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Original Research Article

A comparative study of therapeutic efficacy of Doxycycline vsAzithromycin in patients with Acne Vulgaris

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ABSTRACT

Introduction: Acne vulgaris (AV) is the most common chronic inflammatory skin disease. This study aimed to study the efficacy of Doxycycline vs Azithromycin in acne vulgaris patients.
Materials and Methods: In this study, 40 acne vulgaris patients were included. Forty patients with pustules and nodules were included in this study. Group I patients were divided into two groups –Doxycycline group (100 mg OD for 12 weeks) and Azithromycin group (500 mg OD for 3 consecutive days in a week for 12 weeks). The change occurred in acne lesions were recorded every 2 weekly follow-up using global assessment improvement scale.
Results: in the present study, at the end of 12^{th} weeks of treatment, in Doxycycline group; good to excellent response was seen in 80% cases and poor to fair in 20% patients. In Azithromycin group ; good to excellent response was seen in 70% and poor to fair in 30% patients. There is no significant difference in these two groups.
Conclusion: The study results indicate, t here is no significant difference in the efficacy between Doxycycline and Azithromycin groups. It may be suggesting that Doxycycline is equally efficacious as Azithromycin in moderate to severe degree of acne.

1. Introduction

Acne vulgaris (AV) is the most common chronic inflammatory skin disease. The prevalence of the disease ranging from 35% to 90% in young adults and adolescents.[1,2] It is a multi- factorial disease affecting the pilosebaceous follicle characterized by comedones, papules, pustules, nodules, cysts and scars.[3]

The risk factors of acne vulgaris are genetics, exposure to industrial compounds, trauma, rubbing from tight clothing, cosmetics, emotional stress and unfavorable climate. Increased production of sebum, microbial flora abnormality, cornification of the pilosebaceous duct, inflammation and elevate d levels of androgen.[3] The disease affects the pilosebaceous units of the skin and may result in inflammatory or non-inflammatory lesions and varying degrees of scarring.[4–6] And also it causes physical and psychological morbidity.[7] Thiboutot *et al.* suggested that acne should be recognized as a chronic disease which may also affect the patient psychologically.[8] Generally, acne vulgaris is treated with numerous topical and systemic drugs.[9] Systemic antibiotics have been the mainstay of treatment for moderate to severe acne vulgaris to date, and the effectiveness of several antibiotics, including oxytetracycline, minocycline, doxycycline and erythromycin, in treating acne has been established.[10] Although doxycycline is considered to be a first-line anti-acne antibiotic, it is known to have side effects, such as gastrointestinal symptoms, tooth discoloration, photosensitive reactions, pigmentation changes, and central nervous system effects.[11] Azithromycin is structurally related to erythromycin, and given orally. Azithromycin is characterized by immediate uptake from circulation and followed by slow release.[9] The long elimination

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half-life from tissue permits less-frequentadministration.[12] Azithromycin is more tissue stable, penetrates deeply into tissue and has a higher terminal half-life than erythromycin.[13] Hence, we aimed to study the efficacy of Doxycycline vs Azithromycin in patients with Acne Vulgaris.

2. Materials and Methods

This prospective comparative study was conducted in the Department of Skin and Venereal Diseases, SCB Medical College and Hospital, Cuttack, Odisha. Patients visiting the department of Skin & VD at SCB Medical College and Hospital were recruited as study subjects. Total number of patients were 40. The age of the study subjects was 15 to 25 years of both genders. Forty patients with mainly pustules and nodules were included in this study. Pregnant or lactating female, hypersensitive to drugs, children below 12 years of age and patients who have received either topical or oral treatment for acne in the past 4 weeks were excluded from the study. Patients were divided into two groups, 20 in each group – Doxycycline group (100 mg OD for 12 weeks) and Azithromycin group (500 mg OD for 3 consecutive days in a week for 12 weeks). The change occurred in acne lesions were recorded every 2 weekly follow-up using global assessment improvement scale. Response to therapy grading done as, if reduction of lesions >90% as excellent, 60-90% as good response, 30-60% as fair response and <30% as poor response.

3. Results

In the present study, 4 0 subjects were studied. Table 1 and Figure 1 A,B, Figure 2 A,B shows the response of Doxycycline vs Azithromycin.

At the end of 12^{th} week s of treatment, in Doxycycline group; good to excellent response was seen in 80% cases. 20% patients responded poor to fair grade. In Azithromycin group; at the end of 12^{th} weeks of treatment, 70% responded good to excellent. Fair to poor response was seen in rest 30% cases. There is no significant (p= 0.82) difference in the results between these two groups.

