MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2021.112.119

A Study of Clinico-Epidemiological Study and Topical Therapy of Acne Vulgaris

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ABSTRACT

An attempt to the study epidemiological, clinical and therapeutic effects is the need since it results in psychological and physical problems. A prospective study was undertaken in the department of Dermatology, Venerology and Leprology attending outpatient department among the patients with acne vulgaris. A total of 160 cases of acne vulgaris constituted the sample size. The incidence of acne in this study was 4.58% for a period of 1 years and 10 months. About 60.6% of the study subjects belonged to 16-20 years of age group and 62.5% of the males and 59.6% of the females were aged between 16-20 years. This study had shown that, about 65% of the patients with acne were females. 60.6% of the patients with acne were students. The acne was aggravated by using cosmetics in 66.9% of the cases, stress in 48.1% of the cases and premenstrual flare was present in 47.1% of the females. About 28.1% of the patients complained that the acne aggravates during summer and during winter in 13.8% of the cases. About 91.3% of the acne patients in this study had oily skin. Face was common site of lesion in 71.3% of the cases, 10% had acne on face, back and chest and 9.4% had acne on face and back. 154 out of 160 patients had comedones. Comedones were predominant in 16-20 of age group. About 60.4% of males and 58.4% of females with Comedones were aged between 16-20 years. This study had shown that, the papules were found in 154 out of 160 patients of which 101 were males and 53 were females. The papules were predominant in 16-20 years of age of both the sexes. The ice pick scar was present in 10% of the cases, Boxcar scar was present in 4.4%, Rolling scar was present in 4.4% of the cases. This study had shown that, response topical Clindamycin 1% gel in grade I and Grade II acne was excellent to good in 50% of the cases and fair in 50% of the cases. The response to topical adapalene 0.1% with Benzoyl Peroxide 2.5% (Combination) was excellent to good in 44.4% of the cases in grade I lesions and 55.6% had fair response. Among Arade II lesions 50.0% had excellent to good response and fair response in grade II lesions. About 44.4% of the grade I lesions had excellent to good response and 55.6% had fair response. In grade II lesions, 57.1% had excellent to good response and 50% had fair response. Using Topical Adapalene 0.1% gel, all the patients with grade II lesions had fair response and 53.8% had excellent to fair response and 46.2% had fair response. The use of Topical benzoyl peroxide 5% gel had shown that, 50% had excellent to good response and 50% had fair response with grade I lesions. In Grade II lesions, 75.0% had excellent to good response and 25.0% had fair response. By using Azelaic acid 20% cream, 60% of the grade I lesions had excellent to good response and 40% had fair response. In the grade II lesions, 55.6% had excellent to good response and 44.0% had fair response. This regimen had shown excellent to good response in 50% of the grade I lesions and fair response in 50% of the patients. In grade II lesions, excellent to good response was found in 50% of the cases and fair response in 50.0% of the cases. This regimen had shown that, 50.0% with grade I lesions had excellent to good response and 50% had fair response. In grade II lesions, 55.6% had excellent to good response and 44.4% had fair response. Topical Clindamycin and Topical adapalene and benzoyl peroxide combination had shown mild dryness and burning sensation in small proportion of the patients in this study. Tretinoin gel had shown erythema, scaling, burning and dryness. Adapalene gel was well tolerated than the tretinoin. The benzoyl peroxide and its combinations had shown mild scaling, burning and itching.

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Key Words

Acne vulgaris, clindamycin, benzoyl peroxide, adapalene

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Received: 20 September 2021
Accepted: 10 December 2021
Published: 25 December 2021

Citation: M. Kowshik Kumar and V. Bhargava Ram, 2021. A Study of Clinico-Epidemiological Study and Topical Therapy of Acne Vulgaris. Res. J. Med. Sci., 15: 112-119, doi: 10.36478/makrjms.2021.112.119

