# GENDER AND AGE WISE EFFECT OF ORAL AZITHROMYCIN IN THE TREATMENT OF ACNE VULGARIS

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## ABSTRACT

**Introduction:** Acne vulgaris is a common inflammatory disorder of the skin that involves pilosebaceous units. The pathogenesis of acne is multifactorial and is thought to involve excess sebum production, follicular hyperkeratinization, bacterial colonization, and inflammation. Acne is most common during adolescence, affecting more than 85% of teenagers. Many therapeutic options exist for treating acne including topical benzoyl peroxide, topical and oral antibiotics, topical and oral retinoids and oral contraceptives.

**Objective:** To determine the gender and age wise effect of oral azithromycin in the treatment of acne vulgaris.

**Materials and Methods:** This descriptive cross sectional study was conducted in the dermatology department Hayatabad Medical Complex (HMC) Peshawar from Oct 1, 2015 to Mar 31, 2016.

All patients were divided into four groups (15-18, 19 -22, 23-26 and 27+ years). Those having moderate acne vulgaris on face only were included in the study. Detailed history was taken and complete physical examination was performed to rule out associated diseases. All Patients were given Azithromycin 500 mg daily before meal for 5 consecutive days per month for 3 months. Patients were followed up after taking treatment for three months to see the response of the drug. Response was graded as excellent, good, moderate, mild and no response.

**Results**: A total of 193 patients divided in four age groups of male 82(42.2%) and female 112(57.7%). There were significant changes in responses when compared in age groups with p- 0.000 while age wise it shows better results in female although it was insignificant.

**Conclusion**: Azithromycin is a better option for treatment of acne vulgaris in Group- II ages and female patients.

**Key words:** Azithromycin, Acne vulgaris

## INTRODUCTION

Acne vulgaris is a common inflammatory disorder of the skin that involves pilosebaceous units.[1,2] All individuals transit through adolescense with a few comedones and papules.[3] Acne tends to resolve in third decade, but it may persists into or develop de novo in adulthood.[4] Post adolescence acne predominantly affects women, in contrast to adolescent acne which has a male predominance.[4]

The pathogenesis of acne is multifactorial and is thought to involve excess sebum production, follicular hyper keratinization, bacterial colonization, and inflammation.[5]

Acne is most common during adolescence, affecting more than 85% of teenagers.[9-11] At older ages acne is found more commonly in females than males.[12]

Many therapeutic options exist for treating acne including topical benzoyl peroxide, topical and oral antibiotics, topical and oral retinoids and oral contraceptives.[5] For the last 2-3 decades, systemic antibiotics, mainly tetracyclines and macrolides, have assumed main role in the management of acne patients with inflammatory papules, pustules and cysts.

Azithromycin is one of the macrolides antibiotics that has been recently prescribe for the treatment of acne. It is effective as doxycycline and minocycline.[13] Azithromycin is a nitrogen containing macrolide antibacterial agent and a methyl derivative of erythromycin with action and uses similar to those of erythromycin.[14,15] Its extensive distribution in the tissue allow pulse-dose regimen recommendation for increased compliance.[16] Due to its improved pharmacokinetic properties, high tolerability profile and efficacy against propionibacterium acnes,[14] the rationale for the use of azithromycin in acne has been examined and it has been found to be effective in a few clinical studies.[13,17,18]

A randomized, double blinded study was performed to compare the efficacy of azithromycin with doxycycline. This study indicated that azithromycin is at least as effective as doxycycline in the treatment of acne.[1]

On the basis of previous studies Azithromycin was

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thought to have superior therapeutic effect in treating Acne Vulgaris, My hypothesis is that is Azithromycin has better response in younger age and in females. If this hypothesis is proved it will be recommended to local physicians to treat Acne Vulgaris in younger age females with azithromycin.

## PATIENTS AND METHODS

It was descriptive cross sectional study, conducted in dermatology unit of Hayatabad Medical Complex (HMC) Peshawar over six months period. Sample size was 193 and were selected amongst the Outdoor Patients.

