (6 %) were in the group of above 2 years of duration. In a study conducted Stein Gold L *et al.*, in 2019, with regard to the duration of disease,[14] 31.1% of patients had duration of less than 2 years, 33% had duration of 2 to 5 years and 35. 9% had duration of 5 years or more.[11-14] In another study by Del Rosso J in 2008 the mean duration of illness was 45.55 months and the range was 1 month to 25 years.[7] In the present study, majority of the patients belonged to the group of below 1 year. In our study, Diet is major precipitating factor, which included 14 patients (28 %). In a study conducted by Nijsten T *et al.*, in 2007, increasing pubertal age, seborrhoea, the premenstrual phase, mental stress and sweet and oily foods were recognised as risk factors for moderate to severe acne.[10] Nutritional habits were strongly associated with the severity of acne followed by mental stress which was positively associated with the severity of acne. In another study done by Annie Chiu and Susan Y, mental stress was found to be the major precipitating factor causing acne followed by diet and pre-menstrual flare.[15] Out of 50 patients 12 patients (24%) had a positive family history and 38 patients (76%) had a negative family history of acne. In another study performed by George RM, Sridharan R in 2018, family history was positive in 42% of patients with acne[11]. In a study carried out by Park SY *et al.*, in the year 2020, 21.4 % patients had a positive family history which is in line with the the present study results.[16]

Limitation(s)

Sample size is restricted only to 50 patients. Study could have been large sample could have been given better significant results. We have compared the epidemiological factors in two groups of Acne patients who are treated with Adapalene and Tretinoin are the limitations of our study.

CONCLUSION

It was observed that 24% of the study population showed a positive family history of acne and diet is the major precipitating factor for the development of Acne among all the affected patients. So suggestions of change in dietary habits to be given to Acne patients for better outcome.

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