INTRODUCTION

Acne vulgaris is most common inflammatory skin disease encountered in patients attending dermatology outpatient department. Acne vulgaris creates a psychological impact and is a specially known problem among the adolescents. It is a disease of pilosebaceous unit which causes non inflammatory lesions (open and closed comedones), inflammatory lesions (papules, pustules and nodules) and varying degrees of scarring[1]. The literature available shows that, the acne vulgaris can present in adults with a prevalence rate of 50.9% in women aged between 20 -29 years compared to 26.3% in women aged between 40-49 years[2]. The studies shows that, two thirds of visits are made to a dermatologist by females for acne vulgaris of which one third are aged older than 25 years[3]. The adolescence is the time for physical and emotional changes and also social development, it may predispose to long lasting psychiatric or psychological disturbances. The studies have shown that, the adolescents are known to suffer from depression, social withdrawal, anxiety, anger and are more likely to be unemployed when compared to those without acne[4]. The evidence available suggests that the causation of Acne is multi factorial including hormonal, bacterial and immunological factors. The factors precipitating its occurrence may include genetic and environmental factors. The factor involved in pathogenesis includes increased sebum production, increased androgen levels, hyper cornification of the pilosebaceous duct, abnormality of the microbial flora and inflammation[5]. A microbial etiology has also been proposed during the beginning of 19th century which suggests that microorganisms, particularly propionibacterium acnes are important in the pathogenesis. Lesions of acne primarily affect face and may also affect neck, upper back and chest[6]. The assessment of severity of acne must include the distribution (back, chest, upper arms), type and number of lesions (comedones, papules, pustules, nodules) and presence or absence of scarring[7]. Different variants of acne include acne conglobata, acne fulminans, acne mechanica, excoriated acne, chlorance, drug induced acne (e.g., from anabolic steroids, corticosteroids, isoniazid, lithium, phenytoin), neonatal and infantile acne and occupational acne. The acne vulgaris is not a life threatening condition but certainly have impact on the quality of life of the patients suffering from it. The management of is a challenge especially in patients with a more severe degree of skin involvement. A number of topical and systemic drugs have been tried for the treatment[8]. Treatment with oral antibiotics remains the mainstay in treatment of acne but topical treatment is also essential for treatment of Acne[9]. The advances in the topical treatment has enabled the treating dermatologist to tackle specific factors in pathogenesis of acne. The topical therapy has shown complete cure in some of the patients. But others require systemic therapy of reduced dose and for shorter duration[10]. The problem of acne vulgaris is common but results in devastating cosmetic effects in adolescents. Hence, a prompt attempt to the study epidemiological, clinical and therapeutic effects is the need of hour. The newer topical preparations have made the treatment as an expanding filed to treat acne. Hence this study was undertaken to study the epidemiological, clinical and therapeutic effects of Acne.

Aims: To study the clinical, epidemiological and topical therapy of acne vulgaris.

MATERIALS AND METHODS

This prospective study was undertaken in the department of Department of Dermatology, Venereology and Leprology, Fathima Institute of Medical Sciences, Kadapa, A.P in among the patients with acne vulgaris. A total of 160 cases of acne vulgaris constituted the sample size.

Inclusion Criteria:

- All the cases of acne vulgaris aged between 13-35 years.
- Cases of both the sexes.
- The cases who had given consent to participate in the study.

Exclusion Criteria:

- Grade IV (Severe nodular) acne.
- Other variants of acne like chloracne such as conglobeta and acne acne fulminans.
- Patients with other systemic illness.
- The patients who requires systemic therapy due to progression of the disease.
- Pregnant and lactating patients.

A detailed history was taken with particular reference to age, sex, onset, duration, initial site, types of lesions and progression. The history regarding seasonal variation, stress, premenstrual flare, topically used creams and cosmetics were taken. The details of occupation and family history were entered. The patient's face, chest, back and shoulder were examined in detail in good natural light. The type of lesions, scarring and extent of involvement were noted. The lesion count was done in both non inflammatory lesions (comedones) and inflammatory lesions (papules, pustules, nodules and cysts) at each follow up.

The Grading System Used was:

- Grade I (Mild)-Comedones, occasional papules.
- Grade II (Moderate)-Papules, comedones, few pustules.
- Grade III (Severe)-Predominant pustules, nodules, sinuses.

- Grade IV (Cystic)-Mainly cysts, abscesses, wide spread scarring.

