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Research Article

**STUDY OF THE AZITHROMYCIN TOPICAL SOLUTION  
EFFICACY COMPARE WITH ERYTHROMYCIN AND  
CLINDAMYCIN TOPICAL SOLUTION FOR ACNE VULGARIS  
TREATMENT****<sup>1</sup>Dr.Bazgha Niaz, <sup>2</sup>Dr.Faisal Farooq, <sup>3</sup>Dr.Ramish Faraz Hazir**<sup>1</sup>Hainan Medical University China<sup>2</sup>Xian jiaotong University China<sup>3</sup>Xian jiaotong University China**Abstract:**

*Acne vulgaris is a common deep inflammatory disease. Erythromycin and clindamycin topical solutions are effective in treatment of acne vulgaris patients.*

***Purpose:** This study was performed to compare the topical solution azithromycin effects as a new treatment method with topical erythromycin and clindamycin solutions.*

***Study Design:** A randomized double-blind.*

***Place and Duration:** Dermatology department of Mayo Hospital Lahore, From November 2016 to March 2017.*

***Methodology:** A Six months clinical trial was conducted in outpatients department of 96 patients with acne vulgaris in mild to moderate form. Into three groups, patients are Randomly divided which were combined according to acne severity index (ASI) and treated with azithromycin, erythromycin and clindamycin and 2% alcohol solution for twenty four weeks twice daily. The treatment efficacy was evaluated by total number of acne lesions (TLC).*

***Findings:** Decreased Acute severity index and Total lesion count were significant at week 20 for all three treatment groups ( $P < 0.05$ ). Azithromycin was more effective than clindamycin and erythromycin for acne treatment after 16 weeks ( $P < 0.05$ ). 20 (20.8%) of the azithromycin group reported side effects such as erythema and / or pruritus (12.5%) ( $P < 0.05$ ).*

***Conclusion:** Topical azithromycin solution is a more effective treatment of acne vulgaris in for mild to moderate cases compared to clindamycin and erythromycin, but has more local side effects.*

***Key Words:** Azithromycin, Acne vulgaris, Erythromycin, Clindamycin.*

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**INTRODUCTION:**

An inflammatory skin disorder, acne, is the most common skin problem treated by dermatologists. Early treatment of acne Prevent facial wounds and this is why anxiety psicológica. Topical antibiotics are usually prescribed for the treatment of moderately severe acne vulgaris for thirty years. The two most commonly used propionibacterium acnes (P. acnes) levels are topical antibiotics clindamycin and erythromycin to lower inflammation and reduce inflammation. Some antimicrobial substances, such as benzoyl peroxide, have an anti-inflammatory effect, but they are used to treat acne mild to moderate acne, especially in combination with erythromycin, clindamycin, to lower the most of resistance development. However, due to the emergence of antibiotic resistant strains, these antibiotics become less effective. Azithromycin is a new macrolide with a broad tissue distribution and cellular concentration. Azithromycin shows little activity against aerobic Gram-negative bacteria and anaerobic Gram-negative sepsis, including Propionibacterium (P.acnes) with less side effects and more competent but there is no study of topical solution of azithromycin for treatment acne. For this reason, this study was performed to differentiate the safety of topical alcoholic solution erythromycin, azithromycin, alcoholic solution versus aspirin (ASA) and clindamycin, alcoholic solution (ASC) in acne treatment.

**MATERIALS AND METHODS:**

This randomized double-blind study was held in Dermatology department of Mayo Hospital Lahore, From November 2016 to March 2017.

**Patients:** With mild to moderate acne vulgaris , Male and female patients of age 12-28 years were selected. Patients using any acne treatment in the

previous month were not included in the study. Female patients with acne medications and polydisperse over syndrome were excluded from the study. Patients were randomized to the same number for each treatment. Patients applied the drug twice a day. Patients were assessed at day 1, 2, 4, 8, 12, 16, 20 and 20 weeks after the start of the study. To protect the blindness, a pharmacist dispersed the medication and teaching the patient the appropriate method of administration. The planned treatment duration was 16 weeks and the patients were followed up at the end of six months after the start of treatment.

