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# ORIGINAL ARTICLE

## PRESCRIPTION AUDIT OF ACNE VULGARIS IN SKIN OUTPATIENT DEPARTMENT OF A TERTIARY CARE TEACHING HOSPITAL

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**ABSTRACT: OBJECTIVE**: To evaluate prescribing pattern in acne vulgaris cases at a tertiary care teaching hospital in south India. **METHODS:** Prescriptions of 120 patients of acne vulgaris who attended Dermatology OPD of a tertiary care teaching hospital were selected for study and their drug data were analyzed. **RESULTS**: Topical Benzoyl peroxide, adapalene, ketoconazole were prescribed as monotherapy, while aloevera, liquid paraffin and white soft paraffin as polytherapy. Azithromycin, antibiotics, anti histaminics were prescribed as systemic monotherapy and polytherapy. Statistical analysis revealed p-value was > 0.05. **CONCLUSIONS**: Prescription patterns were in consensus with the general guidelines, with few changes, in the choice of established therapeutic agents.
**KEYWORDS**: Acne Vulgaris, Prescription pattern, Tertiary care centre.

**INTRODUCTION:** Acne vulgaris is a chronic inflammatory disease of the sebaceous follicle. It is characterized morphologically by well-defined annular or arcuate plaques with peripheral erythematous nodules. Acne affects primarily the face, neck, upper trunk and upper arms. It typically occurs at puberty because of increased sebum production triggered by increased androgen levels. However, acne may manifest earlier in childhood or persist throughout adulthood. Early onset of acne and greater intensity is observed in white individuals than in black individuals.

Increased androgen production, hyper responsiveness of sebaceous glands in response to androgens, hyper keratinization within the intra follicular ducts, the presence and activity of the commensal bacteria Propionibacterium acnes, inflammation, including innate and induced immune responses commonly lead to development of acne vulgaris.

In addition to these, lithium, isoniazid, phenytoin, corticosteroids, anabolic steroids, and oral contraceptives with high androgenic activity are also responsible for the disease. Treatment includes topical benzoyl peroxide.[1]

Prescription writing is a science and art, as it conveys the message from the prescriber to the patient. The pattern of drug use in a hospital setting need to be monitored intermittently in order to analyses the rationality and offer feedback and/or suggestions to drug prescribers for suitable modifications in the prescription pattern so as to increase the therapeutic benefit and reduce adverse effect. 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.[2]

Aims and objectives of the present study were to scrutinize the trends in the prescribing practices in acne vulgaris cases in a teaching hospital.

**MATERIALS AND METHODS**: The present prospective study was carried out in the outpatient department of dermatology at KVG Medical College and Hospital, Sullia DK. One hundred and twenty (120) prescriptions of acne vulgaris patients during the period January 2011 to June 2012 were

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selected and demographic data (age, gender), disease data (acne vulgaris), data pertaining to drugs (drugs prescribed, dose, strength, route and adverse effects) were noted. These data were analyzed to evaluate the prescription pattern and rationality of the use of drugs in the treatment of acne vulgaris. The data collected were subjected to statistical analyses and the relevant statistical methods employed were chi-square test, t-test and determination of df (degree of freedom) and p-value.

**RESULTS:** 120 cases of acne vulgaris were analyzed.71 (59.17 %) patients were male and 49 (40.83 %) female with a male/ female ratio of 1.45: 1. Majority of patients 79 (65.83 %) belonged to 15-25years age group, 38 (31.67 %) 26-40 years and 3 (2. 5 %) >40 years.

Topical monotherapy was prescribed in total 96 patients (60 male and 36 female) and out of them 32 (23male and. 9 female) patients were prescribed benzoyl peroxide (5 %), 22 (12 male, 10 female) benzoyl peroxide (2.5 %), 19 (11 male, 8 female) clindamycin (1 %), 11 (7 male, 4 female) adapalene (0.05 %) and 7 (5 male and 2 female) ketoconazole (2%). Topical polytherapy was prescribed in total 24 (11 male and 13 female) patients.

It contained clindamycin phosphate (1%), aloevera (10%), liquid paraffin (7%), white soft paraffin (5%). On statistical analyses, unpaired t-test between males and females being treated with topical monotherapy revealed T score -1.334, 95% C I of difference -9.084 to 2.4714, Df – 10 and p value >0.212. While chi square test revealed Chi-square 1.572, DF 1, Significance level P=0.210 (>0.05) [Table 1].

Systemic drugs were prescribed as monotherapy in total 51 (29 male and 22 female) cases and out of them azithromycin was advised in 36 (19 male and 17 female) and Levo-cetirizine was received by 25 (10 male and 5 female) patients. Systemic polytherapy consisting of doxycycline and ranitidine were prescribed in total 69 (42 male and 27female) cases.

On statistical analyses, Unpaired t-test between males and females being administered systemic monotherapy revealed Difference -3.5000, Standard Error 7.5000, 95% CI of difference -35.7699 to 28.7699, Test statistic t -0.467, Degree of Freedom (DF) 2, Two -tailed probability P0.6866. [Table 2].