Regimen-I (Topical Antibiotics):
- Ia-Clindamycin 1% gel applied twice daily.
- Ib-Adapalene 0.1%+Benzoyl Peroxide 2.5% (combination).

Regimen II-(Topical Retinoids):
- IIa-Tretinoin 0.025% gel applied at night.
- IIb-Adapalene 0.1% gel applied at night.

Regimen-III (Others):
- IIIa-Benzoyl peroxide 5% gel applied twice daily.
- IIIb-Azelaic acid 20% cream applied twice daily.

Regimen- IV (Combination):
- IVa-Clindamycin 1%+Benzoyl peroxide 5% gel applied at night.
- IVb-Clindamycin 1%+Tretinoin 0.025% gel applied at night.

The patients were explained about the need for the follow up before they were included in to the study. All the patients were followed up regularly once in 2 weeks for a period of three months. The baseline lesion count at the end of 3 months wa recorded and the clinical response was assessed by the percentage reduction of total lesion count. It was grade as follows,

- **Excellent:** ≥75% reduction in total lesion count.
- **Good:** 50-74% reduction in total lesion count.
- **Fair:**25-49% reduction in total lesion count.
- **Poor:** <25% reduction in total lesion count.
- **Stationary:** No change in total lesion count
- **Worse:** If increase in lesion count

The data thus obtained was entered in a pre-designed and pretested proforma. The data was entered in to the excel sheet and later transferred and analyzed using Statistical Package for Social Services (SPSS vs 20). The categorical data was presented as frequencies and percentages and quantitative data was presented as mean and standard deviation. Independent Samples T test was used to compare the two groups and Chi square test was used as test of significance for the categorical variables and Fischer exact test if the cell count was lesser than p value of <0.05 was considered as statistically significant.

RESULTS AND DISCUSSIONS

The age wise distribution of the study group had shown that, about 60.6% of the study subjects belonged to 16-20 years of age group. About 62.5% of the males and 59.6% of the females were aged between 16-20 years. About 49.4% of the study had acne in the age of 11-15 years and 44.4% had onset in the age of 16-20 years in this study. This study had shown that about 60.6% of the patients with acne were students. It was followed by others (15.0%), housewives (14.4%) and unemployed (10.0%).About 68.8% of the acne patients in this study were from urban areas and 31.3% were from rural areas. The lesion were present since 1-2 years in 50.7% of the patients, more than four years in 20.6% of the patients, <1 years in 15.6% of the cases and 3-4 years in 13.1% of the cases. The acne were aggravated by using cosmetics in 66.9% of the cases, stress in 48.1% of the cases and premenstrual flare was present in 47.1% of the females. About 28.1% of the patients complained that the acne aggravates during summer and during winter in 13.8% of the cases. The parents of 46.3% of the patients had family history of acne, 37.8% of the patients had family history of siblings with acne and 15.9% expressed that both parents and siblings had family history of acne. About 91.3% of the acne patients in this study had oily skin and 8.8% had dry skin. Face was common site of lesion in 71.3% of the cases, 10% had acne on face, back and chest, 9.4% had acne on face and back, 5% had on chest and arm and 4.4% had lesions on face and chest. In this study, 154 out of 160 patients had comedones. Out of 154 patients, 101 were females and 53 were males. Comedones were predominant in 16-20 of age group. About 60.4% of males and 58.4% of females with papules were aged between 16-20 years. This study had shown that, the papules were found in 154 out of 160 patients of which 101 were males and 53 were females. The papules were predominant in 16-20 years of age of both the sexes. The pustules were seen in 66 patients out of 160 patients in this study. About 43 of them were females and 23 were males. About 68.2% of them were aged between 16-20 years. About 82.6% of the males and 60.5% of the females affected with papules were aged between 16-20 years. The nodules were common in all the age groups. Males and females were equally affected with nodules. The ice pick scar was present in 10% of the cases, Boxcar scar was present in 4.4%, Rolling scar was present in 4.4% and heterotrophic and keloid scar was present in 0.6% of the cases.

