

A prospective study of pattern of prescription for acne vulgaris in a tertiary care hospital: an observational study

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ABSTRACT

Background: Acne vulgaris is a common dermatological disorder of the pilosebaceous unit affecting younger age groups but presenting usually at puberty and is of cosmetic concern. There are various treatment modalities available ranging from topical/oral anti-acne preparations to hormonal therapy depending on the severity of acne. Use of synthetic retinoid is highly regulated due to its potential for severe adverse events, primarily teratogenicity. There is a need for periodic prescription auditing. By providing feedback to the prescribers to formulate the guidelines enhances therapeutic efficacy by rational use, minimizes the adverse effects and cost of treatment. Objectives: to assess the prescription pattern for Acne vulgaris.

Methods: A medication details and prescribers information are collected in pre-designed proforma along with the demographic details from 210 study subjects after personal briefing about the study. The data was analyzed using SPSS.

Results: Out of 210 prescriptions of acne patients, majority were in between 21-40 years (48.09%), M:F ratio was 1:1.41, female were 58.57% when compared to males 41.43%. Topical agents accounted for 54.13% and 36.36% of oral antibiotics (most common was azithromycin). Fixed dose combinations accounted for 4.39% and concomitantly administered drugs (antihistaminics, proton pump inhibitors, H2 blockers, emollients and skin protective agents) accounted for 53.82% of the prescribed drugs.

Conclusions: Drug utilization study periodically can be an eye opener for the prescribers to prescribe the drugs in a rational way and it could reduce the prescription error and minimizing the untoward effects will subsequently reduce the cost of treatment.

Keywords: Acne vulgaris, Prescription pattern, Rational use

INTRODUCTION

Acne vulgaris is a common chronic dermatological disorder of the pilosebaceous glands presenting usually at puberty.¹ It is characterized by the formation of comedones (non-inflammatory lesions), papules,

pustules, and nodulocystic lesions (inflammatory lesions). These lesions generally affect the face and upper trunk. The pathogenesis is complex and multifactorial which includes abnormal sebum production, follicular hyperkeratinization, bacterial proliferation and inflammation.²

Treatment of acne vulgaris is focussed towards elimination of comedones by normalization of follicular keratinization and reducing sebaceous gland activity, the population of *P. Acnes* and inflammation. Mild to moderate acne may respond adequately to topical agents such as retinoic acid, benzoyl peroxide, azelaic acid or salicylic acid which alter the pattern of epidermal desquamation, preventing the formation of comedones and aiding in the resolution of preexisting cysts. Topical antibacterial agents such as erythromycin, clindamycin are also valuable adjuncts to therapy.³

Patients with moderate to severe acne with a prominent inflammatory component will benefit from the addition of systemic therapy, such as tetracycline in doses of 250-500mg bid or doxycycline, 100mg bid. Minocycline is also useful. Female patients who do not respond to oral antibiotics may benefit from hormonal therapy. Several oral contraceptives are now approved by the FDA for use in the treatment of acne vulgaris.³

Patients with severe nodulocystic acne unresponsive to the therapies discussed above may benefit from treatment with the synthetic retinoid isotretinoin. Its use is highly regulated due to its potential for severe adverse events, primarily teratogenicity.³

The drug utilization research or studies are the powerful exploratory tools to ascertain the role of drugs in the society which refers to the marketing, distribution, prescription, and use of drugs with special emphasis on the medical, social and economic consequences.⁴

The irrational use of drugs is a major concern of present day medical practice and it leads to ineffective treatment, unnecessary prescription of drugs leading to adverse effects and economic burden on patients and the society.⁵ Rational drug prescribing is defined as the use of the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost.⁶ Therefore periodic auditing of prescriptions is essential to increase the therapeutic efficacy, decrease adverse effects and provide feedback to prescribers.⁷

The prevalence of acne vulgaris is high in dermatology OPD and data regarding drug usage pattern is lacking. This study was done to describe the prescribing pattern of prescriptions in patients with Acne vulgaris in Dermatology OPD to promote rational prescribing.

