

The Effect of GLP-1 Receptor Agonists on Hidradenitis Suppurativa: A Comprehensive Systematic Review

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PRACTICE POINTS

- Glucagonlike peptide 1 receptor agonists (GLP-1 RAs) can be used adjunctively to manage hidradenitis suppurativa (HS) symptoms.
- The anti-inflammatory properties of GLP-1 RAs as well as their tendency to cause weight loss and manage metabolic syndrome improve the outcome of HS.
- Although current evidence is limited to case reports, these agents can be successfully integrated with existing protocols (biologics, antibiotics, or metformin); however, clinicians should monitor for gastrointestinal adverse effects.

Hidradenitis suppurativa (HS), or acne inversa, is a chronic and inflammatory skin disease characterized by painful nodules and abscesses. The pathogenesis involves immune dysregulation, metabolic disturbances, and hormonal influences. Glucagonlike peptide 1 receptor agonists (GLP-1 RAs) are antidiabetic medications with anti-inflammatory properties and effects on weight reduction, which may be beneficial in HS management. Our objective was to systematically review the literature on the efficacy and safety of GLP-1 RAs in the treatment of HS. Three publications met the inclusion criteria. Preliminary evidence suggests that GLP-1 RAs may be an effective adjunct therapy for HS, especially in patients with obesity and metabolic syndrome. Larger controlled studies are warranted to confirm these findings and establish clinical guidelines.

Hidradenitis suppurativa (HS) is a chronic relapsing inflammatory skin disorder affecting apocrine gland-bearing areas such as the axillae, inguinal

regions, and anogenital area.¹ It manifests with painful nodules, abscesses, sinus tract formation, and scarring.² The disease strongly impacts patients' quality of life due to pain, malodor, and psychosocial burden.³

The exact etiology of HS is multifactorial, involving genetic predisposition, mechanical stress, hormonal influences, dysbiosis, and immune dysregulation.⁴ Obesity and metabolic syndrome are highly prevalent among patients with HS and are considered exacerbating factors.⁵ Adipose tissue contributes to systemic inflammation through the secretion of proinflammatory cytokines such as tumor necrosis factor (TNF) α and interleukins (ILs).⁶

Management of HS includes lifestyle modifications, medical therapy, and surgical interventions. Medical treatments encompass antibiotics, retinoids, hormonal therapy, immunosuppressants, and immunomodulators such as anti-TNF and anti-IL-17 agents.⁷ Despite available therapies, many patients have suboptimal responses or experience adverse effects and dramatic reductions in their quality of life.³

Glucagonlike peptide 1 receptor agonists (GLP-1 RAs) are incretin-based therapies used in type 2 diabetes and obesity management.⁸ They enhance insulin secretion, suppress glucagon release, delay gastric emptying, and promote satiety.⁹ Beyond glycemic control, GLP-1 RAs exhibit anti-inflammatory properties and cardiovascular benefits.¹⁰

Given the high prevalence of obesity and metabolic syndrome in patients with HS as well as the anti-inflammatory effects of GLP-1 RAs, these agents may offer therapeutic benefits in HS.¹¹ We conducted a systematic review to evaluate the existing evidence on the efficacy and safety of GLP-1 RAs in the treatment of HS.

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Methods

A systematic review was conducted via a PubMed search of articles indexed for MEDLINE in October 2024, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines¹² using the terms *hidradenitis suppurativa* OR *acne inversa* AND *GLP-1 receptor agonist* OR *glucagon-like peptide-1 receptor agonist* OR *liraglutide* OR *semaglutide* OR *exenatide* OR *dulaglutide*. No filters were applied to limit the search by language or publication date.

Inclusion criteria were clinical trials, observational studies (cohort, case control, cross-sectional), and case reports/series involving patients diagnosed with HS treated with GLP-1 RAs. Outcomes of interest included clinical improvement in HS severity (eg, lesion count, pain assessment, HS-specific scores), safety, and adverse events. Exclusion criteria included animal studies or in vitro experiments, reviews, editorials, and opinion pieces without original patient data; studies not in English; and studies not reporting clinical outcomes related to HS.

Two independent reviewers (N.R.K. and S.K.C.) screened the titles and abstracts for relevance. Full-text articles of potentially eligible studies were retrieved for detailed evaluation. Data extracted included study design, patient demographics, intervention details, outcomes, and adverse events. Discrepancies were resolved through discussion.

Results

The initial search yielded 11 articles (Figure). After screening titles and abstracts, 9 articles were selected for full-text review. Of these, 3 articles met the inclusion criteria. These studies included 3 case reports. Interventions involved liraglutide (2 reports)^{13,14} and semaglutide¹⁵ (1 report)(Table). The patient population consisted of adult patients with HS with comorbid diabetes, obesity, and/or metabolic syndrome.