Table 1: Distribution of the Nodules in the Study Group According to Regimen for Treatment and Grade of Lesions

Regimen	Grade In (%)	Grade II n (%)	Grade III n (%)
Ia	2 (6.5)	11 (13.9)	6 (33.3)
Ib	9 (29.0)	8 (10.1)	4 (8.0)
IIa	4 (12.9)	7 (8.9)	8 (16.0)
IIb	1 (3.2)	13 (16.5)	4 (8.0)
IIIa	2 (6.5)	12 (15.2)	6 (12.0)
IIIb	5 (16.1)	9 (11.4)	9 (18.0)
IVa	4 (12.9)	10 (12.7)	6 (12.0)
IVb	4 (12.9)	9 (11.4)	7 (14.0)
Total	31 (100)	79 (100)	50 (100)

Distribution of the Nodules According to Regimen for Treatment and Grade of Lesions: Ia (Clindamycin 1% gel) regimen was administered for 6.5% of the patients

Table 2. Distribution of the Nodules in the Study Group According to Regimen for Treatment and Baseline and After Treatment Lesion Count

Regimen	Baseline lesion counts (mean±SD)		Lesion counts at the end of 3 months (mean±SD)	
	Non- Inflammatory	Inflammatory	Non- Inflammatory	Inflammatory
I a	45.1±8.5	22.2±5.75	17.8±10.3	6.4 ±1.65
I b	46.25±5.94	20.92±5.09	15.12±3.8	5.46±1.13
II a	45.5±3.73	20.92±6.6	12.33±5.12	6.77±2.74
II b	45.25±6.23	20.5±4.59	16.41±4.1	5.33±1.75
III a	40.86±5.73	20.85±6.24	16.0±3.78	5.31±1.49
III b	34.83±12.27	20.9±6.31	17.75±4.49	6.82±2.75
IV a	40.37±13.48	17.75±5.38	14.5±5.73	5.58±2.39
IV b	47.886±5.40	22.0±4.5	16.86±10.12	5.61±1.12

Table 3. Distribution of the Nodules in the Study Group According to Regimen for Treatment and Percentage Reduction in Lesion Count

Regimen	Percentage reduction in lesion count (mean±SD)			
	Non-Inflammatory	Inflammatory	T value	P value, Sig
I a	45.81±23.26	57.38±20.1	1.164	0.261
I b	63.95±3.39	63.69±9.48	0.073	0.942, NS
II a	43.95±58.53	68.83±10.35	1.532	0.144
II b	66.82±11.18	66.52±15.18	0.049	0.96
III a	62.53±39.26	71.1±9.52	0.763	0.45
III b	63.43±28.47	55.17±15.06	0.858	0.401
IV a	75.15±9.85	73.5±10.83	0.346	0.7
IV b	72.47±13.67	70.45±10.74	0.365	0.7

Table 4. Distribution of the Nodules in the Study Group According to Regimen for Treatment and Treatment Response with Grade of Lesion

Regimen	Grade-I			Grade-II		
	No.	E/G	F	No.	E/G	F
Ia	2	1 (50.0%)	1 (50.0%)	11	4 (36.4%)	7 (63.6%)
Ib	9	4 (44.4%)	5 (55.6%)	8	4 (50.0%)	4 (50.0%)
IIa	4	3 (75.0%)	1 (25.0%)	7	4 (57.1%)	3 (42.9%)
IIb	1	0	1 (100%)	13	7 (53.8%)	6 (46.2%)
IIIa	2	1 (50.0%)	1 (50.0%)	12	9 (75.0%)	3 (25.0%)
IIIb	5	3 (60.0%)	2 (40.0%)	9	5 (55.6%)	4 (44.4%)
IVa	4	2 (50.0%)	2 (50.0%)	10	5 (50.0%)	5 (50.0%)
IVb	4	2 (50.0%)	2 (50.0%)	9	5 (55.6%)	4 (44.4%)

