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ORIGINAL RESEARCH

Comparative Analysis of the Efficacy of Abrocitinib and Dupilumab in the Treatment of Atopic Dermatitis

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Background: This study compares the efficacy and safety of Abrocitinib, a Janus kinase 1 (JAK1) inhibitor, and Dupilumab, an interleukin-4 and interleukin-13 inhibitor, in the treatment of Atopic dermatitis (AD).

Methods: A retrospective study was conducted on 136 patients with moderate to severe AD, treated with either Abrocitinib (n=60) or Dupilumab (n=76) from June 2022 to June 2024. Abrocitinib was administered at 100 mg/day orally, and Dupilumab at 300 mg subcutaneously every two weeks after a 600 mg loading dose. Primary outcome measures included serum immunoglobulin E (IgE) levels, eosinophil (Egb) counts, and clinical symptom improvement, assessed by the Eczema Area and Severity Index (EASI), Numeric Rating Scale (NRS) for pruritus, and Scoring Atopic Dermatitis (SCORAD). Quality of life was evaluated using the Dermatology Life Quality Index (DLQI), while emotional distress was assessed through the Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS). The incidence of adverse reactions was also recorded. Statistical significance was determined using *t*-tests and Chi-square tests ($p < 0.05$).

Results: Both treatments reduced IgE and eosinophil levels with no significant inter-group differences ($p > 0.05$). Abrocitinib was more effective in reducing pruritus, with a greater reduction in NRS scores ($p < 0.05$). EASI, SCORAD, DLQI, SAS and SDS improvements were similar, though Abrocitinib showed a greater reduction in anxiety ($p = 0.011$). The overall effective rate was higher in the Abrocitinib group (80.00%) compared to Dupilumab (69.73%) but not significantly ($p = 0.174$). Adverse reactions were minimal and comparable, with incidences of 8.33% for Abrocitinib and 9.21% for Dupilumab ($p = 0.858$).

Conclusion: Both Abrocitinib and Dupilumab are effective and well-tolerated treatments for atopic dermatitis. While their overall efficacy and safety profiles are comparable, Abrocitinib offers superior relief of pruritus. Both therapies represent valuable options in the management of moderate to severe atopic dermatitis.

Keywords: atopic dermatitis, Abrocitinib, Dupilumab, Janus kinase 1 inhibitor, interleukin-4 inhibitor

Introduction

Atopic dermatitis (AD) is a chronic inflammatory skin disorder characterized by pruritic, eczematous lesions. Its pathophysiology involves a complex interplay of genetic predisposition, immune dysregulation, and environmental factors. This condition affects a significant portion of the global population, often beginning in early childhood and persisting into adulthood, thereby imposing a considerable burden on both patients and healthcare systems. The prevalence of AD has been steadily increasing, highlighting the urgent need for effective therapeutic options.[1–3]

Recent advances in the treatment of moderate to severe AD have introduced targeted therapies, including Janus kinase (JAK) inhibitors. Abrocitinib, an oral JAK1 inhibitor, has shown promise in managing AD by inhibiting key signaling pathways involved in the inflammatory process. Clinical trials have demonstrated that abrocitinib effectively reduces the severity of eczema and improves patients' quality of life, with a favorable safety profile.[4,5] By selectively targeting the JAK1 pathway, abrocitinib offers a novel mechanism of action that contrasts with traditional systemic therapies, thus addressing the unmet needs of patients with inadequate responses to topical treatments. Dupilumab, a fully human

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monoclonal antibody that inhibits interleukin-4 (IL-4) and interleukin-13 (IL-13) signaling, has also emerged as a cornerstone in the management of AD. By blocking these key cytokines, dupilumab reduces inflammation and improves skin barrier function.[6–8] Extensive clinical studies have validated its efficacy and safety, demonstrating significant improvements in clinical outcomes, including reduction in itch severity and lesion area, as well as overall quality of life enhancement.

Given the distinct mechanisms of action of abrocitinib and dupilumab, a comparative analysis of their efficacy in treating AD is warranted. While both treatments have shown significant benefits, their differing pathways may influence clinical decisions based on individual patient profiles and treatment goals. This study aims to critically evaluate and compare the therapeutic outcomes of abrocitinib and dupilumab in adult patients with moderate to severe AD. The primary objectives include assessing clinical efficacy, safety profiles, and patient-reported outcomes, thereby providing insights into the most effective treatment modalities for this complex condition.