METHODS

This was an observational, cross sectional study conducted among the patients attending dermatology OPD of Sri Siddhartha Medical College, Tumkur during the period of January 2016 to April 2016.

Following approval from the Ethics committee and after obtaining informed consent, the information was collected in a specially designed case record form by

direct observation of prescriptions to assess the prescription pattern for acne vulgaris. The patients attending dermatology OPD and willing to participate in the age group of 10-40years were included in the study and those who were not willing to participate, patients having drug induced acne and acne form eruptions were excluded. The case record form included - demographic details of the patient, diagnosis details - type of acne, site of involvement, Medication details such as drugs prescribed, strength, dose/quantity, frequency of administration/application, duration of therapy, concomitant drugs used, instructions given to patients, number of drugs per prescription and for the legibility of prescribers handwriting.

The case record forms were evaluated for pattern of prescription with respect to number of antiacne preparations, antibiotics and the strength of the preparations used, total duration and cost of treatment

Descriptive statistical analysis was used for demographic data and to assess the prescription pattern for acne vulgaris. The data was represented as numbers and percentages.

RESULTS

A total of 210 prescriptions of acne patients were collected over four months period and were analysed. Patients between the ages of 21-40 years (48.09%) accounted for majority of the cases, followed by patients under 20 years (43.81%) and patients above 40 years (8.09%). Most of the patients were urban residents (63.81%) compared to rural residents (36.19%). Students (57.62%) accounted for the vast number of cases indicating the preponderance of acne in that age group.

The male to female ratio was found to be 1:1.41, where female patients accounted for 58.57% and male patients accounted for 41.43% of the cases (Table 1).

Table 1: Demographic details of study participants.

Characteristics	n = 210 (%)
Age (years):	
a) <20	92 (43.81)
b) 21-40	101 (48.09)
c) >40	17 (8.09)
Gender:	
a) Female	123 (58.57)
b) Male	87 (41.43)
Residence:	
a) Urban	134 (63.81)
b) Rural	76 (36.19)
Occupation:	
a) Students	121 (57.62)
b) Farmer	16 (7.62)
c) Housewife	40 (19.05)
d) Business	15 (7.14)
e) Unemployed	18 (8.57)

Cases of acne were graded according to IPA. The grade 2 (44.76%) constituted the majority of the cases followed by grade 3 (27.62%), grade 1 (17.61%) and grade 4 (10%) (Table 2).

Table 2: Distribution of disease as per grade of acne.

Grades	n= 210 (%)
Grade I (Comedones, occasional papules)	37 (17.61)
Grade II (Papules, comedones, few pustules)	94 (44.76)
Grade III (Predominantly pustules, nodules, abscesses)	58 (27.62)
Grade IV (Mainly cysts/abscesses, widespread scarring)	21 (10)

Table 3a: Characteristics of drugs prescribed.

Drug characteristics	n (%)
Topical agents:	
1) Comedolytics (Benzoyl peroxide 2.5% and 5%)	28 (4.95)
2) Adapalene	23 (4.64)
3) Tretinoin (0.025%, 0.05%)	25 (11.42)
4) Antibiotic	
- Clindamycin (gel/ointment)	29 (13.24)
- Azithromycin (gel/ointment)	26 (11.87)
Total	131
Systemic drugs:	
1) Azithromycin 500mg PO	34 (15.53)
2) Doxycycline 100 mg PO	25 (11.42)
3) Nadifloxacin PO	16 (7.31)
4) Retinoids 20 mg PO	13 (5.94)
Total	88
Total (Topical + systemic drugs)	219 (38.70)

The treatment protocol followed for different grades of acne are as follows: Grade 1- topical agents (comedolytics and retinoids); Grade 2 - topical agents (comedolytics, retinoids and/or antibiotics) and oral drugs (antibiotics); Grade 3 - topical agents (comedolytics, retinoids and/or antibiotics) and oral drugs (antibiotics and/or retinoids); Grade 4 - topical agents (comedolytics, retinoids and/or antibiotics) and oral drugs (antibiotics and/or retinoids).

Table 3b: Fixed dose combinations.