Jennings et al¹³ reported a 31-year-old obese woman with a history of smoking and Hurley stage 2 HS, a Hidradenitis Suppurativa Physician's Global Assessment

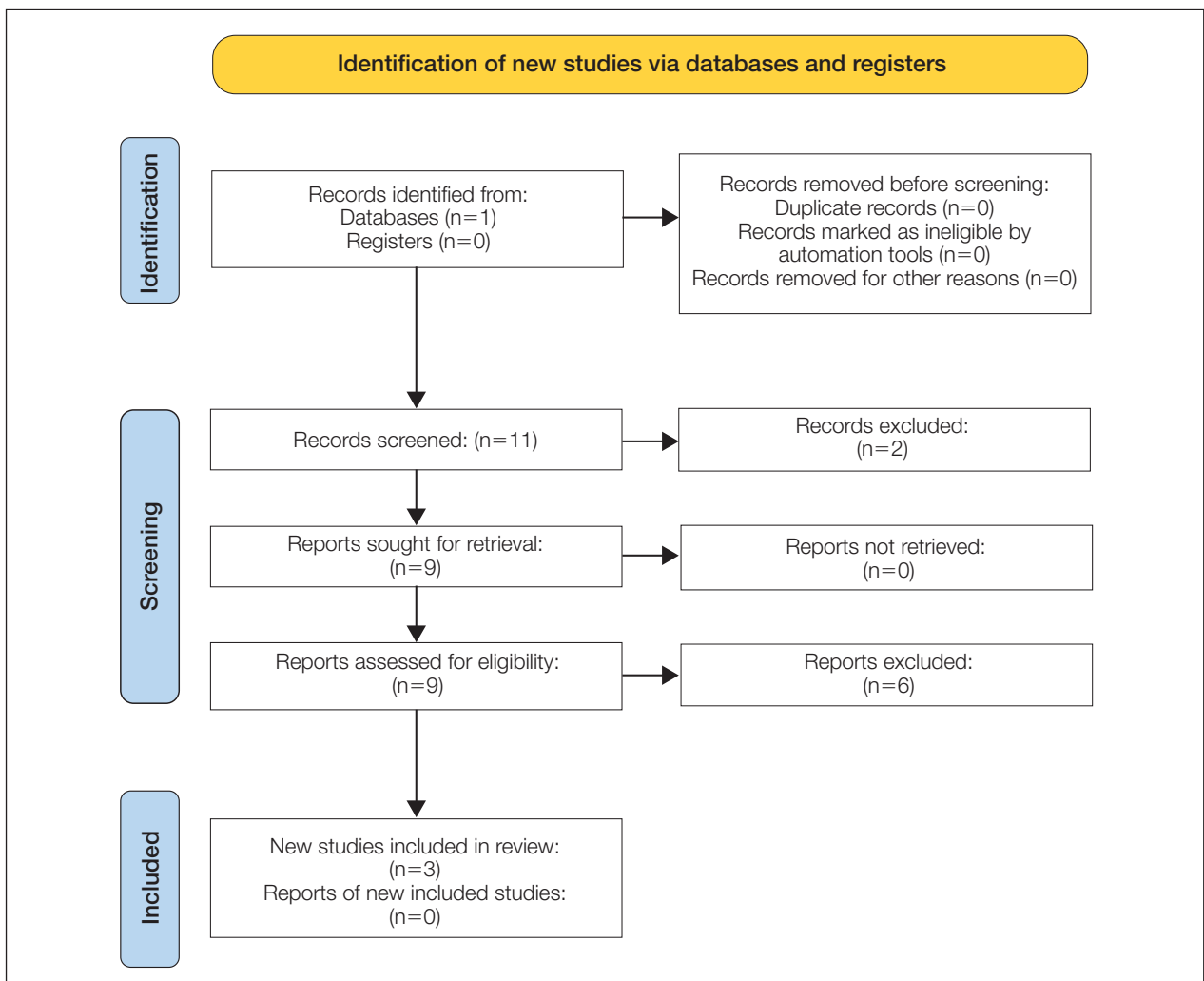


FIGURE. PRISMA flow diagram of systematic review of the literature on glucagonlike peptide-1 receptor agonists and hidradenitis suppurativa.

score of 4, a Dermatology Life Quality Index score of 24, and a body mass index of 45.3. She was treated with liraglutide monotherapy, starting with 0.6 mg subcutaneously once daily then titrating weekly to 1.8 mg subcutaneously. After 4 weeks, outcomes showed a reduction in Hidradenitis Suppurativa Physician's Global Assessment (score=1) and Dermatology Life Quality Index (score=14) scores, and the patient lost 4.5 kg from baseline. The patient's Hurley stage decreased from 2 to 1. After another 4 weeks, the patient's weight decreased by a further 2 kg and HS remained controlled. No adverse events were recorded.