Methods

Study Design

A retrospective evaluation was conducted at our hospital to assess the efficacy of abrocitinib and dupilumab in the treatment of atopic dermatitis. The study period spanned from June 2022 and June 2024. A total of 136 patients diagnosed with atopic dermatitis who received treatment with either abrocitinib or dupilumab were included in the analysis. Among these, 60 patients were treated with abrocitinib and were classified into the abrocitinib group, while 76 patients were treated with dupilumab and formed the dupilumab group. The research methodology, objectives, and protocols were developed in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines[9] and were subsequently approved by the Ethics Committee of our hospital.

Inclusion and Exclusion Criteria

Inclusion Criteria

1) Patients aged 18 years or older diagnosed with moderate to severe atopic dermatitis according to the European Academy of Dermatology and Venereology (EADV) criteria.
2) Patients who have received treatment with either abrocitinib or dupilumab for a minimum duration of 12 weeks.
3) Patients who provided informed consent for the retrospective review of their medical records.

Exclusion Criteria

1) Patients with a history of hypersensitivity or adverse reactions to abrocitinib or dupilumab.
2) Patients currently participating in other clinical trials involving investigational drugs or therapies for atopic dermatitis.
3) Patients who have received phototherapy or systemic immunosuppressants within 4 weeks prior to the initiation of treatment with abrocitinib or dupilumab.
4) Patients who lacked assessment for any of the study's outcome measures, including changes in serum immunoglobulin E (IgE) levels, eosinophil counts, symptom improvement (Eczema Area and Severity Index [EASI], Numeric Rating Scale [NRS], Scoring Atopic Dermatitis [SCORAD]), quality of life (Dermatology Life Quality Index [DLQI]), emotional distress (Self-Rating Anxiety Scale [SAS], Self-Rating Depression Scale [SDS]), or the incidence of adverse reactions.

Treatment Protocols

Patients in the abrocitinib group received oral abrocitinib at a dosage of 100 mg daily. In the dupilumab group, patients were administered subcutaneous dupilumab at a dosage of 300 mg every two weeks, following a loading dose of 600 mg at baseline. Throughout the treatment period, patients were permitted to use emollients, topical mid-potency corticosteroids, and topical calcineurin inhibitors to manage their symptoms effectively. This multimodal approach aimed to enhance the overall therapeutic outcomes and improve patient comfort during the study.

Data Collection and Variables Examined

Pathological Indicators: The primary pathological markers evaluated included serum total IgE levels and peripheral blood eosinophil (Eg) counts. These biomarkers are critical in assessing the immunological response associated with atopic dermatitis.

Symptom Improvement: The assessment of symptom improvement was based on several scales. EASI: This scale ranges from 0 to 72, with lower scores indicating reduced affected area and severity. NRS: This scale measures itch intensity, ranging from 0 to 10, where higher scores reflect greater severity of pruritus. SCORAD: This comprehensive index evaluates the extent of atopic dermatitis using the "rule of nines" method, with total scores ranging from 0 to 100, where higher scores signify more severe disease.

Quality of Life and Emotional Distress: The impact on quality of life was measured using the DLQI, which assesses multiple aspects of daily and social functioning. Scores range from 0 to 30, with higher scores indicating greater impairment due to the disease. Additionally, SAS and SDS were utilized, with higher scores indicating more severe anxiety and depression.

Adverse Reactions: The incidence of adverse events was meticulously documented, including conditions such as conjunctivitis, injection site reactions, upper respiratory infections, herpes simplex, and erythema.

Overall Efficacy Rate: Treatment outcomes were categorized into four groups. Significantly Effective: Symptoms resolved with a reduction in SCORAD score of over 90%. Effective: Notable symptom improvement, with SCORAD score reduction between 60% and 90%. Improved: Some symptom alleviation, with SCORAD score reduction between 20% and 59%. Ineffective: No symptom improvement or worsening, with SCORAD score reduction below 20%. The proportions of the first two categories were calculated to reflect overall treatment efficacy.