Fixed dose combinations	n (%)
Topical preparations	
Clindamycin + Adapalene	9 (39.13)
Clindamycin + Benzoyl peroxide	5 (21.73)
Clindamycin + Tretinoin	5 (21.73)
Benzoyl peroxide + Adapalene	3 (13.04)
Azithromycin + Adapalene	1 (4.35)
Total	23 (4.39)

Table 3c: Concomitant drugs.

	n (%)
Concomitant drugs	
1. Antihistaminic	102 (36.17)
2. H ₂ Receptor blockers/Proton pump inhibitors	91 (32.27)
3. Emollients and skin protective agents	58 (20.57)
4. Others	31 (10.99)
Total	282 (53.82)

Table 4: Analysis of prescription.

Analysis of prescription	n (%)
1. Number of prescriptions	210
2. Total no. Of drugs prescribed	524
3. Total no. Of drugs prescribed through oral route	88 (15.55%)
4. Total no. Of drugs prescribed through topical route	196 (34.53%)
5. Average no. Of drugs prescribed per prescription	2.49
6. Number of fixed dose combinations	65 (11.48%)
Total no. of concomitant drugs	282 (49.82%)

Table 5: Number of drugs per prescription.

Number of drugs per prescription	n = 210 (%)
1	32 (15.24)
2	101 (48.09)
3	54 (25.71)
4	15 (7.14)
5	08 (3.81)

Table 6: Categories of drugs used according to grade of acne.

Grade	Oral	Topical
Grade I		A) Benzoyl peroxide 2.5%-5% B) Adapalene 0.1% C) Tretinoin 0.025% - 0.05%
Grade II	Antibiotics (Azithromycin/ Doxycyclin)	A) Benzoyl peroxide 2.5%-5% B) Adapalene 0.1% C) Tretinoin 0.025%-0.05%
Grade III	A) Antibiotics (Azithromycin/ Doxycyclin) B) Retinoids - Isotretinoin	A) Benzoyl peroxide 2.5%-5% B) Adapalene 0.1% C) Tretinoin 0.025%-0.05%
Grade IV	A) Retinoids - Isotretinoin B) Antibiotics (Azithromycin/ Doxycyclin)	A) Benzoyl peroxide 2.5%-5% B) Adapalene 0.1% C) Tretinoin 0.025%-0.05%

A total number of 524 drugs (Table 3 and 4) were prescribed in 210 prescriptions and the average number of drugs per prescription was found to be 2.49. Topical and Oral preparation included 242 drugs; and 282 drugs were used as concomitant drugs. The topical agents accounted for 54.13% of the total drugs prescribed which included comedolytic agents (benzoyl peroxide), retinoids (adapalene, tretinoin) and antibiotics (clindamycin, azithromycin). Oral drugs accounted for 36.36% which included antibiotics (azithromycin, doxycycline, nadifloxacin) and retinoids. Fixed dose combinations accounted for 4.39% and concomitantly administered drugs (antihistaminics, proton pump inhibitors, H₂ blockers, emollients and skin protective agents) accounted for 53.82% of the prescribed drugs.

DISCUSSION

Acne is a manifestation of hormonal overstimulation of the pilosebaceous units of genetically susceptible individuals.¹

In hospital Dermatological manifestation accounts for 10-30% of all outpatients and analysis of its prescription gives an insight on approach of prescribers towards treatment which helps to achieve rational care.²

In the present study, a total of 210 prescriptions were analysed. Majority of patients were in age group between 21-40 years (46%) which was comparable to the study by Kaur S and Kumar S, where the most common age group was between 20-29 years.^{3,4}

About 43.81% patients under 20 years had acne. By the above data it is clear that younger age people are affected with acne vulgaris, where in these age, major changes occurs in hormones production which has importance role in the pathophysiology of acne.⁵

Students (57.62%) was affected more this could be because of hormonal factors, increased use of cosmetics.⁶

