Current Topical Treatment Approaches for Managing Acne Associated with Janus Kinase Inhibitors

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SYNOPSIS

- Acne is increasingly recognized as an adverse event associated with JAK inhibitors (JAKi; "JAKne"), with 2 meta-analyses demonstrating increased acne risk with JAKi[1,2]
- JAKne shares some clinical characteristics with acne vulgaris and is often mild or moderate in severity, with predominantly inflammatory lesions[4,5]; however, unlike acne vulgaris, no relationship with hormonal, immune, or microbiome imbalances has been identified as the underlying cause of JAKne[6]
- While there are no established treatment guidelines for JAKne, management strategies appear similar to those for acne[1,6]
  - US guidelines for the treatment of mild to severe acne recommend topical treatments combining multiple mechanisms of action, with strong recommendations for benzoyl peroxide (BPO), retinoids, and/or antibiotics[7]
- Recently, JAKi indications have expanded to include dermatologic diseases such as atopic dermatitis and psoriasis, resulting in a vast increase in the clinical uptake of JAKis[3]
- Given this rapid increase in JAKi prescriptions and the potential impact of JAKne on treatment adherence, the development of evidence-based management strategies is becoming increasingly important

OBJECTIVE

- To conduct a narrative review that explores and summarizes current topical treatment options for JAKne and evaluate their effectiveness

METHODS

- PubMed and EMBASE were searched in August 2025 using combinations of terms related to JAKi (eg, "JAK inhibitor" OR "Ruxolitinib," etc) and acne (eg, "acne" or "iatrogenic acne," etc)
- Articles were screened and supplemented, as needed, with additional manuscripts known to authors or publications identified within articles

RESULTS

Topical treatments for JAKne

- Though publications were limited, topical acne therapies were described for JAKne treatment, including antibiotics, BPO, general retinoids/adapalene (ADAP), salicylic acid, or varying combinations of each (**Table 1**)[4,8-12]

Effectiveness of topical treatments for JAKne

- Across 4 publications that reported treatment effectiveness, qualitative terms such as "substantial improvement," "good/moderate/poor response," "partial improvement/resolution," and "successfully treated" were used[8-11]
- One case study evaluated the effectiveness of a topical treatment for moderate to severe JAKne owing to upadacitinib (15-30 mg daily), with acne improving to mild to almost clear following treatment with fixed-dose, triple-combination clindamycin phosphate 1.2%/ADAP 0.15%/BPO 3.1% gel (**Figure 1**)[11]
- Three publications evaluated effectiveness of topical treatments for mild to moderate JAKne: 1 clinical trial study site reported successful treatment of JAKne with ADAP or fixed-dose ADAP 0.1%/BPO 2.5% gel, whereas 2 other studies reported mixed responses to various topical treatments (**Figure 2**)[8-10]

TABLE 1. **Summary of Publications Reporting Topical Treatments for JAKne**

Publication	Study type	N[a]	JAKi	Acne severity (n)	Acne treatment (n)
Publications where topical acne treatment effectiveness was reported					
Correia et al. 2022[8]	Clinical trial (one study site)[b]	6	Upadacitinib (15/30 mg)	Mild to moderate (N=6) • Comedonal acne (n=3) • Mild papulopustular acne (n=2) • Moderate papulopustular acne (n=1)	• ADAP 0.1% gel (n=2) • ADAP 0.1%/BPO 2.5% gel (n=4)
Honap et al. 2025[9]	Retrospective cohort	106	• Upadacitinib (15/30/45 mg) • Tofacitinib (5/10 mg) • Filgotinib (200 mg)	NS (primarily mild to moderate)[c]	Topical antibiotics, BPO, retinoids, and salicylic acid[d] • Monotherapy (n=35) • Combination therapy (n=44)
Lee et al. 2022[10]	Case series	8[e]	• Baricitinib (4 mg) • Upadacitinib (15 mg)	Mild or moderate (N=8): • Inflammatory lesions (papules, pustules, and nodules, N=8) • Comedonal lesions with just a few papules (n=1)	• Nadifloxacin 1% cream (n=5)[f] • ADAP 0.1%/BPO 2.5% gel (n=3)[f]
Olszewski et al. 2025[11]	Case study	1	Upadacitinib (15 mg)	Moderate to severe inflammatory acne with erythema and postinflammatory hyperpigmentation	Clindamycin phosphate 1.2%/ADAP 0.15%/BPO 3.1% gel
Publications where topical acne treatment effectiveness was not reported					
Avallone et al. 2024[4]	Retrospective chart review	33	Upadacitinib (15/30 mg)	• Mild to moderate (n=NS) • Severe (n=3)	• BPO (n=7) • Antibiotics (n=16) • Retinoids (n=5)[g]
Mendes-Bastos et al. 2022[12]	Clinical trials[b]	82	Upadacitinib (15/30 mg)	Mostly mild or moderate (n=NS)	• Antibiotics (n=32) • BPO (n=25) • Retinoids (n=14)

