Original Article:

An observational study on the effect of Azithromycin in treatment of Acne Vulgaris

***Roy P[1] Haque M[2] Paul PC[3] Raza AKMM[4] Mitu AZ[5] Munni TA[6]**

Abstract :

Background: *Acne vulgaris or simply acne is a common dermatological problem. Acne most commonly seen in adolescence age caused by increased androgens in both sexes. It is caused by propionibacterium acne. In spite of many ranges of antibiotics available, Azithromycin is one of the antibiotics that has been recently prescribe for treatment of acne which is as effective as doxycycline and minocycline. This study is undertaken to see the efficacy of Azithromycin in the treatment of acne vulgaris.* ***Objective:*** *The main objective of this report was to assess the efficacy of 500 mg of azithromycin administered thrice weekly for 12 weeks in the treatment of acne vulgaris.* ***Methods:*** *This study was performed on 100 patients (50 male and 50 female) in Jahurul Islam Medical College and Hospital, Bajitpur, Kishoregonj, using special grading system GAGS. The exclusion criteria for the study were pregnancy, a history of macrolide sensitization and retinoid therapy.* ***Result:*** *Grade I patient showed effect 80%, Grade II 90% recovery Grade III is also effective as a 90% recovery but Grade 4 were not much effective only 65% recovered.* ***Conclusion:*** *This study showed that, azithromycin has greatest advantage over other systemic antibacterial in acne because it is long-acting drug and can be used in single dose three times weekly.*

Keywords: Acne vulgaris, Azithromycin, GAGS, Propionibacterium acnes.

Received: 22.02.2020, **Accepted:** 17.03.2020. ***Ad-din Medical Journal. 2020; 1 (1) : 19-22***

Introduction

Acne vulgaris is a common inflammatory disorder of the Pilo-sebaceous follicles. It is a multi-factorial disease and its pathophysiology centers on the interplay of follicular hyper-keratinization, colonization with Propionibacterium acnes (PA), increased sebum production, and inflammation.

This disease has a high prevalence, occurring mainly in adolescence. Although the peak of prevalence is around the 17th year of life, acne lesions can appear earlier and are not uncommonly observed in the age group ranging from 12 to 14 years, in which the conditions is under reported[1]. Antibiotic therapy has long been found useful in the management of moderate-to-severe acne vulgaris. Mechanisms of action include suppressing growth of PA, reducing the production of inflammatory mediators, and acting in immune modulation.

Commonly prescribe antibiotics include tetracyclines, doxycycline, minocycline, limecycline and erythromycin. Azithromycin is one of the antibiotics that has been recently prescribe for treatment of acne which is at least as effective as doxycycline and minocycline[2,3].

Azithromycin is a nitrogen-containing macrolide antibacterial agent and a methy1 derivative of erythromycin with actions and uses similar to those of erythromycin[4,5]. Its extensive distribution in the tissues allows pulse-dose regimen recommendation for increased compliance[6].

Material and Method

The primary focus of this open-label non-comparative therapeutic study was to assess the efficacy of 500 mg of azithromycin thrice weekly (once on every other day) for 8 weeks in the treatment of Acne vulgaris in patients. This study enrolled 100 patients from the outpatient Derma-

1. Dr. Popy Roy, Assistant Professor, Department of Pharmacology and therapeutics, Jahurul Islam Medical College. Kishoreganj.
2. Professor Dr. Mozammel Haque, Department of Dermatology and veneriology, Jahurul Islam Medical College & Hospital. Kishoreganj.
3. Professor Dr. Paritosh Chandra Paul,Head of the department, Department of Pharmacology and therapeutics, Jahurul Islam Medical College . Kishoreganj.
4. Dr. A K M Maruf Raza,Associate professor, Department of Pathology, Jahurul Islam Medical College. Kishoreganj.
5.Dr. Md. Zabed Ahmed Mitu,Associate professor,Department of Microbiology,Jahurul Islam Medical College. Kishoreganj.
6. Dr. Tajrin Akter Munni, Associate professor,Department of Anatomy,Jahurul Islam Medical College

***Correspondence:** roydrpopy@gmail.com.

tology Department in Jahurul Islam Medical college and hospital during the period from December 2018 to December 2019. Patients were examined by dermatologists and an assessment was made, including a full count of acne lesions, we used special grading system of GAGS. The lesions were counted at the beginning of the treatment and at weeks. The difference between the number of lesions observed at baseline and the number seen in subsequent examinations was used to evaluate the efficacy of therapy. At every check-up we assessed the clinical response to azithromycin, any adverse events, and patient tolerance. The exclusion criteria were pregnancy, a history of macrolide sensitization and retinoid therapy. Patients with relapsing acne previously treated with antimicrobials such as doxycycline, minocycline and erythromycin were eligible to be enrolled in the study after a six-month wash-out period. No topical therapy was associated. Patients were advised not to undergo any beauty procedures, such as chemical peels, bleaches during the study period. All patients were also evaluated at 2 months, post-treatment follow-up visit. 100 hundred patients 50 male and 50 female 17-25 yrs of age and with mild to severe acne (score of acne 19-38), in the Global Acne Grading System (GAGS), were included in the study.9 Every patient was being exact physical examination and graded by GAGS. In GAGS: Acne patients were assigned into 4 grades.

- Mild = 1 – 18 Score
- Moderate = 19 – 30 Score
- Severe = 31 – 38 Score
- Very Severe > 39 Score

In this study patients were excluded if: Global acne score was greater than 39 or lower than 19. Concomitant use of anti-androgenic drugs Isotretinoin use in the last six months Participants were awarded and investigators got written informed consent from them. After that, they were allocated to four groups as a grading system. We prescribed Azithromycin in these groups as follow:

Grade I: 500 mg Azithromycin as initial dose followed by 500 mg weekly pulse doses for 12 weeks.

