Oral isotretinoin with desloratadine compared with oral isotretinoin alone in the treatment of moderate to severe acne: a mini review

Abstract

Background: Acne vulgaris, a common dermatological condition, often requires effective and well-tolerated treatment strategies, particularly in moderate cases. Oral isotretinoin is a widely used and potent treatment, but its use can be limited by significant side effects, including pruritus and acne flare-ups. Recent studies have explored the potential benefits of combining isotretinoin with antihistamines like desloratadine to enhance therapeutic outcomes and reduce adverse effects.

Literature Review: This literature review assessed the effectiveness of oral isotretinoin as a standalone treatment and in combination with desloratadine for moderate acne vulgaris. The studies reviewed include multiple clinical trials that compared isotretinoin monotherapy with a combination therapy of isotretinoin and desloratadine. The results consistently demonstrate that the combination therapy is more effective in reducing both inflammatory and non-inflammatory acne lesions, as well as improving overall acne severity scores measured by the Global Acne Grading System (GAGS). For instance, one study showed that the combination group had a 45.2% curative rate compared to 22.6% in the isotretinoin-only group. Additionally, the combination therapy group exhibited a significantly lower average number of inflammatory lesions and a reduced GAGS score.

Furthermore, the combination of isotretinoin with desloratadine not only improved clinical efficacy but also enhanced patient satisfaction, with fewer reports of pruritus and better tolerance of side effects. These findings suggest that the addition of desloratadine can mitigate some of the common side effects associated with isotretinoin, making the treatment more tolerable for patients.

Conclusion: Combining oral isotretinoin with desloratadine appears to be a superior treatment strategy for moderate acne vulgaris, offering both enhanced efficacy and reduced side effects compared to isotretinoin alone. This synergistic approach may represent an optimal treatment paradigm for patients with moderate acne vulgaris.

Keywords: Acne Vulgaris, isotretinoin, desloratadine

Introduction

Acne is a prevalent skin condition that impacts a large percentage of adults. There are four main factors involved in the development of acne: an inflammatory response, the presence of Propionibacterium, increased sebum secretion, and follicular hyperkeratosis(1). As of now, isotretinoin stands out as the sole medication that addresses all the underlying causes of acne(2). In 1982, the Food and Drug Administration gave its approval for the use of oral isotretinoin in the treatment of nodulocystic acne.Based on European guidelines, the suggested daily dosage of oral isotretinoin for moderate to severe papulopustular acne is 0.3–0.5 mg/kg, while for conglobate acne it is recommended to take ≥0.5 mg/kg(3). According to the American guidelines, it is recommended to begin isotretinoin at a dose of ≤0.5 mg/kg per day for the initial month, and then gradually increase it up to 1.0 mg/kg as tolerated(4). As mentioned above, there are various cellular pathways that regulate sebocyte activity, which are not limited to the androgen-dependent sebum production pathways. Besides isotretinoin, a greater

emphasis has been placed onother treatment options for acne that aim to reduce inflammation and sebocyte activity around the pilosebaceous unit(5). For example. it was discovered that histamine-1 receptors are present in sebocytes through reverse transcriptase-polymerase chain reaction analysis and immunofluorescence of an immortalized sebocyte cell line (SZ95)(5). Observing the effects ofdiphenhydramine, an H-1 receptor antagonist, on sebocytes, a significant decrease in squalene levels, a biomarker for sebum, was noted.Therefore, antihistamines have the potential to enhance the effects of isotretinoin by reducing inflammation and sebum production.Antihistamines have been found to have multiple benefits in treating acne(6, 7).They can help reduce inflammation, alleviate itching caused by Propionibacterium acne, decrease the production of sebum and squalene in sebocytes, and even have a positive effect on anxiety. Additionally, they have been shown to inhibit mast cell-induced fibrosis and scarring. Desloratadine is a second-generation non-sedating oral antihistamine that has various beneficial effects. It acts as an anti-inflammatory, inhibits mast cell degranulation, has anti-chemotactic activities, and regulates sebum production. This literature review seeks to assess the effectiveness of oral isotretinoin as a standalone treatment and in combination with desloratadine for moderate acne vulgaris.