4. Discussion

Initial response to treatment with Doxycycline appeared at 2 weeks and peak response was noted at 8-10 weeks of treatment. At the end of treatment 95% patients showed some response but good to excellent response was seen in 80% cases only. Doxycycline reduces the number of P. Acne and Staphylococcus epidermidis. It also has effect on the generation of the reactive oxygen species.[14] Like Minocycline, Doxycycline also inhibits the formation of inflammatory granuloma. Plewig G, *et al*., found that 45-50% of patients has good to excellent response to Doxycycline in Acne vulgaris.[15]

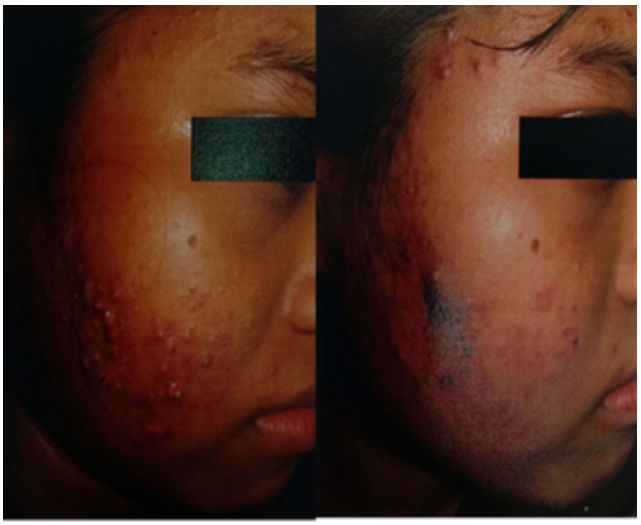

Fig. 1: A and 1B. Shows Before and After Treatment (at 12 weeks) with Doxycyclin respectively

Fig. 2: A and 2 B. Shows Before and After Treatment (at 12 weeks) with Azithromycin respectively

In the present study, initial response to treatment with Azithromycin appeared at 2 weeks and peak response was noted at 8-10 weeks. At the end of treatment all 20 patients showed response but good to excellent response was seen in 70% cases. Azithromycin reduces the number of Corynebacterium acne and Staphylococcus epidermidis.[16] Azithromycin is acid stable, rapidly absorbed and has marked tissue distribution capacity. Antibiotics resistance with Azithromycin is also less.[17,18] There is no significant difference in the results between these two groups. (p=0.82)

Table 1: Doxycycline group Vs Azithromycin group

At the end of 2 weeks				
Drug	**Poor response**	**Fair response**	**Good response**	**Excellent response**
Doxycycline	16 (80%)	4 (20%)	0	0
Azithromycin	17 (85%)	3 (15%)	0	0
At the end of 4 weeks				
Doxycycline	14 (70%)	5 (25%)	1 (5%)	0
Azithromycin	15 (75%)	4 (20%)	1 (5%)	0
At the end of 6 weeks				
Doxycycline	12 (60%)	6 (30%)	2 (10%)	0
Azithromycin	13 (65%)	5 (25%)	2 (10%)	0
At the end of 8 weeks				
Doxycycline	9 (45%)	8 (40%)	3 (15%)	0
Azithromycin	9 (45%)	9 (45%)	2 (10%)	0
At the end of 10 weeks				
Doxycycline	5 (25%)	7 (35%)	6 (30%)	2 (10%)
Azithromycin	6 (30%)	7 (35%)	6 (30%)	1 (5%)
At the end of 12 weeks				
Doxycycline	1 (5%)	3 (15%)	13 (65%)	3 (15%)
Azithromycin	3 (15%)	3 (15%)	10 (50%)	4 (20%)

Chisquare = 0.926, df =3, p = 0.82

5. Conclusion

In the present study, good to excellent response was seen in 80% cases with Tab. Doxycycline and 20% patients showed poor to fair grade. In case of Azithromycin group, at the end of 12 weeks of treatment, 70% had good to excellent response. Fair to poor response was seen in 30% cases. There is no significant difference in the efficacy between Doxycycline and Azithromycin groups. It may be concluded that Doxycycline is equally efficacious as Azithromycin in moderate to severe degree of acne. Further studies with large sample size are recommended to confirm these findings.

6. Conflict of Interest

None.

7. Source of Funding

None.

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