Khandalavala¹⁴ reported a single case of a 19-year-old woman with severe HS, obesity, and metabolic syndrome of 8 years' duration treated with liraglutide. The patient had a weight of 215 lb with a body mass index of 37. With a combination of metformin 2000 mg/d, liraglutide 0.6 mg/d subcutaneously increased to 1.8 mg/d over 2 months, levonorgestrel-ethinyl estradiol (no dosage listed), dapsone 100 mg/d, and finasteride 5 mg/d, there was a marked reduction in nodules and abscesses after 6 months, with a weight loss of 40 lb (19% body weight). No adverse events were reported.

Mainville et al¹⁵ described a 59-year-old woman with refractory HS who showed improvement with a

TABLE. Cases Identified From Systematic Review of GLP-RAs for HS

| Reference | GLP-1 RA used | Adjunctive treatment used | Study duration, wk | Weight lost, kg | Outcomes |
|-------------------------------|--|---|--------------------|-----------------|--|
| Jennings et al ¹³ | Liraglutide 0.6 mg/d subcutaneously titrated weekly to 1.8 mg/d subcutaneously | None | 8 | 6.5 | Decrease from Hurley stage 2 to 1; decrease in HS-PGA score from 4 to 1; decrease in DLQI score from 24 to 14; no longer needed narcotic analgesia to manage pain from HS lesions; no adverse effects reported |
| Khandalavala ¹⁴ | Liraglutide 0.6 mg/d subcutaneously increased to 1.8 mg/d | Metformin 2000 mg/d, levonorgestrel-ethinyl estradiol (no dosage listed), dapsone 100 mg/d, and finasteride 5 mg/d | 24 | 18.1 | Initial improvements with dapsone alone; after metformin, liraglutide, and finasteride were added, the patient lost 40 lb over 6 mo; there was a trend of weight regain afterwards but HS remained controlled with fewer lesions appearing and resolving quicker; no new lesions in 6 mo; axillary lesions healed completely, and the large perianal abscess improved by 90%; thoracoabdominal lesion improved by 60%; 4-5 small areas persisted; facial acne improved but persisted |
| Mainville et al ¹⁵ | Semaglutide (no dosage listed) | Aspirin, atorvastatin, furosemide, ertapenem 1 g/d for 6 wk, minocycline 100 mg/d for 3 mo, metformin 500 mg three times daily for 2 mo, doxycycline 100 mg/d to bridge to adalimumab (160 mg subcutaneously at day 0; 80 mg subcutaneously at day 14, and 80 mg subcutaneously weekly from day 28) | 12 | 10 | At wk 7 the patient lost 10 kg of weight; at wk 7 of adalimumab, symptoms of discharge improved by 50%; adalimumab 80 mg weekly subcutaneously continued to prevent HS relapses; HS was stable over months |

Abbreviations: DLQI, Dermatology Life Quality Index; GLP-1 RA, glucagonlike peptide 1 receptor agonist; HS, hidradenitis suppurativa; HS-PGA, Hidradenitis Suppurativa Physician's Global Assessment Scale.

combination of intravenous ertapenem 1 g/d for 6 weeks, minocycline 100 mg/d for 3 months, metformin 500 mg three times daily for 2 months, doxycycline 100 mg/d to bridge to adalimumab (160 mg subcutaneously starting dose then 80 mg subcutaneously), and semaglutide (no dosage listed). After semaglutide was introduced, the patient lost 10 kg. The only adverse event was diarrhea.

Comment

The limited but growing body of evidence suggests that GLP-1 RAs may be beneficial in managing HS, particularly in patients with comorbid obesity. Treatment with liraglutide or semaglutide was associated with marked improvements in clinical severity scores, lesion counts, pain reduction, and quality of life.

As adjunct therapy, GLP-1 RAs could serve alongside standard HS treatments such as antibiotics and biologics. Addressing obesity, a known risk factor and disease modifier in HS, may lead to better disease control. The therapeutic benefits of GLP-1 RAs in HS are attributed to weight loss, which reduces adipose tissue and systemic inflammation.¹⁶ The anti-inflammatory effects of GLP-1 RAs involve the reduction of proinflammatory cytokines such as IL-6 and TNF- α .¹⁷ Metabolic improvements, including enhanced insulin sensitivity and lipid profile, also may contribute to disease modulation.¹⁷

Limitations—Because our analysis was limited to 3 case reports, the strength of the evidence is limited. These case reports also lack the standardized use of the Hidradenitis Suppurativa Clinical Response scoring system that generally is found in randomized controlled trials (RCTs). The lack of RCTs precludes definitive conclusions about efficacy. Future directions include the need for well-designed RCTs with large sample sizes to confirm findings, assessment of long-term safety and tolerability in patients with HS, and further research into the molecular mechanisms by which GLP-1 RAs affect HS pathophysiology. Of note, it is imperative to be aware of the medication shortage for all GLP-1 RAs when prescribing these medications for patients with HS.