**Treatment of the study:** Patients in the azithromycin group achieved 2% azithromycin (in 60% ethanol / 40% aqueous solution) alcohol solution as the method of Mc Hugh et al. The treatment efficacy was determined by the total number of lesions in the whole face. At each visit, the doctor rated the overall change as: a reduction of 80% or more was labeled as good, 50-79% moderate, 20-49% mild, and poor as 20% less. Side effects were recorded on complaints of patients throughout the study. All evaluators are cured of the received treatment. To optimize the consistency of the subject. The evaluators, the same staff, saw the same patients on each visit. Statistical analysis: The data were analyzed with SPSS software using ANOVA, Tukey and other useful statistical methods with  $P < 0.05$ .

**RESULTS:**

Overall, 96 patients (32 in each group) were randomized to treatment and evaluated between November 2016 and March 2017 (Table I, II), with no difference significant noted between inflammatory lesions, demographic characteristics and non-inflamed basal values.

Table-I: Demographic Characteristics.

	Azit	Eryth	clinda	P-value
<b>-Sex</b>				
Male	4(12.5%)	4(12.5%)	4(12.5%)	NS
Female	28(87.5%)	28(87.5%)	28(87.5%)	
<b>-Age(years)</b>				
Meant±SD	18.9±2.9	19.3±2.9	20.4±4.3	NS
Range	15-26	16-25	12-28	
<b>-Family history</b>				
Positive	21(65.5%)	17(53.1%)	18(56.3%)	NS
Negative	11(34.5%)	15(46.9%)	14(43.7%)	
<b>-BMI</b>				
Meant±SD	22.3±3.7	23.1±5.4	22.7±4.4	NS
Range	18.6-31.0	16-38	13-30	

Azit: Azithromycin Eryth: Erythromycin, Clinda: Clindamycin

This study results confirms that non-inflammatory and inflammatory lesions improve during the 20 weeks of three types of treatment with topically applied antibiotics. Table II show a significant difference in the total number of non-inflammatory lesions and in the total number of lesions between the three groups of treatment.

Table-II: Absolute Lesion Count.

	Azit N=32 Mean(SD)	Eryth N=32 Mean(SD)	Clinda N=32 Mean(SD)	Ons way ANOVA A-E-CP-Value	Tukey test		
					A vs E P-Value	A vs C P-Value	E vs C P-Value
<i>Total number of inflammatory lesions</i>							
Week 0	47.9 (56.1)	65.7 (47.1)	54.7 (34.3)	NS	NS	NS	NS
Week 2	21.7 (23.7)	23.2 (13.7)	29.1 (24.9)	NS	NS	NS	NS
Week 4	15.7 (16.5)	18.2 (12.3)	20.1 (20.2)	NS	NS	NS	NS
Week 8	10.3 (9.1)	13.0 (8.5)	16.4 (16.8)	NS	NS	NS	NS
Week 12	7.1 (7.8)	9.8 (7.8)	12.1 (13.2)	NS	NS	NS	NS
Week 16	5.3 (8.3)	12.0 (12.6)	13.0 (12.2)	NS	NS	NS	NS
Follow up 20 Weeks	5.5 (9.0)	12.8 (16.7)	12.7 (9.9)	NS	NS	NS	NS
<i>Total number of non-inflammatory lesions</i>							
Week 0	148.9 (57.6)	142.7 (50.2)	11.3 (45.9)	NS	NS	NS	NS
Week 2	113.3 (45.9)	101.3 (31.3)	117.9 (34.9)	NS	NS	NS	0.044
Week 4	83.6 (43.7)	79.0 (25.9)	98.4 (39.5)	0.011	NS	NS	0.009
Week 8	62.3 (30.1)	71.3 (22.0)	84.2 (38.4)	0.005	NS	0.008	0.022
Week 12	47.2 (24.9)	57.1 (21.4)	71.2 (33.9)	0.015	NS	0.012	NS
Week 16	38.2 (24.7)	54.8 (26.3)	70.0 (41.1)	0.014	NS	0.010	NS
Follow up 20 Weeks	33.6 (26.7)	52.3 (28.9)	72.6 (38.9)	0.000	NS	0.000	0.005
<i>Total number of lesions</i>							
Week 0	146.8 (96.9)	268.5 (39.4)	215.0 (49.2)	NS	NS	NS	NS
Week 2	135.0 (54.1)	124.6 (38.1)	147.0 (55.5)	NS	NS	NS	0.047
Week 4	99.3 (51.6)	97.2 (33.0)	118.6 (51.5)	0.017	NS	NS	0.015
Week 8	72.7 (32.1)	84.3 (25.3)	100.6 (40.6)	0.005	NS	0.008	0.023
Week 12	54.3 (27.2)	67.0 (24.3)	83.4 (43.3)	0.013	NS	0.010	NS
Week 16	43.6 (27.3)	66.9 (36.1)	83.0 (50.1)	0.013	NS	0.009	NS
Follow up 20 Weeks	39.2 (31.0)	65.2 (43.6)	85.3 (44.4)	0.000	NS	0.000	0.014