Statistical Analysis

Statistical analyses were conducted with precision using SPSS software (Version 27.0). For quantitative data that followed a normal distribution, inter-group differences were assessed using independent sample *t*-tests, with results presented as means ± standard deviations. Categorical variables were reported as frequencies and percentages, and associations between these variables were evaluated using Chi-square (χ^2) tests. If the conditions for the Chi-square test were not met, the Fisher's exact test was employed as an alternative. All statistical hypotheses were two-tailed, and a significance level of $p < 0.05$ was established to determine statistical significance. This rigorous statistical framework ensures the robustness and reliability of the findings within the context of this study.

Results

Comparative Baseline Characteristics and Complications

In this study, the baseline characteristics of patients in the Abrocitinib group (n=60) and Dupilumab group (n=76) were generally comparable. The mean age of participants in both groups was similar, with the Abrocitinib group having an average age of 39.43 ± 7.92 years, while the Dupilumab group had a mean age of 38.62 ± 7.35 years. The duration of disease was slightly longer in the Dupilumab group (14.35 ± 2.12 months) compared to the Abrocitinib group (13.58 ± 1.95 months). Regarding disease severity, both groups had a higher proportion of patients with moderate to severe atopic dermatitis. In the Abrocitinib group, 33 patients were categorized as having moderate disease and 27 with severe disease, whereas in the Dupilumab group, 41 patients had moderate and 35 had severe atopic dermatitis. Complication rates were slightly higher in the Dupilumab group. The most common complications observed were cough, allergic rhinitis, and allergic conjunctivitis. In the Abrocitinib group, 17 patients experienced cough, 12 had allergic rhinitis, and 9 developed allergic conjunctivitis. Correspondingly, in the Dupilumab group, these numbers were higher, with 21 patients reporting cough, 17 presenting with allergic rhinitis, and 13 developing allergic conjunctivitis (Table 1). Overall, the demographic and clinical profiles were balanced between the two treatment groups, though there was a slight variation in complication rates, which may have contributed to the therapeutic outcomes observed later in the study.

Table 1 Comparative Baseline Characteristics and Complications

Characteristics	Abrocitinib Group (n=60)	Dupilumab Group (n=76)
Male/Female (n)	28/32	35/41
Age (years, $\bar{x} \pm s$	39.43 ± 7.92	38.62 ± 7.35
Duration of Disease (months, $\bar{x} \pm s$)	13.58 ± 1.95	14.35 ± 2.12
Severity (n, Moderate)	33	41
Severity (n, Severe)	27	35
Complication (n, Cough)	17	21
Complication (n, Allergic Rhinitis)	12	17
Complication (n, Allergic Conjunctivitis)	9	13

Notes: $\bar{x} \pm s$: Mean ± standard deviation. χ^2: Chi-square test. P value: Probability value.

Comparative Analysis of IgE and Egb Levels Between Abrocitinib and Dupilumab

Both Abrocitinib and Dupilumab demonstrated significant reductions in serum IgE and eosinophil (Egb) levels following treatment. In the Abrocitinib group, IgE levels decreased from 482.45 ± 18.95 IU/mL to 289.10 ± 14.28 IU/mL, and the Dupilumab group saw a reduction from 476.32 ± 20.75 IU/mL to 295.64 ± 24.12 IU/mL, with both groups showing statistically significant improvements ($p < 0.0001$). Although baseline and post-treatment comparisons between the two groups showed no significant difference ($p > 0.05$), the reductions within each group were notable Similarly, Egb levels dropped significantly in both groups. The Abrocitinib group had a reduction from 1.10 ± 0.29 to 0.36 ± 0.10 10^9/L, while the Dupilumab group saw a decrease from 1.17 ± 0.28 to 0.39 ± 0.15 10^9/L ($p < 0.0001$ for both). Again, no significant difference was found between the two groups in terms of their effectiveness on Egb levels ($p > 0.05$). Both treatments proved effective in reducing allergic inflammation (Table 2).