Grade II: 500 mg Azithromycin as initial dose followed by 500 mg weekly pulse doses for 12 weeks.

Grade III: 500 mg Azithromycin as initial dose followed by 500 mg weekly pulse doses for 12 weeks. Grade IV: 500 mg Azithromycin as initial dose followed by 500 mg weekly pulse doses for 12 weeks.

We followed patients over a 12-week period and visited them monthly. At each visit, acne lesions were assessed by blinded dermatologist to treatment protocols and GAGS was used to evaluate the response of patients to treatment. The patient visits were done at the end of first, second and third month.

Grading of acne vulgaris using visual analogue Scale :

Grade	Score	Observation
Grade 1 (Mild)	1 – 18	Microcomedone
Grade 2 (Moderate)	19 – 30	Comedone
Grade 3 (Severe)	31 – 38	Inflammatory Papule/Pustule
Grade 4 (Very-severe)	> 38	Nodule Nodulo-Cystic

Result

At this open therapeutic trial 100 patients were enrolled (50 males, 50 females) all of them were teenagers and adolescents (ages 17-50 years) with moderate-sever papulo-pustular acne. **Grade 1** patient were achieved good excellence effect 80%. Grade II is also effective as 90% recovery. Grade III is also effective as a 90% recovery. But Grade 4 were not much effective only 65% recovered **(Table-1).**

Table I: Evaluation of efficacy of therapy

Grade of Response%	Reduction of Acne
Grade I	Up to 80%
Grade II	Up to 90%
Grade lll	Up to 90%
Grade lV	Up to 65%

Table II: Overall distribution of all acne patients (%)

Grade	Male	Female	Recovered Patient	Recovered Patient (%)
Grade 1	3	7	8	80%
Grade 2	7	3	9	90%
Grade 3	20	20	36	90%
Grade 4	20	20	22	65%
Total	50	50	85	85%

Discussion

Acne is multifactorial disease primarily of teenagers with follicular plugging and inflammation. It is the most common skin disease; affecting almost every individual during puberty[4,5].

Our patients achieved over all response (85%). Federico who reported a good excellent response of 90.9% after 4 weeks of therapy[6] and slightly higher than Singhi[7] comparative clinical trials have shown that the tolerability profile of azithromycin is superior to that of erythromycin and doxycycline[8] which is similar to the results conducted in our study. Moreover, tetracyclines can cause both mucocutaneous and systemic adverse effects. Azithromycin has many advantages compared to other antibiotics. It is more stable than erythromycin in low gastric pH, it produces fewer gastrointestinal side-effects and does not present any major drug interaction[9].

Gruber et al[10] compared azithromycin with minocycline and observed a satisfactory clinical response (70-75%) with both the drugs. These findings suggest that azithromycin is a better alternative in patients with moderate to severe acne and has no serious side effects.

Our study conveyed that Azithromycin had a less frequent dose, was easy to administer and was effective in controlling and clearing acne. The ease of this pulse regimen contributed to patient and parental compliance and cost-effectiveness which was comparable to the study conducted by Federico Bardazziet al in Italy[11].

The study also highlighted that azithromycin has great advantage over that systemic antibacterials because it is long acting and can be used in single dose three times weekly which distinguishes it from other acne drugs[12].

Conclusion

This study showed that, azithromycin has greatest advantage over other systemic antibacterial in acne because it is long-acting drug and can be used in single dose three times weekly.

References

1. Herane MI, Ando I Acne in infancy and acne genetics Dermatology 2003;206: 24-28.

2. Fernandez-Obregon AC. Azithromycin for the treatment of acne. Int J Dermatol. 1997;36:239-40.

3. Gruber F, Grubisic-Greblo H, Kastelan M, Brajac I, Lenkovic M, Zamolo G. Azithromycin compared with minocycline in the treatment of acne comedonica and papulo-pustulosa J Chemother 1998;10: 469-73.

4. Peters DH, Friedel HA, McTavish D. Azithromycin A review of its antimicrobial activity, pharmacokinetic properties and clinical efficacy Drug 1992;44: 750-99.

5. Alvrez-Elroco S, Enzler MJ. The macrolides, Erythromycin, clarithromycin and Azithromycin, Mayo Clin Proc 1999;74: 613-34.

6. Lalak NJ, Morris DL. Azithromycin clinical pharmacokinetics. Clin Pharmacokinet 1993;25: 370-4.

7. Singhi MK, Ghiya BC, Dhabhai RK Comparison of oral Azithromycin pulse with daily doxycycline in the treatment of acne vulgaris. Indian J Dermatol VenereolLeprol 2003;69: 274-6.

8. Kapadia N, Talib A, Acne treated successfully with Azithromycin. Int J Dermatol. 2004;43(10):766-7.

9. Alvarez-Elroco S, Enzler MJ. The macrolides, erythromycin, clarithromycin, and Azithromycin. Mayo Clin Proc. 1999;74: 613-34.

10. Gruber F, Grubisic-Greblo H, Kastelan M, et al. Azithromycin compared with minocycline in the treatment of acne comedonica and papulo pustulosa J Chemother 1998; 10: 269.

11. Federico B, Francesco S, Gianluca P, Michela T, Riccardo B, Giuseppe S, Emi D, Azithromycin: A new therapeutical strategy for acne in adolescents. Dermatology Online Journal. 2008;13(4):4.

12. Sanjeev S, Priyank K, Sanjay B, Jain SK. Efficacy of Azithromycin Pulse Therapy in Acne Vulgaris Treatment: A Hospital Based Study. International Journal of Scientific Study. 2014;1(4):21-23.