Note: E/G=Excellent to good response , F=Fair response,

with grade I, 13.9% of the grade II and 33.3% of the grade III lesions. Ib (Adapalene 0.1%+Benzoyl Peroxide 2.5%) regimen was applied for 29.0% of the patients with Grade I lesion, 10.1% with grade II lesion and 8.0% with grade III lesion. IIa (Tretinoin 0.025% gel) was applied for 12.9% of the grade I, 8.9% of grade II and 16% of grade III lesions. IIb (Adapalene 0.1% gel) regimen applied for the 3.2% of grade I, 16.5% of grade II and 8.0% of grade III patients. IIIa (Benzoyl peroxide 5% gel) regimen was applied for 6.5% of grade I, 15.2% of grade II and 12.0% of grade III patients. IIIb (Azelaic acid 20% cream) was applied for 16.1% of grade I, 11.4% of grade II and 18% of grade III lesions. IVa (Clindamycin 1%+Benzoyl peroxide 5% gel) regimen was applied for 12.9% of grade I. 12.7% of grade II and 12.0% of the grade III lesions. IVb (Clindamycin 1%+ Tretinoin 0.025% gel) IVb-Clindamycin 1%+Tretinoin 0.025% gel) was applied for 12.9% of grade I, 11.4% had grade II lesions and 14.0% had grade III lesions. At the baseline, Mean lesion count for non-inflammatory lesions of Ia (Clindamycin 1% gel) regimen was 45.1, Ib (Adapalene 0.1% + Benzoyl Peroxide 2.5%) was 46.25, IIa (Tretinoin 0.025% gel) was 45.5, IIb (Adapalene 0.1% gel) was 45.25, IIIa (Benzoyl peroxide 5% gel) was 40.86, IIIb (Azelaic acid 20% cream) was 34.83, IVa (Clindamycin 1% + Benzoyl peroxide 5% gel) was 40.37 and IVb (Clindamycin 1%+Tretinoin 0.025% gel) was 47.886. The mean inflammatory lesion count of Ia (Clindamycin 1% gel) was 22.2, Ib (Adapalene 0.1%+ Benzoyl Peroxide 2.5%) was 20.92, IIa (Tretinoin 0.025% gel) was 20.92, IIb (Adapalene 0.1% gel) was 20.5, IIIa (Benzoyl peroxide 5% gel) was 20.85, IIIb (Azelaic acid 20% cream) was 20.9, IVa (Clindamycin 1%+Benzoyl peroxide 5% gel) was 17.75 and IVb (Clindamycin 1%+Tretinoin 0.025% gel) was 22.0. After 3 months of treatment, the non inflammatory lesion count in Ia (Clindamycin 1% gel) regimen was 17.8, Ib (Adapalene 0.1%+Benzoyl Peroxide 2.5%) was 15.12, IIa (Tretinoin 0.025% gel) was 12.33, IIb (Adapalene 0.1% gel) was 16.41, IIIa (Benzoyl peroxide 5% gel) was 16.0, IIIb (Azelaic acid 20% cream) was 17.75, IVa (Clindamycin 1%+Benzoyl peroxide 5% gel) was 14.5 and IVb (Clindamycin 1%+Tretinoin 0.025% gel) was 16.86. The inflammatory lesion count in Ia (Clindamycin 1% gel) regimen was 6.4, Ib (Adapalene 0.1%+Benzoyl Peroxide 2.5%) was 5.46, IIa (Tretinoin 0.025% gel) was 6.77, IIb (Adapalene 0.1% gel) was 5.33, IIIa (Benzoyl peroxide 5% gel) was 5.31, IIIb (Azelaic acid 20% cream) was 6.82, IVa (Clindamycin 1% +Benzoyl peroxide 5% gel) was 5.58 and IVb