Comparative Analysis of Symptom Improvement Between Abrocitinib and Dupilumab

Both Abrocitinib and Dupilumab demonstrated significant improvement in clinical symptoms of atopic dermatitis, as assessed by the EASI, NRS, and SCORAD scores. For EASI, the Abrocitinib group showed a reduction from 58.74 ± 4.12 to 25.32 ± 5.67, while the Dupilumab group had a similar decrease from 58.85 ± 4.37 to 26.54 ± 5.51. While both groups experienced marked improvements, the difference between them was not statistically significant ($p > 0.05$). Regarding the NRS, the Abrocitinib group reduced their score from 4.12 ± 1.29 to 1.15 ± 0.24, while the Dupilumab group decreased from 4.27 ± 1.39 to 2.03 ± 0.22. The improvement was statistically significant in both groups ($p < 0.0001$), but the Abrocitinib group demonstrated a greater reduction in itching intensity ($p < 0.05$). For the SCORAD, both groups showed significant reductions in overall disease severity. The Abrocitinib group improved from 81.23 ± 8.14 to 26.17 ± 8.45, and the Dupilumab group improved from 78.94 ± 9.11 to 28.71 ± 8.12, with no statistically significant difference between the groups ($p > 0.05$) (Table 3).

Table 2 Comparative Analysis of IgE and Egb Levels Between Abrocitinib and Dupilumab

Group	IgE (IU/mL) Before Treatment ($\bar{x} \pm s$)	IgE (IU/mL) After Treatment ($\bar{x} \pm s$)	t Value	p value
Abrocitinib Group (n=60)	482.45 ± 18.95	289.10 ± 14.28	63.12	< 0.0001
Dupilumab Group (n=76)	476.32 ± 20.75	295.64 ± 24.12	49.51	< 0.0001
t Value	1.777	1.858	–	–
p Value	0.078	0.065	–	–
Group	Egb (10^9/L) Before Treatment ($\bar{x} \pm s$)	Egb (10^9/L) After Treatment $\bar{x} \pm s$)	t Value	p value
Abrocitinib Group (n=60)	1.10 ± 0.29	0.36 ± 0.10	18.69	< 0.0001
Dupilumab Group (n=76)	1.17 ± 0.28	0.39 ± 0.15	21.41	< 0.0001
t Value	1.425	1.332	–	–
p value	0.157	0.185	–	–

Abbreviations: IgE, Immunoglobulin E; Egb, Eosinophils.

Table 3 Comparative Analysis of Symptom Improvement Between Abrocitinib and Dupilumab

Group	EASI Before Treatment ($\bar{x} \pm s$)	EASI After Treatment ($\bar{x} \pm s$)	NRS Before Treatment ($\bar{x} \pm s$)	NRS After Treatment ($\bar{x} \pm s$)	SCORAD Before Treatment ($\bar{x} \pm s$)	SCORAD After Treatment ($\bar{x} \pm s$)
Abrocitinib Group (n=60)	58.74 ± 4.12	25.32 ± 5.67*	4.12 ± 1.29	1.15 ± 0.24*	81.23 ± 8.14	26.17 ± 8.45*
Dupilumab Group (n=76)	58.85 ± 4.37	26.54 ± 5.51*	4.27 ± 1.39	2.03 ± 0.22*	78.94 ± 9.11	28.71 ± 8.12*
t Value	0.150	1.266	0.645	22.25	1.525	1.779
p Value	0.881	0.208	0.520	< 0.0001	0.130	0.078

Note: * indicates statistical significance compared to pre-treatment values ($p < 0.05$).
Abbreviations: EASI, Eczema Area and Severity Index; NRS, Numeric Rating Scale for itch; SCORAD, Scoring Atopic Dermatitis.

Comparative Analysis of Quality of Life and Emotional Distress Between Abrocitinib and Dupilumab

For the DLQI, both groups demonstrated a marked reduction in scores following treatment, indicating improved quality of life. The Abrocitinib group showed a decrease from 18.94 ± 2.25 to 7.95 ± 2.11, while the Dupilumab group decreased from 19.12 ± 2.12 to 8.48 ± 3.10. Although both groups experienced significant improvements ($p < 0.05$), the difference between the two was not statistically significant ($p > 0.05$). In terms of SAS, there was a reduction in anxiety levels in both groups. The Abrocitinib group saw a decrease from 61.74 ± 3.69 to 48.78 ± 4.53, while the Dupilumab group decreased from 62.02 ± 4.08 to 50.73 ± 4.21. The difference in post-treatment anxiety reduction between the groups was statistically significant ($p = 0.011$), with Abrocitinib showing a slightly greater improvement. For SDS, both groups also experienced a significant reduction in depression scores. The Abrocitinib group improved from 58.91 ± 4.38 to 49.92 ± 4.24, while the Dupilumab group decreased from 59.02 ± 4.27 to 50.86 ± 4.02. However, there was no statistically significant difference in post-treatment depression scores between the groups ($p > 0.05$) (Table 4).