Conclusion

Glucagonlike peptide 1 RAs show promise as a therapeutic option for HS, especially in patients with obesity and metabolic disturbances. The observed benefits likely result from weight loss and anti-inflammatory effects. Other drugs targeting glucose-dependent insulinotropic polypeptide and glucagon also are being studied thoroughly as options for managing HS. Although preliminary results are encouraging, robust clinical trials are

needed to establish efficacy, optimal dosing, and safety in this patient population.

REFERENCES

- Vinkel C, Thomsen SF. Hidradenitis suppurativa: causes, features, and current treatments. *J Clin Aesthet Dermatol*. 2018;11:17-23.
- Napolitano M, Megna M, Timoshchuk EA, et al. Hidradenitis suppurativa: from pathogenesis to diagnosis and treatment. *Clin Cosmet Investig Dermatol*. 2017;10:105-115. doi:10.2147/CCID.S1111019
- Chernyshov PV, Finlay AY, Tomas-Aragones L, et al. Quality of life in hidradenitis suppurativa: an update. *Int J Environ Res Public Health*. 2021;18:6131. doi:10.3390/ijerph18116131
- Seyed Jafari SM, Hunger RE, Schlapbach C. Hidradenitis suppurativa: current understanding of pathogenic mechanisms and suggestion for treatment algorithm. *Front Med (Lausanne)*. 2020;7:68. doi:10.3389/fmed.2020.00068
- Alotaibi HM. Incidence, risk factors, and prognosis of hidradenitis suppurativa across the globe: insights from the literature. *Clin Cosmet Investig Dermatol*. 2023;16:545-552. doi:10.2147/CCID.S402453
- Vossen ARJV, van der Zee HH, Prens EP. Hidradenitis suppurativa: a systematic review integrating inflammatory pathways into a cohesive pathogenic model. *Front Immunol*. 2018;9:2965. doi:10.3389/fimmu.2018.02965
- Orenstein LAV, Nguyen TV, Damiani G, et al. Medical and surgical management of hidradenitis suppurativa: a review of international treatment guidelines and implementation in general dermatology practice. *Dermatology*. 2020;236:393-412. doi:10.1159/000507323
- Brown E, Cuthbertson DJ, Wilding JP. Newer GLP-1 receptor agonists and obesity-diabetes. *Peptides*. 2018;100:61-67. doi:10.1016/j.peptides.2017.12.009
- Cornell S. A review of GLP-1 receptor agonists in type 2 diabetes: a focus on the mechanism of action of once-weekly agents. *J Clin Pharm Ther*. 2020;45(suppl 1):17-27. doi:10.1111/jcpt.13230
- Lee YS, Jun HS. Anti-inflammatory effects of GLP-1-based therapies beyond glucose control. *Mediators Inflamm*. 2016;2016:3094642. doi:10.1155/2016/3094642
- Mintoff D, Benhadou F, Pace NP, et al. Metabolic syndrome and hidradenitis suppurativa: epidemiological, molecular, and therapeutic aspects. *Int J Dermatol*. 2022;61:1175-1186. doi:10.1111/ijd.15910
- Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. doi:10.1136/bmj.n71
- Jennings L, Nestor L, Molloy O, et al. The treatment of hidradenitis suppurativa with the glucagon-like peptide-1 agonist liraglutide. *Br J Dermatol*. 2017;177:858-859. doi:10.1111/bjd.15233
- Khandalavala BN. A disease-modifying approach for advanced hidradenitis suppurativa (regimen with metformin, liraglutide, dapson, and finasteride): a case report. *Case Rep Dermatol*. 2017;9:70-78. doi:10.1159/000473873
- Mainville L, MacHaalany J, Veillette H. Hidradenitis suppurativa patient requiring cardiac procedure with inguinal access: case management with ertapenem. *SAGE Open Med Case Rep*. 2024;12:2050313X241274819. doi:10.1177/2050313X241274819
- Hamed K, Alosaimi MN, Ali BA, et al. Glucagon-like peptide-1 (GLP-1) receptor agonists: exploring their impact on diabetes, obesity, and cardiovascular health through a comprehensive literature review. *Cureus*. 2024;16:E68390. doi:10.7759/cureus.68390
- Alharbi SH. Anti-inflammatory role of glucagon-like peptide 1 receptor agonists and its clinical implications. *Ther Adv Endocrinol Metab*. 2024;15:20420188231222367. doi:10.1177/20420188231222367