NS: Non Significant Azit: Azithromycin Eryth: Erythromycin Clinda: Clindamycin

Within the first four weeks of treatment, the best response was observed in the AEA over the best therapeutic response and the AEA observed in the fourth week. The smallest effect was observed from the ASC. In our study, 20.8% of the patients complained more redness, itching, burning and edema in the azithromycin group (12.5%,  $p < 0.05$ ) (Table II).

## DISCUSSION:

The results of this study indicate that inflammatory lesions and non-inflammatory lesions improve during the 16 weeks of three types of treatment with topically applied antibiotics. Oral and topical antibiotics are the most commonly used for acne lesions. The mechanisms by which antibiotics work with acne vary slightly from one to another. Some medicines may have anti-inflammatory or antibacterial properties, while other medicines may also have two properties. The beneficial effect of the 2% alcohol solution of the most common antibiotics such as erythromycin and clindamycin has been shown in various studies. Oral and topical erythromycin and clindamycin have comparable efficacy to placebo and vehicle in patients with papulopostula. Two randomized double-blind clinical trials have shown that the efficacy of erythromycin and clindamycin is the same for acne treatment.

Clinical isolates of *P. acnes* are known to be very sensitive to azithromycin. Our study showed that all topical medications had a significant effect on the inflammatory lesion of the acne, but erythromycin had a better efficacy for comedones treatment in the first weeks, but azithromycin had a more positive effect after the fourth week. Significant effect on comedones compared to other drugs. A new macrolide is Azithromycin that has been produced to overcome deficiencies of erythromycin such as short half-life and gastrointestinal intolerance. Recently, it has been found in the treatment of inflammatory acne azithromycin to be effective. The macrolides anti-inflammatory effect has been demonstrated in several studies. Some studies results shows that various inflammatory processes are affected by macrolides such as phagocytosis, neutrophil migration, cytokines production and oxidative burst. A new macrolide Azithromycin with a unique and superior

pharmacokinetic profile when compared to other macrolides. It takes too much and provides a less frequent dosage. In a steady state, tissue levels are significantly increased compared to serum levels. Azithromycin also has no significant pharmacological interactions. Kus et al. They have shown that irritated acne lesions without oral azithromycin reduce the inflammatory lesions comparable to results, and that azithromycin is effective and safe as a treatment for acne doxycycline. Tetracycline is a good alternative for patients who can not tolerate side effects. In our study, 20.8% of patients complained of burning and azithromycin group (12.5%,  $p < 0.05$ ), which was more common, swelling, redness, itching. Tetracyclines are first-line anti-acne antibiotics. However, tetracyclines can be associated with a considerable number of side effects. Comparative experiments have shown that azithromycin exceeded conventional acne treatment, such as tolore propyl erythromycin and doxycycline. But concern about the use of oral antibiotics is the possible transfer of antibiotic resistance to other organisms. To reduce the risk of developing resistance oral antibiotics topical agents may be sufficient mild acne should not be used. Topical azithromycin has a promising and lasting effect in the treatment of acne, but according to the results of our study, there are more controlled studies comparing topical azithromycin with the proposed local side effects and the efficacy and acceptability of topical azithromycin conventional antibiotics.

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