Comparison of Clinical Efficacy Between Abrocitinib and Dupilumab

The clinical efficacy of Abrocitinib and Dupilumab was assessed based on the proportion of patients who achieved significant improvement, moderate improvement, or exhibited no response to treatment. In the Abrocitinib group (n=60), 35 patients were classified as significantly effective, while 13 were effective, and 9 showed some improvement. Only 3 patients were deemed ineffective, resulting in an overall effective rate of 80.00%. In the Dupilumab group (n=76), 41 patients were classified as significantly effective, with 12 categorized as effective and 15 showing some improvement. A higher number of patients, 8 in total, were classified as ineffective, leading to an effective rate of 69.73%. Although the Abrocitinib group demonstrated a higher overall effective rate compared to the Dupilumab group, statistical analysis revealed no significant difference between

Table 4 Comparative Analysis of Quality of Life and Emotional Distress Between Abrocitinib and Dupilumab

Group	DLQI Before Treatment ($\bar{x} \pm s$)	DLQI After Treatment ($\bar{x} \pm s$)	SAS Before Treatment ($\bar{x} \pm s$)	SAS After Treatment ($\bar{x} \pm s$)	SDS Before Treatment ($\bar{x} \pm s$)	SDS After Treatment ($\bar{x} \pm s$)
Abrocitinib Group (n=60)	18.94 ± 2.25	7.95 ± 2.11*	61.74 ± 3.69	48.78 ± 4.53*	58.91 ± 4.38	49.92 ± 4.24*
Dupilumab Group (n=76)	19.12 ± 2.12	8.48 ± 3.10*	62.02 ± 4.08	50.73 ± 4.21*	59.02 ± 4.27	50.86 ± 4.02*
t Value	0.479	1.133	0.414	2.574	0.148	1.322
p value	0.633	0.259	0.679	0.011	0.883	0.189

Note: *indicates statistical significance compared to pre-treatment values ($p < 0.05$).
Abbreviations: DLQI, Dermatology Life Quality Index; SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale.

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Table 5 Comparison of Clinical Efficacy Between Abrocitinib and Dupilumab

Group	Significantly Effective (n)	Effective (n)	Improved (n)	Ineffective (n)	Effective Rate (%)
Abrocitinib Group (n=60)	35	13	9	3	80.00
Dupilumab Group (n=76)	41	12	15	8	69.73
χ^2 Value	–	–	–	–	1.848
P Value	–	–	–	–	0.174

Table 6 Comparison of Adverse Reactions Between Abrocitinib and Dupilumab

Group	Conjunctivitis (n)	Injection Site Reaction (n)	Upper Respiratory Infection (n)	Herpes (n)	Erythema (n)	Total Incidence (%)
Abrocitinib Group (n=60)	1	2	1	0	1	8.33
Dupilumab Group (n=76)	2	2	1	1	1	9.21
χ^2 Value	–	–	–	–	–	0.321
P value	–	–	–	–	–	0.858

the two treatments in terms of overall efficacy ($\chi^2 = 1.848$, $p = 0.174$) (Table 5). This suggests that both treatments provide comparable clinical benefits in managing patients with atopic dermatitis.

Comparison of Adverse Reactions Between Abrocitinib and Dupilumab

Adverse reactions were assessed in both the Abrocitinib and Dupilumab treatment groups, with relatively low overall incidence rates observed in both cohorts. In the Abrocitinib group (n=60), the total incidence of adverse reactions was 8.33%, with one case each of conjunctivitis, upper respiratory infection, and erythema, and two cases of injection site reactions. No cases of herpes were reported in this group. Similarly, in the Dupilumab group (n=76), the total incidence of adverse reactions was slightly higher at 9.21%. Two cases of conjunctivitis, one case of upper respiratory infection, one case of herpes, and one case of erythema were reported, while the incidence of injection site reactions was the same as the Abrocitinib group, with two cases. Statistical analysis revealed no significant difference in the overall incidence of adverse reactions between the two groups ($\chi^2 = 0.321$, $p = 0.858$) (Table 6). This suggests that both treatments are generally well-tolerated, with comparable safety profiles in patients with atopic dermatitis.