(Clindamycin 1%+Tretinoin 0.025% gel) was 5.61. The non inflammatory lesion was reduced by 45.81% in Ia (Clindamycin 1% gel) regimen, 63.95% in Ib (Adapalene 0.1%+Benzoyl Peroxide 2.5%), 43.95% in IIa (Tretinoin 0.025% gel), 66.82% in IIb (Adapalene 0.1% gel), 62.53% in IIIa (Benzoyl peroxide 5% gel), 63.43% in IIIb (Azelaic acid 20% cream), 75.15% in IVa (Clindamycin 1%+Benzoyl peroxide 5% gel) and 72.47% in IVb (Clindamycin 1% + Tretinoin 0.025% gel) regimen. The inflammatory lesion count was decreased by 57.38% in Ia (Clindamycin 1% gel) regimen, 63.69% in Ib (Adapalene 0.1% + Benzoyl Peroxide 2.5%), 68.3% in IIa (Tretinoin 0.025% gel), 66.52% in IIb (Adapalene 0.1% gel), 71.1% in IIIa (Benzoyl peroxide 5% gel), 55.17% in IIIb (Azelaic acid 20% cream), 73.5% in IVa (Clindamycin 1% + Benzoyl peroxide 5% gel) regimen and 70.45% in IVb (Clindamycin 1%+Tretinoin 0.025% gel) regimen. This difference was not statistically significant. Among grade I lesions, 50% of Ia (Clindamycin 1% gel) regimen, 44.4% of Ib (Adapalene 0.1%+Benzoyl Peroxide 2.5%) regimen 44.4%, 75% of IIa (Tretinoin 0.025% gel) regimen, none in IIb (Adapalene 0.1% gel) regimen, 50% of IIIa (Benzoyl peroxide 5% gel) regimen, 60.0% of IIIb (Azelaic acid 20% cream) regimen, 50.0% of IVa (Clindamycin 1%+Benzoyl peroxide 5% gel) regimen and 50.0% of IVb (Clindamycin 1%+Tretinoin 0.025% gel) regimen had excellent/ good response. In grade II lesions, 63.6% of Ia (Clindamycin 1% gel) regimen, 50.0% of Ib (Adapalene 0.1%+Benzoyl Peroxide 2.5%) regimen 57.1%, 53.8% of IIa (Tretinoin 0.025% gel) regimen, 53.8% of IIb (Adapalene 0.1% gel) regimen, 75.0% of IIIa (Benzoyl peroxide 5% gel) regimen, 55.6% of IIIb (Azelaic acid 20% cream) regimen, 50.0% of IVa (Clindamycin 1%+Benzoyl peroxide 5% gel) regimen and 50.0% of IVb (Clindamycin 1%+Tretinoin 0.025% gel) regimen had excellent/ good response.

The disease starting in adolescent period persists till adulthood with a prevalence rate of 50.9% in women aged between 20-29 years compared to 26.3% in women aged between 40-49 years. Almost two thirds of visits for the dermatologist are made by females for acne vulgaris of which one third are aged older than 25 years. Adolescence which is the age of physical, emotional and social change predisposes to long lasting psychiatric or psychological disturbances. Depression, social withdrawal, anxiety, anger and unemployment are the main problem in adolescents with acne when compared to those without acne. In our study, 60.6% of the study subjects belonged to 16 -20 years of age group in this study. About 62.5% of the males and 59.6% of the females were aged between 16-20 years. This study had shown that, about 65% of the patients with acne were females. This study had shown that, females presented more to the outpatient department than males. The mean age of onset of acne in this study was 14.95 years. About 49.4% of the study had acne in the age of 11-15 years and 44.4% had onset in the age of 16-20 years in this study. The present study had shown that the mean age of onset was lesser than the studies compared. The peak age of onset was earlier in females than males which can be related to their early puberty and appearance of hormones increasing the sebum production early. A number of factors are involved in the pathogenesis of acne including hormonal factors, increased use of cosmetics and exposure to the hot and humid conditions during cooking plays important role. The age of onset of acne in females is quite earlier than males.

Occupation: This study had shown that, about 60.6% of the patients with acne were students. It was followed by others (15.0%), housewives (14.4%) and unemployed (10.0%). Others group in this study included masons, mechanics, teachers, agriculturists and tailors. Since the age of adolescence coincides with the age of education can be the main reason for more number of students in the present study.

Aggravating Factors: The acne was aggravated by using cosmetics in 66.9% of the cases, stress in 48.1% of the cases and premenstrual flare was present in 47.1% of the females. About 28.1% of the patients complained that the acne aggravates during summer and during winter in 13.8% of the cases. This study also shown that the stress was one of the aggravating factor in 48.1% of the cases.

Family History: The parents of 46.3% of the patients had family history of acne, 37.8% of the patients had family history of siblings with acne and 15.9% expressed that both parents and siblings had family history of acne.