Acne is more commonly seen in males in adolescence and early adulthood, a trend that reverses with increasing age and adult acne is more common in women.^{7,8} This statement suits for present study and females 58.57% with acne was more common than males (41.43%). Presence of acne even after 25 years of age is described has adult acne and it was obvious in present study that majority of them were between 21-40 years of age.⁹ Gender wise, adult acne was commonly seen in females which was strengthened by present which could be of exposure to humid while cooking.^{6,9-11}

The pathogenesis is complex and multifactorial which includes abnormal sebum production, follicular hyperkeratinization, bacterial proliferation with *Propionibacterium acnes* and inflammation.¹²

Depending on lesions, 4 grading system has been developed to assess the severity of acne has.¹³
Grade 1- Comedones+occasional papules.
Grade 2- Papules+comedones+few pustules.
Grade 3- Predominant pustules+nodule+abscesses.
Grade 4- Mainly cysts+abscesses+widespread scarring.

The male to female ratio in the adult age group was found to be 1:1.41 which is similar with findings of other studies that adult acne is more common in females.^{9-11,14}

In our study (Table 2) majority of the patients presented with grade 2 disease (43%), followed by grade 3 (27%), grade 1 (17%) and grade 4 (13%) disease which was collaborative with Nibedita Patro et al.¹⁴

Out of 524 medicines prescribed, 242 included drugs for acne out of which oral formulations were 88 (36.36%) and topical 154 (63.63%) which was consistent with previous study where 38.1% and 60.2%, 40.02% and 57.01% drugs were administered by oral and topical route respectively.^{4,15}

Out of 154 topical drugs prescribed, single topical preparations were 131 (85.06%) while combination topical preparations were 23 (14.94%). The values are slightly less with previous study where 96.38% and 3.62%, 94.2% and 5.8% were single and combined topical preparations prescribed respectively.^{4,15} combination of topical preparation was used to increase their effectiveness since topical preparations are generally preferred because they exert specific action at the site of application, also few unwanted effects are expected as a result of less systemic absorption and even it is easy for patient to apply without any assistant.

Fdcs (fixed dose combination) were 23 (4.39%) which is higher when compared to previous study by Narwane et al 1.9% and Kumar S et al 3.08%, but it was much lower than another study in which it was 36.6%.^{4,15,16} In case of long term acne it is useful to use different treatment option by combining them which becomes inevitable in such condition to cut down the economic burden and to increase the patient adherence and compliance.

An average of 2.49 drugs were prescribed per prescription which is lesser than previous studies where 3.26 and 2.7 drugs were prescribed per prescription respectively.^{15,16} Although polypharmacy was practiced for symptomatic relieve in resistant and more severe cases of acne, rationality towards prescription was kept in mind in our study to minimize the adverse drug reactions, drug-drug interactions, poor patient adherence and compliance, but not the least it is cost which could be made economical to decrease the burden on patient as well as to their family since the cost of skin medication & consultation are very high in the current practice. And 2 drugs were prescribed in about 48.09%.

In our study azithromycin (38.64%) was the most commonly prescribed oral antibiotics as monotherapy followed by doxycycline (28.41%) which differs from Nibedita Patro et al study where Doxycycline (54.18%) was the most frequently prescribed oral antibiotic.¹⁴

There was not a single prescription of combined therapy with oral antibiotic but they were prescribed along with topical medications for acne which differed from Nibedita Patro et al where there was no single prescription of monotherapy with oral antibiotic.¹⁴

Out of 370 drugs prescribed orally, 282 (76.23%) were concomitant drugs in which antihistaminics (27.57%) and H₂ Receptor blockers/Proton pump inhibitors (24.59%) followed by emollients (15.68%) were prescribed in decreasing order is higher than the Santhosh Kumar et al, study where only 8.06% of antihistaminics were prescribed.⁴ This indicates that the severity of the acne presentation would have influenced the higher rate of concomitant medications for the quick symptomatic relief.

Limitations

Small sample size and single centric study.

CONCLUSION

Monitoring Drug utilization periodically can be an eye opener as well as alarming bell for the prescribers to prescribe the medicine in a rational way and it could reduce the prescription error and minimizing the untoward effects will subsequently reduce the cost of treatment. Therefore Awareness among doctors will increase with improve in patient care by rational utilization of drugs.

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