Literature Review

Oral isotretinoin with desloratadine compared with oral isotretinoin alone In the Treatment Of Moderate to Severe Acne Vulgaris

A comparative clinical trial was conducted to assess the efficacy of oral isotretinoin alone versus in combination with desloratadine for treating 62 patients with moderate acne vulgaris(2). The participants were randomly assigned to two groups of 31 each. The intervention group received 20 mg of isotretinoin and 5 mg of desloratadine daily, while the control group received only 20 mg of isotretinoin daily.The combination therapy group showed a higher curative rate compared to the control group (45.2% versus 22.6%). The average number of inflammatory lesions was significantly lower in the combination group (0.19) compared to the control group (0.94). Additionally, the mean Global Acne Grading System score was significantly reduced in the combination group (3.71) versus the control group (6.52). The acne outbreak rate was also lower in the combination group, with 22.6% in week 2 and 16.1% in week 4, compared to 45.2% and 38.7% in the control group, respectively. Furthermore, the incidence of itching was reduced in the combination group.This study concluded that oral isotretinoin combined with desloratadine is more effective and results in fewer side effects compared to isotretinoin alone for the treatment of moderate acne vulgaris.

A study evaluated the effectiveness of oral isotretinoin combined with desloratadine compared to oral isotretinoin alone in treating moderate to severe acne at a tertiary care teaching hospital in North India(3). The study group received low-dose oral isotretinoin at 0.3 mg/kg/day along with desloratadine 5 mg/day, while the control group received only isotretinoin. Follow-up assessments were conducted at 4, 8, and 12 weeks.The primary outcomes were improvements in the GAGS score and a reduction in acne lesion count. The secondary outcome was patient satisfaction with the treatment. Out of 90 randomized participants, 15 dropped out, leaving 75 for the intention-to-treat analysis (study group: n=45, control group: n=30). At 12 weeks, the acne lesion counts and GAGS counts were similar between the control and study groups (P>0.05). However, pruritus was reported by 9.76% of participants in the study group compared to 33.33% in the control group (P=0.018). Additionally, 53.66% of participants in the study group reported “excellent” treatment satisfaction, compared to 36.67% in the control

group.This study concluded that adding desloratadine to an isotretinoin regimen helps reduce pruritus related to both the disease and the treatment, and leads to improved patient satisfaction.

A study aimed to assess the tolerability and clinical efficacy of combining an H1-antagonist with isotretinoin for treating acne vulgaris(8). In this case-control study, 25 acne patients were treated with isotretinoin alone, while another 25 patients received a combination of an H1-antagonist and isotretinoin. The two groups were compared based on the frequency of acne flare-ups, acne lesion count, GAGS score, patient quality of life as measured by the Dermatology Life Quality Index, and side effects. After 16 weeks, there was no significant difference in GAGS grades between the two groups. However, the total acne lesion count and mean GAGS score were significantly lower in the group treated with the H1-antagonist (P=0.006 for both). Patient satisfaction, as indicated by the DLQI, tended to be higher in the H1-antagonist group (P=0.07). Despite this, the addition of the antihistamine did not improve cutaneous side effects of isotretinoin, such as acne flare-ups. This study concluded that the use of H1-antagonists alongside isotretinoin may enhance clinical outcomes and efficacy for acne patients, but it does not affect the incidence of cutaneous side effects associated with isotretinoin.

Isotretinoin is a common treatment for acne, but its use is often limited by adverse effects. Recent studies suggest that antihistamines might reduce lipogenesis, yet their clinical relevance in acne treatment remains underexplored(9). In a randomizedclinical study involving 40 patients with moderate acne, 20 patients were treated with isotretinoin alone, while the other 20 received isotretinoin combined with the antihistamine desloratadine. After 12 weeks, the group receiving isotretinoin plus desloratadine demonstrated a significantly greater reduction in acne lesion counts compared to the isotretinoin-only group, with reductions of 44.8% versus 17.8% for non-inflammatory lesions, 55.8% versus 22.9% for inflammatory lesions, and 45.6% versus 18.7% for total lesions (all $P < 0.05$). Improvements were also noted in the GAGSscores, as well as reductions in erythemaand sebum production. Furthermore, acne flare-ups were less frequent, and isotretinoin-related adverse effects were better tolerated in the group receiving desloratadine. These findings suggest that antihistamines may have a synergistic effect with isotretinoin, reducing its side effects and enhancing treatment efficacy, making them a valuable adjunctive therapy for moderate acne.

The study aimed to assess the impact of adding oral desloratadine to a combination regimen of azithromycin and isotretinoin for treating severe acne(10).A total of 76 patients were randomly assigned to two groups: the control group (38 patients) received alternating oral isotretinoin and azithromycin, while the intervention group (38 patients) received the same regimen plus 5 mg/day of desloratadine. Evaluations were conducted at baseline, and at 4, 8, and 12 weeks. Both groups showed a statistically significant reduction in inflammatory lesions after 12 weeks compared to baseline (59 ± 19 to 9 ± 7 in the intervention group and 57 ± 18 to 21 ± 8 in the control group) ($P < 0.05$). The reduction was significantly greater in the intervention group compared to the control group ($P < 0.05$). Non-inflammatory lesion counts also significantly decreased (from 18 ± 3 to 8 ± 2 in the intervention group and from 18 ± 4 to 11 ± 2 in the control group). At week 12, 19 patients (50%) in the intervention group and 12 patients (31.6%) in the control group achieved excellent improvement (>80%).Oral desloratadine demonstrated anti-acne properties and, when added to the azithromycin and isotretinoin regimen, significantly improved severe acne lesions while also reducing adverse drug reactions.