**DISCUSSION**: International guidelines for management of acne vulgaris recommend topical agents; benzoyl peroxide, antibiotics, retinoids, etc as first-line treatment of acne vulgaris.[3] Bacterial resistance to benzoyl peroxide has not been reported.[4]

Consensus recommendation for the treatment is based on the location of the acne vulgaris and the type of acne (inflammatory and non-inflammatory). Depending on the magnitude and type of infection, a chosen antimicrobial may be administered by oral route, injection or may be applied topically.[5]

Mild to moderate lesions respond best to topical anti-inflammatory agent such as benzoyl peroxide, adapalene and topical antibiotic such as clindamycin are the most popular in the management of acne.

If acne vulgaris involves extensive disease (20 % of body is involved) systemic therapy (oral azithromycin (500 mg thrice weekly) is indicated. It provides significant relief, although evidence based studies have showed that doxycycline (100 mg once daily) is more effective than azithromycin. Macrolides, co-trimoxazole, and trimethoprim may offer some degree of relief.

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Acne vulgaris may be complicated by bacterial super infection and bacterial culture should be considered with the presence of exudates weeping and crusting. Combination therapy with topical benzoyl peroxide and clindamycin has been recommended in potentially infected acne vulgaris Marginal benefit has been demonstrated with their use.[6]

Recently, 405–420 nm of ultraviolet free blue light**,** pulsed dye laser (585 nm), have been recommended for physical treatment of acne vulgaris.[7,8] Isotretinoin is recommended for refractory acne.[9]

**CONCLUSION**: Modest prescribing practices were evident in the hospital where this study was carried out and the prescription patterns in acne vulgaris were in consensus with the general guidelines in vogue, with few changes perhaps, in the choice of established therapeutic agents.

Periodic audits should be conducted to rationalize the prescription, reduce errors and suggest effective management of dermatological diseases.

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| DRUGS | MALE | | | | FEMALE | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|
| | MONO | | POLY | | MONO | | POLY | | | |
| | N | % | N | % | N | % | N | % | N | % |
| Azithromycin (500mg) | 19 | 15.83 | | | 17 | 41.17 | | | 36 | 30 |
| Levo-cetirizine (5mg) | 10 | 8.33 | | | 5 | 4.17 | | | 15 | 12.50 |
| Doxycycline (100mg) Ranitidine (150mg) | | | 42 | 35 | | | 27 | 22.50 | 69 | 57.50 |
| | | | | | | | | | 120 | 100 |

Table 1: Systemic monotherapy and polytherapy treatment in acne vulgaris. Total number of cases - 120

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MONO=Monotherapy, POLY=Polytherapy, N. =Number of patients, %=Percentage of patients, mg=milligram

For the patients on mono therapy we run an unpaired t test

T-test (assuming equal variances)

| | |
|---|---|
| Difference | -3.5000 |
| Standard Error | 7.5000 |
| 95% CI of difference | -35.7699 to 28.7699 |
| Test statistic t | -0.467 |
| Degrees of Freedom (DF) | 2 |
| Two-tailed probability | P = 0.6866 |

P value >0.05 for

chi square

| Treatment | Male | Female |
|---|---|---|
| Mono | 29 | 22 |
| Poly | 42 | 27 |

| | |
|---|---|
| Chi-square | 0.0643 |
| DF | 1 |
| Significance level | P = 0.7998 |
| Contingency coefficient | 0.0231 |

P value >0.05

| DRUGS | MALE | | | | FEMALE | | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|
| | MONO | | POLY | | MONO | | POLY | | | |
| | N. | % | N. | % | N | % | N | % | N | % |
| Benzoyl peroxide (5%) | 23 | 19.18 | | | 9 | 7.50 | | | 32 | 26.68 |
| Adapalene (0.05%) | 7 | 5.83 | | | 4 | 3.33 | | | 11 | 9.16 |
| Clindamycin (1%) | 11 | 9.16 | | | 8 | 6.67 | | | 19 | 15, 83 |
| Benzoyl peroxide (2.5%) | 12 | 10 | | | 10 | 8.33 | | | 22 | 18.33 |
| Ketoconazole (2%) | 7 | 5.83 | | | 5 | 4.17 | | | 12 | 10 |
| Clindamycin phosphate (1%') Aloevera(10%), liquid paraffin (7%), white soft paraffin (5%) | | | 11 | 9.17 | | | 13 | 10.83 | 24 | 20 |
| | | | | | | | | | 120 | 100 |

Table 2: Topical monotherapy and polytherapy treatment in acne vulgaris
Total number of patients - 120

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MONO=Monotherapy, POLY=Polytherapy, %=Percentage of patients, mg=milligram N=Number of patients

T-test for Independent Paired samples of Monotherapy

| | |
|---|---|
| T score | - 1.331 |
| P value | 0.212 |
| Df | 10 |
| 95% CI | -9.804 to 2.4714 |

| Treatment | Male | Female |
|---|---|---|
| Mono | 60 | 36 |
| Poly | 11 | 13 |

On running chi square test, we get,

| | |
|---|---|
| Chi square | 1.572 |
| P value | 0.210 (>0.05) |
| Df | 1 |

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