May not be a comprehensive list of publications evaluating effectiveness of topical treatments for JAKne.
[a]Represents number of patients with JAKne, except for Honap et al. 2025, Mendes-Bastos et al. 2022, and Avallone et al. 2024, for which N represents subset of patients with JAKNe specifically treated with topical therapies.
[b]Clinical trials measuring effectiveness of JAKis in treating atopic dermatitis with reports of JAKne as an adverse event.
[c]Although acne severity in patients receiving topical therapy was not specified, most patients in the overall study population had mild to moderate acne (n=192/209), scored based on body surface area affected.
[d]Most common topical therapies received by patients; full list of all topical therapies used to treat patients was not provided in the publication.
[e]One patient experienced spontaneous resolution of acne.
[f]Patients treated with nadifloxacin 1% cream and with ADAP 0.1%/BPO 2.5% gel may not be mutually exclusive.
[g]Includes 1 patient for whom topical retinoids was second-line treatment.
ADAP, adapalene; BPO, benzoyl peroxide; N/A, not applicable; NS, not specified.

FIGURE 1. **Effectiveness of Topical Treatment (CAB Gel) for Moderate to Severe JAKne**

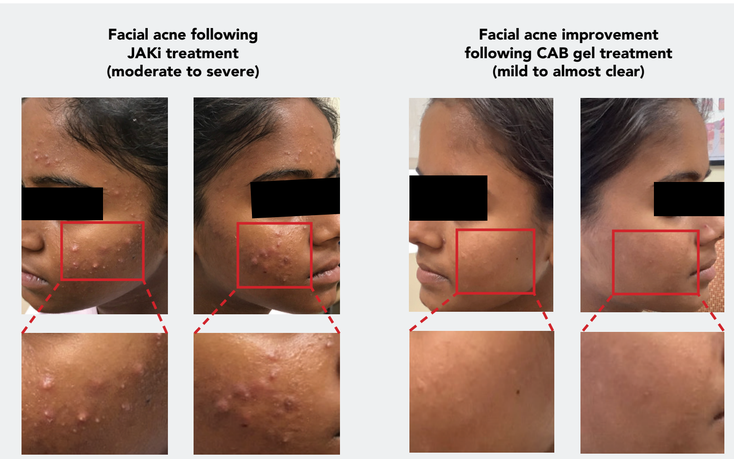
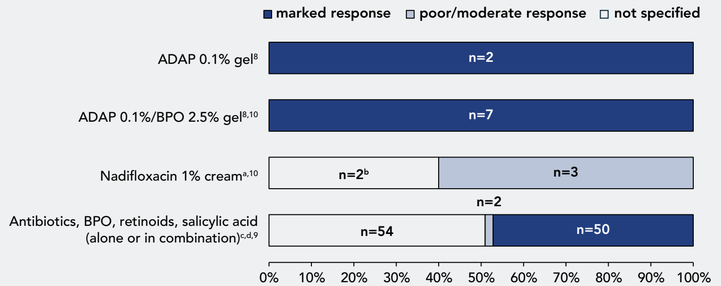


Figure adapted from Olszewski N and Bunick CG, 2025.[11]
(Left) Facial acne lesions following 16-week JAKi treatment period, during which the patient was titrated up from 15 mg to 30 mg oral upadacitinib daily dose (prior to initiation of CAB gel). (Right) Facial acne lesions following 5 months of once-daily treatment with CAB gel while maintaining upadacitinib therapy.
CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1%; JAKi, JAK inhibitor.