Both male and female patients 15 to 30 years old and having moderate acne vulgaris on face were included in the study.

Pregnant patients, Breast feeding, Acne fulminans, Acne conglobata, Isotretion therapy within past 6 months, Topical treatment in last 2 weeks and use of other systemic antibiotics in the last month were excluded from the study.

After approval by the Hospital Ethical Committee all patients coming to Dermatology OPD of Hayatabad Medical Complex Peshawar fulfilling inclusion criteria were enrolled for the study. Informed written consent was taken from the patients. Detailed history and complete physical examination was done and patients were divided into four groups based on their ages. All Patients were given azithromycin 500 mg daily before meal for 5 consecutive days each month for 3 months. For the response patients were followed up after three months. Response was measured in term of complete disappearance of acne valgaris.

### *Evaluation*

SPSS 22.0 version was used for statistical analysis. Frequencies and percentage were calculated for Gender, age groups. Means $\pm$ Standard deviation were computed for different age groups. Chi-square test was used to check the significance of excellent, good, moderate, mild and no responses of age groups and gender. P-value $\leq$ 0.05 was considered as significant. Results were expressed in the form of tables and graphs.

## RESULTS

A total of 193 patients divided in four age groups of male 82 in number (42.3%) and female 112 ( 57.7%) Table 1. Patients from group-I were 118 (60.8%), from group-II were 68 (35.1%), from group-III were 5 (2.6%) and from group-IV were 3 (1.5%). Table 2

In male patients “Excellent” response was noted in 25 (30.5 %), “Good” response was 14 (17.1%), “Moderate” response was 17 (20.7%), “Mild” response was 16 (19.5%), and “No” response was 10 (12.2%), while in female patients “Excellent” response was noted in 38 (33.9 %), “Good” response was 20 (17.9%), “Moderate” response was 34 (30.4%), “Mild” response was 14 (12.5%), and “No” response was 6 (5.4 %) with a P-Value = 0.195 (>0.05) showing insignificant change in gender. Table 3

In group-I “Excellent” response was observed in 15 (12.7 %), “Good” response was 24 (20.3%), “Moderate” response was 51 (43.2%), “Mild” response was 25 (21.2%), and “No” response was 3 (2.5 % ). In group-II “Excellent” response was observed in 49 (72.1 %), “Good” response was 10 (14.7%), “Moderate” response was 0%, “Mild” response was 6 (8.8%), and “No” response was 3 (4.4 %). In group-III “Excellent” response was observed in 2 (40.0%), “Good” response was 1 (20%), “Moderate” response was also 1 (20%), “Mild” response was 1 (20.0%), and “No” response was also 0 % while In group-IV “Excellent” response was noted in 2 (66.7 %), “Good” response was 0 %, “Moderate” response was also 0%, “Mild” response was 1 (33.3%), and “No” response was also 0 % with a P-Value= .000 (<0.05) that shows significantly different responses in treating Acne Vulgaris with Azithromycin. A total of 68 (35.1%) responses were noted as “Excellent”, 35 (18.5%) responses were noted as “Good”, 52 (26.%) responses were noted as “Moderate”, 33 (17.0%)

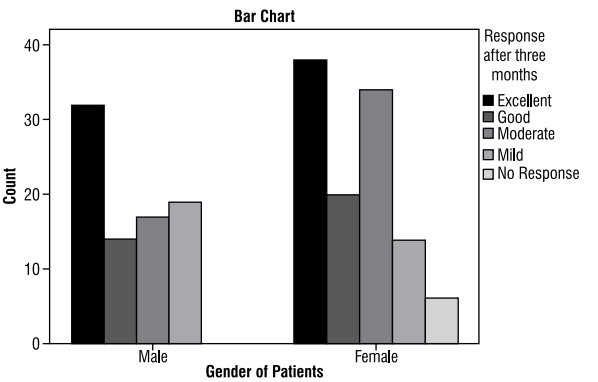


Fig no 1.