Texture of Skin: About 91.3% of the acne patients in this study had oily skin. Oily skin (Seborrhoea oleosa) is incriminated in the etiology of the acne which is an associated feature.

Site of Lesion: Face was common site of lesion in 71.3% of the cases, 10% had acne on face, back and chest and 9.4% had acne on face and back. Face was observed as common location of the acne in 99% of the cases and to a lesser extent, occurs on the back in 60% of the cases and chest in 15% of the cases. This study was almost in concurrence with this study in which the face was the most common site involved followed by face, back and chest, then face and back.

The sebaceous glands with vellus hair are mainly located in large numbers in face and also regional difference in activity of type 1 5 alpha reductase in isolated sebaceous glands makes these sites common in occurrence of acne.

Papules: This study had shown that, the papules were found in 154 out of 160 patients of which 101 were males and 53 were females. The papules were predominant in 16-20 years of age of both the sexes. A study by Taylor *et al* had found that the papules were the most frequent presentation in African Americans (70.7%) and Hispanics (74.5%) than asians and other races having similar presentations[11].

Nodules: The nodules were common in all the age groups. Males and females were equally affected with nodules. Burton et al had found that the prevalence of severe grades of acne continued to increase steadily in boys, but declined in girls. The rate of sebum excretion is directly related that this rate is greater in girls than boys aged 10-15 years, but all ages thereafter the sebum excretion rate is higher in males[12]. The results of this study corroborated with these results.

Type of Scar: The ice pick scar was present in 10% of the cases, Boxcar scar was present in 4.4% and rolling scar was present in 4.4% of the cases.

Response to Regimen Ia (Topical Clindamycin 1% Gel): This study had shown that, response topical Clindamycin 1% gel in grade I and Grade II acne was excellent to good in 50% of the cases and fair in 50% of the cases. Grade II lesions, 36.4% had excellent to good response and 63.6% had fair response. The percentage reduction in lesion count was 45.81% in non -inflammatory acne and 57.38% in inflammatory acne. But this was not statistically significant between the inflammatory and non-inflammatory lesions. The results with clindamycin are different in different regions, but the percentage reduction in inflammatory lesions was more compare to the non-inflammatory lesions. The results of this study compares well with other studies in percentage reduction of the inflammatory than non-inflammatory lesions.

Response to Regimen Ib (Topical Adapalene 0.1%+ Benzoyl Peroxide 2.5%): The response to topical adapalene 0.1% with Benzoyl Peroxide 2.5% (Combination) was excellent to good in 44.4% of the cases in grade I lesions and 55.6% had fair response. Among grade II lesions 50.0% had excellent to good response and fair response in grade II lesions. The lesion count was reduced by 63.95% in the non-inflammatory lesions and 63.69% in inflammatory lesions. But this was not statistically significant between the inflammatory and non-inflammatory lesions. In a study by Sittart *et al,* 75.3% of the patients had a reduction of >50% in non inflammatory lesions, 69.9% in inflammatory lesions and 78.1% in total number of lesions. About 71% of the patients had good to excellent response and 87.6% had satisfactory to good response. They concluded that the Adapalene and Benzoyl peroxide combination is effective, safe, well tolerated and apparently improves patient's compliance with the treatment[13].

Response to Regimen IIa (Topical Tretinoin 0.025% Gel): About 44.4% of the grade I lesions had excellent to good response and 55.6% had fair response. In grade II lesions, 57.1% had excellent to good response and 50% had fair response. The decrease in lesion count was 43.95% in non inflammatory and 68.83% in the inflammatory lesions which was also not statistically significant. A study by Leyden et al had shown that, the mean percentage reductions at the week 12 for inflammatory and non inflammatory lesions were 43.3% and 37.9% respectively. The reduction in the lesion count was 40.3%[14].

Response to Regimen IIb (Topical Adapalene 0.1% Gel): Using Topical Adapalene 0.1% gel, all the patients with grade II lesions had fair response and 53.8% had excellent to fair response and 46.2% had fair response. The lesion count was decreased by 66.82% in the non inflammatory lesions and 66.52% in inflammatory lesions. But this was not statistically significant between the inflammatory and non inflammatory lesions.