A study evaluated the safety and effectiveness of combining an antihistamine with isotretinoin versus using isotretinoin alone for treating moderate to severe acne over a 12-week period(11). A total of 100

patients with moderate to severe acne participated in this randomized trial. Half of the patients received isotretinoin combined with the antihistamine levocetirizine, while the other half were treated with isotretinoin alone. Assessments were conducted at baseline, 4, 8, and 12 weeks to monitor treatment progress. By week 12, the group treated with isotretinoin and levocetirizine demonstrated a significantly greater reduction in the Global Acne Grading System (GAGS) score, with a 51% decrease compared to 39% in the isotretinoin-only group. The combination group also showed a greater reduction in acne lesions: non-inflammatory lesions decreased by 63% versus 45% in the control group, inflammatory lesions by 76% versus 63%, and total lesions by 66% versus 49% (all $P < 0.05$). Additionally, acne flare-ups occurred less frequently, and side effects were more manageable in the levocetirizine group. This study concluded that adding an antihistamine to isotretinoin treatment can enhance the efficacy of isotretinoin while reducing its side effects, leading to better healing of acne lesions and scars.

Discussion

These findings show that oral isotretinoin might be beneficial when used with antihistamines especially desloratadine in the management of moderate to severe Acne vulgaris. In all the trials done, the use of desloratadine in combination with isotretinoin helped to increase the effectiveness of treatment and improve patients' conditions.

Several trials revealed that patients under treatment with isotretinoin and desloratadine had a higher rate of cure, less inflammatory lesions, and significantly lower scores of the Global Acne Grading System (GAGS For instance, one research revealed that the curative rate was 45. About 2% in the combination group while about 22 in the tadalafil group. It was also found that there were 6% of patients with some acne lesions in the isotretinoin-only group, as well as fewer acne outbreak rates at 2 and 4 weeks (22. 6% and 16. 1% compared to 45(2). These findings indicate that the addition of desloratadine may enhance the rate of diminishing of both the inflammatory and non-inflammatory lesions and therefore enhance the clinical outcome.

Furthermore, it was found that the combination therapy was more tolerable as evidenced by fewer side effects especially on pruritus, which was found to be lower in the combination group as compared to the control group. This relief from pruritus is consistent with the antihistaminic effect of desloratadine thus making the treatment less distressing to the patients (3).

Despite the clear benefits in terms of reduction of acne lesion counts and improvement in patient satisfaction, less clear was the effect of the combination therapy in reducing cutaneous side effects including acne flare (8). Out of all the trials mentioned one trial did not show any difference in flare-ups between the two groups but other trials suggested that the use of antihistamines was more effective in managing the side effects (9).

The combination of isotretinoin and antihistamines seems to have additive effects in that it may decrease lipogenesis and inflammation that is involved in acne while also minimizing some of the side effects of isotretinoin(12). This dual-action approach not only improves the clinical efficacy of the acne treatment but also increases patient compliance and satisfaction since patients experience less side effects including itching and flare ups.

Conclusion

The literature reviewed consistently indicates that combining oral isotretinoin with desloratadine or other antihistamines is more effective than isotretinoin monotherapy in treating moderate acne vulgaris. Across various studies, the combination therapy resulted in significantly higher curative rates, greater reductions in inflammatory and non-inflammatory lesions, and lower Global Acne Grading System (GAGS) scores. Moreover, the addition of desloratadine improved patient satisfaction by reducing pruritus and other side effects commonly associated with isotretinoin.While isotretinoin remains a powerful treatment for acne, its effectiveness is often limited by adverse effects, which can impact patient compliance and overall treatment success. The integration of desloratadine not only enhances clinical outcomes by reducing acne severity and flare-ups but also increases the tolerability of isotretinoin. These findings suggest that adding an antihistamine like desloratadine to isotretinoin therapy could be a valuable strategy for optimizing the management of moderate acne vulgaris, offering a balanced approach that maximizes efficacy while minimizing side effects. This combination therapy could be particularly beneficial for patients who experience significant discomfort or adverse reactions from isotretinoin alone. Future research should continue to explore the mechanisms behind this synergy and assess its long-term benefits in larger and more diverse patient populations.

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