**Table 1. Gender of Patients**

| Gender | Frequency | Percent |
|---|---|---|
| Male | 82 | 42.3 |
| Female | 112 | 57.7 |
| Total | 194 | 100.0 |

**Table 2. Ages in Groups**

| Age Groups | Frequency | Percent |
|---|---|---|
| Group-I | 118 | 60.8 |
| Group-II | 68 | 35.1 |
| Group-III | 5 | 2.6 |
| Group-IV | 3 | 1.5 |
| Total | 194 | 100.0 |

**Table 3**

| Gender | Response after three months | | | | | Total | Pearson Chi-Square | P-Value |
|---|---|---|---|---|---|---|---|---|
| | Excellent | Good | Moderate | Mild | No Response | | | |
| Male | 25 | 14 | 17 | 16 | 10 | 82 | 6.047 | 0.195 |
| | 30.5% | 17.1% | 20.7% | 19.5% | 12.2% | 100.0% | | |
| Female | 38 | 20 | 34 | 14 | 6 | 112 | | |
| | 33.9% | 17.9% | 30.4% | 12.5% | 5.4% | 100.0% | | |

**Table 4**

| | Response after three months | | | | | Total | Pearson Chi-Square | P-Value |
|---|---|---|---|---|---|---|---|---|
| | Excellent | Good | Moderate | Mild | No Response | | | |
| Group-I | 15 | 24 | 51 | 25 | 3 | 118 | 85.926 | .000 |
| | 12.7% | 20.3% | 43.2% | 21.2% | 2.5% | 100.0% | | |
| Group-II | 49 | 10 | 0 | 6 | 3 | 68 | | |
| | 72.1% | 14.7% | 0.0% | 8.8% | 4.4% | 100.0% | | |
| Group-III | 2 | 1 | 1 | 1 | 0 | 5 | | |
| | 40.0% | 20.0% | 20.0% | 20.0% | 0.0% | 100.0% | | |
| Group-IV | 2 | 0 | 0 | 1 | 0 | 3 | | |
| | 66.7% | 0.0% | 0.0% | 33.3% | 0.0% | 100.0% | | |

responses were noted as "Mild" and "No response was noted in just 6 (3.1%) patients with P-Value=.000 (<0.05) that shows significant change in different groups. Fig 1

## DISCUSSION

Acne is a disorder of pilosebaceous glands. Propianobacterium acne is a pathogen involved in pathogenesis of acne[1,2]. Hence traditionally many antibiotics along with other adjuvants are used to treat acne. Systemic antibiotics like tetracyclines, erythromycin, sulpha drugs are being used along with various topical antibiotic creams and lotions[21,22]. However the systemic drugs are being used on daily dose basis for few months, this has lead to compliance problems on part of patients [10]. Since quite sometime search is going on for systemic drugs that are safer and have less compliance issue on part of patient. Azithromycin is one such drug on which most of the work is going on. Azithromycin is one of the macrolides antibiotics that has been recently prescribe for the treatment of acne. It as effective as doxycycline and minocycline[13]. Therefore we conducted this present study to see the response of azithromycin in the treatment of acne vulgaris.

We used this drug for a period of three months in different age groups and both genders.

Our study revealed statistically significant response to treatment with azithromycin in both male and female patients and in different age groups.

Earlier studies done by farahnaz and her colleagues from iran, isfahan showed no significant statistical differences in age and sexes of individuals in response of treatment at repeated evaluation during three months assessment. But our study revealed statistically significant response to treatment in both sex and different age groups because farahnaz study[2] have low sample size as that of our study.

Another study conducted by Federico and his colleagues showed that there patients also showed no difference in response among various age and sex groups. But our study showed significant difference in diff age groups and sex, because in referred study they took only 52 patients but in our study total number of patients are 193, divided in different age and sex group[23].

Further randomized control trials are needed to assess the response of azithromycin in different age and sex groups for more accurate results.

## CONCLUSION

The conclusion of my study is that in the age range of 19-22 years, patients shows better response to oral azithromycin as compared to other age groups mentioned in the study. Better response was noted in the study in female patients for the treatment of moderate acne vulgaris.

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