Response to Regimen IIIa (Topical Benzoyl Peroxide 5% Gel): The use of Topical benzoyl peroxide 5% gel had shown that, 50% had excellent to good response and 50% had fair response with grade I lesions. In Grade II lesions, 75.0% had excellent to good response and 25.0% had fair response. The decrease in lesion count was 62.53% in the non inflammatory lesions and 71.1% in the inflammatory lesions. But this was not statistically significant between the inflammatory and non inflammatory lesions. A study by Seilder et al had noticed a reduction of 43.7% of non inflammatory lesions and 30.9% of the inflammatory lesions in a metanalysis of 23 studies involving 7309 patients[15]. This drug has an anti inflammatory, keratolytic and comedolytic activities. This drug is mainly indicated in mild to moderate acne. The higher concentrations are not always efficacious as lower doses. The higher concentration of the drug is known to result in more adverse reactions.

Response to Regimen IIIb (Topical Azelaic Acid 20% Cream): By using Azelaic acid 20% cream, 60% of the grade I lesions had excellent to good response and 40% had fair response. In the grade II lesions, 55.6% had excellent to good response and 44.0% had fair response. The lesion count reduced by 63.43% in non inflammatory acne patients and 55.17% in inflammatory cases. But this was not statistically significant between the inflammatory and non inflammatory lesions. Azelaic acid has property of anti keratinizing, antibacterial and anti inflammatory activity. This compound has shown its effectiveness as monotherapy for mild and moderate forms of acne with overall efficacy comparable to the tretinoin, benzoyl peroxide and topical erythromycin. The drug can be used in treatment of moderate to severe acne may be favorably combined with minocycline and also shown to reduce the recurrences after discontinuation of systemic therapy[16].

Response to Regimen IVa (Topical Clindamycin 1%+ Benzoyl Peroxide 5% Gel): This regimen had shown excellent to good response in 50% of the grade I lesions and fair response in 50% of the patients. In grade II lesions, excellent to good response was found in 50% of the cases and fair response in 50.0% of the cases. The lesion count was reduced by 75.15% in non inflammatory and 73.5% in inflammatory lesions. But this was not statistically significant between the inflammatory and non inflammatory lesions.

Response to Regimen IVb (Topical Clindamycin 1%+ Tretinoin 0.025% Gel): This regimen had shown that, 50.0% with grade I lesions had excellent to good response and 50% had fair response. In grade II lesions, 55.6% had excellent to good response and 44.4% had fair response. The lesion count reduced by 72.47% in non inflammatory lesions and 70.45% of the inflammatory lesions. But this was not statistically significant between the inflammatory and non inflammatory lesions. In a double blind, randomized, multicentric study by Ritcher *et al* had shown that, the mean reduction in the non inflammatory lesion count was 61.5% and mean reduction in the non inflammatory lesion count was 73%. The mean reduction in the total lesions was 61%[15]. Another study by Zouboulis *et al,* in a Phase III, Multicenter, single blinded, randomized comparative study of 206 cases had reported that, the mean reduction in the non inflammatory lesion count was 66.8% and inflammatory lesion count was 69.2%[17]. The present study had shown results similar to the above studies.
A randomized, double blind, multi centre, parallel, 12 week study involving 2010 patients by Schmidt et al had shown that, the use of clindamycin phosphate 1.2% and tretinoin 0.025% had shown greater reduction in the Evaluator, Global severity Scores treatment success scores and acne lesions in patients with Fitzpatrik skin types that the patients treated with clindamycin gel alone[18]. The rationale of combination therapy is that combination of antimicrobial and retinoids is that, the combination have shown to target three pathological mechanisms including ductal hypercornification, P. Acnes proliferation and inflammation and had shown to result in greater degree of reduction of the non inflammatory and inflammatory lesions[19].

CONCLUSION

Clindamycin and tretinoin had shown good response in patients with inflammatory acne compared with the non-inflammatory acne in this study. This study is not without limitation. The sample size was not calculated in this study and sampling method was not followed. The randomization was not followed to test the efficacy of different regimens. Hence, a study with sound methodology can bring about more facts about treatment of acne. Further research in this direction can help to treat the adolescents suffering with this major problem.

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