Post-Hoc Power Analysis

To evaluate the overall statistical power of the study, a weighted post-hoc power analysis was performed. The final weighted post-hoc power was calculated to be 86.5%, exceeding the conventional 80% threshold, thereby ensuring the robustness of the study's conclusions. The post-hoc power analysis mitigates concerns regarding potential type II errors, affirming that the study is sufficiently powered to discern significant treatment effects across multiple domains.

Discussion

AD is a chronic inflammatory skin disease characterized by intense pruritus and eczematous lesions, often associated with elevated IgE levels and eosinophilia. The introduction of targeted therapies, such as Abrocitinib and Dupilumab, has revolutionized the treatment landscape for moderate to severe AD, providing new options for patients who are refractory to conventional therapies. Both Abrocitinib, a JAK1 inhibitor, and Dupilumab, an IL-4/IL-13 receptor antagonist, are designed to target specific cytokine pathways that play critical roles in the pathogenesis of AD.[10,11] Abrocitinib inhibits JAK1-mediated signaling, which impacts multiple cytokines involved in the inflammatory response, including IL-31, a key mediator of pruritus. In contrast, Dupilumab blocks IL-4 and IL-13, two key cytokines in the Th2 immune pathway, reducing inflammation and restoring skin barrier function. Despite their distinct mechanisms of action, both drugs have demonstrated significant clinical benefits in reducing AD severity and improving quality of life.[12,13] This study presents a comprehensive comparison of the efficacy and safety profiles of Abrocitinib and Dupilumab in the treatment of AD,

one of the most common chronic inflammatory skin disorders. The results showed that both therapies significantly improved clinical outcomes, quality of life, and emotional distress while maintaining a comparable safety profile. However, a few differences between the two treatments warrant further discussion, particularly the more pronounced reduction in pruritus seen in the Abrocitinib group.

In terms of clinical efficacy, both Abrocitinib and Dupilumab were highly effective in reducing the severity of AD, as reflected in the EASI, NRS, and SCORAD scores. However, Abrocitinib demonstrated a slightly superior reduction in pruritus, as shown by the NRS scores. This difference could be explained by the distinct mechanisms of action of these drugs. Abrocitinib is a selective Janus kinase (JAK) 1 inhibitor, which blocks multiple cytokine pathways involved in inflammation, including interleukin (IL)-31, a key mediator of itch in AD. By directly inhibiting JAK1 signaling, Abrocitinib may more effectively target the itch-specific cytokines that contribute to pruritus, thereby providing faster and more profound relief from itching compared to Dupilumab.[14,15] Dupilumab, on the other hand, is a monoclonal antibody that blocks the IL-4 and IL-13 pathways, which are central to the Th2 immune response in AD. Although Dupilumab is highly effective in reducing inflammation and improving skin barrier function, its effects on pruritus may be less pronounced compared to Abrocitinib, as it does not directly inhibit JAK1 or IL-31.[16,17] This mechanistic difference likely accounts for the observed variations in pruritus relief, despite the overall efficacy of both treatments in reducing disease severity.

Both Abrocitinib and Dupilumab significantly reduced IgE and eosinophil (Egb) levels, which are key markers of allergic inflammation in AD. The comparable reductions in these biomarkers between the two groups suggest that both treatments are effective in attenuating the immune pathways involved in AD pathogenesis. IgE is a hallmark of allergic responses and is often elevated in patients with moderate to severe AD. The ability of both Abrocitinib and Dupilumab to lower IgE levels highlights their effectiveness in modulating the immune response. However, the lack of significant differences between the groups in IgE and Egb levels suggests that these biomarkers may not fully capture the clinical benefits of either treatment, particularly in terms of pruritus relief, which may rely more on the inhibition of other cytokine pathways, such as IL-31.[18,19] The improvement in quality of life, as assessed by the DLQI, was significant in both treatment groups, with no statistically significant difference between the two. This finding underscores the positive impact that both therapies have on reducing the burden of AD, which can severely impair patients' daily functioning and psychological well-being. Furthermore, both treatments were effective in reducing emotional distress, as indicated by reductions in SAS (anxiety) and SDS (depression) scores. Interestingly, the Abrocitinib group showed a significantly greater reduction in anxiety compared to the Dupilumab group. This difference may be related to the more rapid and effective pruritus relief provided by Abrocitinib, as itch is a major contributor to anxiety in AD patients.[20,21] Faster alleviation of pruritus may lead to quicker improvement in psychological symptoms, thereby enhancing the overall treatment experience for patients.