FIGURE 2. **Effectiveness of Topical Treatments for Mild to Moderate JAKne[8-10]**

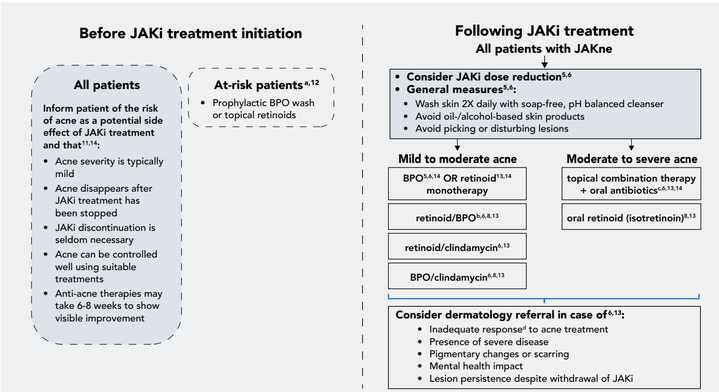


Qualitative terms describing treatment effectiveness were grouped into "poor/moderate response" (ie, poor to moderate response/partial improvement) and "marked response" (ie, good response/successful treatment/complete resolution).
[a]While the publication stated that "most" patients had a moderate to poor response, specific numbers were not provided. As such, a conservative assumptionof 3/5 poor/moderate response was applied.[10]
[b]Showed improvement after switching JAKi.
[c]Exact treatment combinations not disclosed.[9]
[d]n=5 patients who showed response to topical treatment had concurrent JAKi dose reduction.[9]
ADAP, adapalene; BPO, benzoyl peroxide.

Management and treatment recommendations for JAKne

- There are no formal guidelines for managing JAKne[6]
- However, a handful of publications outline JAKne management and treatment algorithms[5,6,8,13,14]; a summary drawn from these articles is shown in **Figure 3**
- Overall, topical acne treatments are recommended for mild to moderate JAKne,[5,6,8] with topical therapies combined with oral treatments recommended for moderate to severe JAKne[6]
  - Results from the 1 patient successfully treated with CAB gel suggest that combination therapy that includes a *topical* antibiotic may successfully be used to treat moderate to severe JAKne[11]

FIGURE 3. **Review of Management and Treatment Recommendations for JAKne**



Treatment recommendations from Kim et al, 2024 were derived from a panel discussion focused on adapting existing acne treatment algorithms for Asian skin.[14]
[a]History or family history of acne, female sex, younger demographics and non-white patients.[13]
[b]ADAP/BPO can sometimes lead to dryness or irritation, especially in individuals with atopic dermatitis.[14]
[c]It is recommended that oral antibiotics are used concomitantly with BPO and other topical therapy.[7]
[d]Patient not responding to topicals or systemic antibiotics over 3-6 months.[6,13]
ADAP, adapalene; BPO, benzoyl peroxide; JAKi, JAK inhibitor.

CONCLUSIONS

- Though studies/analyses of topical JAKne treatment are limited, therapy with retinoids, antibiotics, BPO, and/or salicylic acid have demonstrated effectiveness
- Research into the mechanism of JAKi-induced acne may further inform both treatment strategies and larger studies of the effectiveness/safety of various topical treatments

REFERENCES

1. Martinez J, et al. *JAMA Dermatol.* 2023;159(12):1339-1345.
2. Chen BL, et al. *J Dermatolog Treat.* 2024;35(1):2397477.
3. Chikhoune L, et al. *Rev Med Interne.* 2025;46(2):89-106.
4. Avallone G, et al. *J Am Acad Dermatol.* 2024;90(5):1031-1034.
5. Ballanger F, et al. *Acta Derm Venereol.* 2023;103:adv11657.
6. Temido MJ, et al. *Am J Gastroenterol.* 2025;120(1):125-134.
7. Reynolds RV, et al. *J Am Acad Dermatol.* 2024;90(5):1006.e1001-1006.e1030.
8. Correia C, et al. *Dermatol Ther.* 2022;35(9):e15688.
9. Honap S, et al. *Clin Gastroenterol Hepatol.* 2025:S1542-3565(25)00465-3.
10. Lee SD, et al. *JAAD Case Rep.* 2022;30:11-16.
11. Olszewski N, Bunick CG. *J Clin Aesthet Dermatol.* 2025;18(9):36-39.
12. Mendes-Bastos P, et al. *J Am Acad Dermatol.* 2022;87(4):784-791.
13. Awad A, et al. *Frontline Gastroenterology.* 2024;flgastro-2024-102841.
14. Kim H, et al. *Cosmetics.* 2024;11:220.

AUTHOR DISCLOSURES

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