While the overall effective rates were slightly higher in the Abrocitinib group compared to the Dupilumab group (80.00% vs 69.73%), this difference was not statistically significant. Both treatments achieved high rates of significant clinical improvement, suggesting that they are equally effective in managing AD. However, the marginally higher efficacy of Abrocitinib could be attributed to its broader cytokine inhibition via JAK1 blockade, which may offer additional therapeutic benefits in certain patients.[22,23] The safety profiles of both Abrocitinib and Dupilumab were comparable, with low overall incidence rates of adverse reactions in both groups. No significant differences were observed in the rates of common adverse events such as conjunctivitis, upper respiratory infections, and injection site reactions. These findings align with previous studies that have reported favorable safety profiles for both treatments. Importantly, the absence of serious adverse events in either group reinforces the notion that both therapies are well-tolerated options for long-term management of AD.[24,25] The slightly higher incidence of adverse reactions in the Dupilumab group may be due to the larger sample size or individual patient variability, but this difference did not reach statistical significance.

Given that the efficacy of both treatments was similar, cost considerations become a critical factor in treatment selection. Abrocitinib is typically less expensive than Dupilumab, which may influence treatment decisions, especially in settings where cost is a significant concern.[26] For patients without contraindications to JAK1 inhibitors, Abrocitinib offers a potentially more cost-effective option while maintaining similar clinical benefits.[27] In contrast, Dupilumab may

be preferred in specific patient populations due to its unique mechanism of action targeting IL-4 and IL-13.[28] These cost differences should be considered alongside clinical effectiveness when making treatment decisions, particularly in healthcare systems with budget constraints or for patients with limited financial resources. Based on these findings, clinicians are advised to consider both Abrocitinib and Dupilumab as viable treatment options for moderate to severe AD. Treatment selection should be individualized, taking into account not only the clinical efficacy and safety profiles but also patient-specific factors such as comorbid conditions, treatment preferences, and economic considerations. In cases where cost is a significant concern, Abrocitinib may serve as a more cost-effective alternative.

Although this study provides valuable insights into the comparative efficacy and safety of Abrocitinib and Dupilumab, several limitations should be acknowledged. First, the study's retrospective design may introduce biases in data collection and patient selection. Additionally, the follow-up period may have been insufficient to capture long-term safety and efficacy outcomes. Future studies should aim to validate these findings in larger, prospective randomized controlled trials with extended follow-up periods. Investigations focusing on long-term outcomes, patient-reported quality of life, and sustained disease control would be valuable. Additionally, research into biomarkers predictive of treatment response may facilitate more personalized therapeutic strategies. Comparative cost-effectiveness analyses in diverse healthcare settings are also warranted to further elucidate the economic impact of these therapies in routine clinical practice.

Conclusions

Both Abrocitinib and Dupilumab demonstrated comparable efficacy in improving symptoms of atopic dermatitis, quality of life, and reducing emotional distress, with no significant differences in clinical efficacy or safety profiles. Notably, Abrocitinib showed greater efficacy in relieving pruritus. The incidence of adverse reactions was low and similar between the two groups, indicating that both treatments are effective and well-tolerated options for managing atopic dermatitis.

Data Sharing Statement

The datasets used and/or analyzed during this study are available from the corresponding author upon reasonable request.

Ethics Approval and Consent to Participate

This study was approved by the Ethics Committee of Zhoushan Hospital. All study procedures complied with the ethical standards of the institutional and national research committees and the 1964 helsinki Declaration and its subsequent amendments.

Consent for Publication

Written informed consent for publication was obtained from all patients.

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Disclosure

The authors declare that they have no competing interests in this work.

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