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Case Report

Novel Cutaneous Manifestations During Semaglutide Therapy: Case Report of Two Siblings

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Abstract

Background: Glucagon-like peptide-1 (GLP-1) receptor agonists have become integral to the management of obesity and type 2 diabetes mellitus because of their proven efficacy in promoting sustained weight loss and improving metabolic health. Although gastrointestinal adverse effects associated with semaglutide are well recognized, its dermatological manifestations remain poorly characterized, with only isolated reports describing cutaneous adverse reactions. Recognition of these effects is clinically relevant because increasing numbers of patients are receiving GLP-1 receptor agonists for weight management.

Case Presentation: We report two biologically related female siblings, aged 44 and 41 years, who received semaglutide for weight reduction using a standardized dose-escalation regimen over four months. Both patients developed similar cutaneous manifestations during therapy, including new-onset acneiform eruptions predominantly affecting the T-zone and chin, increased seborrhea, subjective improvement in overall skin complexion, and reduced secondary body hair growth. Patient A additionally demonstrated complete clinical resolution of bilateral axillary acanthosis nigricans following approximately 15% weight loss, whereas Patient B achieved a 7% reduction in body weight. Both patients experienced transient gastrointestinal adverse effects during dose escalation, with persistent constipation being the only continuing systemic symptom.

Management & Results: Semaglutide therapy was continued throughout treatment because both patients achieved clinically meaningful weight reduction and tolerated the medication well. Acneiform eruptions were managed conservatively with topical adapalene and benzoyl peroxide without requiring systemic treatment or discontinuation of semaglutide. Both patients remained satisfied with treatment outcomes despite mild dermatological adverse effects.

Conclusion: This report expands the limited literature describing dermatological manifestations associated with semaglutide therapy. The temporal association between semaglutide treatment and the development of acneiform eruptions, seborrhea, altered hair growth, and improvement in skin appearance warrants further investigation. However, the resolution of acanthosis nigricans and improvement in skin complexion are likely multifactorial and may primarily reflect metabolic improvements resulting from substantial weight loss rather than a direct pharmacological effect of semaglutide. Prospective studies incorporating objective dermatological assessment and metabolic biomarkers are needed to clarify these observations.

Keywords: Acanthosis Nigricans, Acneiform Eruption, Agonist, Cutaneous Manifestations, GLP-1 Receptor Obesity, Semaglutide, Weight Loss.

Introduction

Obesity has emerged as one of the most significant global public health challenges, contributing substantially to the burden of cardiovascular disease, type 2 diabetes mellitus, metabolic syndrome, and reduced quality of life. Pharmacological interventions that produce sustained weight reduction while improving cardiometabolic outcomes have therefore become increasingly important in clinical practice. Among these, glucagon-like peptide-1 (GLP-1) receptor agonists have demonstrated remarkable efficacy in reducing body weight, improving glycaemic control, and lowering cardiometabolic risk through appetite suppression, delayed gastric emptying, and enhancement of insulin secretion in a glucose-dependent manner [1,2].

Semaglutide is a long-acting GLP-1 receptor agonist that has become widely prescribed for the management of obesity and type 2 diabetes mellitus. Large randomized clinical trials have consistently demonstrated clinically meaningful reductions in body weight together with improvements in glycaemic control, cardiovascular risk factors, and overall metabolic health, leading to its widespread adoption in routine clinical practice [3]. Although semaglutide has a well-established safety profile, the majority of reported adverse effects involve the gastrointestinal tract, including nausea, vomiting, diarrhea, constipation, abdominal discomfort, and delayed gastric emptying [2,4]. In contrast, comparatively little attention has been directed toward its potential dermatological manifestations, and evidence regarding cutaneous adverse events remains limited.

The skin is increasingly recognized as a visible marker of systemic metabolic health. Improvements in insulin sensitivity, chronic low-grade inflammation, hormonal regulation, adipose tissue metabolism, and oxidative stress accompanying weight loss may influence several cutaneous processes, including pigmentation, sebaceous gland activity, hair growth, wound healing, and epidermal homeostasis [3,5]. Consequently, distinguishing direct pharmacological effects of GLP-1 receptor agonists from secondary dermatological changes resulting from weight reduction presents a considerable clinical challenge. Current literature describing cutaneous manifestations associated with semaglutide consists predominantly of isolated case reports and small case series, with only sporadic reports describing inflammatory dermatoses, hypersensitivity reactions, injection-site reactions, or other uncommon dermatological findings [1].

Herein, we report two biologically related female siblings who developed remarkably similar cutaneous changes during semaglutide therapy prescribed for weight reduction. The observed manifestations included new-onset acneiform eruptions, seborrhea, subjective improvement in skin complexion, reduction in secondary body hair growth, and complete resolution of axillary acanthosis nigricans in one patient following substantial weight loss. By documenting the chronological evolution of these findings in accordance with the CARE Case Report Guidelines, this report expands the limited evidence regarding the dermatological manifestations associated with GLP-1 receptor agonists. It also highlights the need for prospective observational studies incorporating standardized dermatological assessment, objective skin pigmentation measurements, hormonal profiling, and metabolic biomarkers to better elucidate the underlying mechanisms and establish whether these findings represent direct pharmacological effects or secondary consequences of metabolic improvement [1–5].

Patient Information

Two biologically related female siblings were evaluated for cutaneous changes that developed during treatment with semaglutide prescribed for weight reduction. Both patients were healthcare professionals, allowing accurate reporting of symptoms and treatment adherence. Written informed consent for publication of the clinical information and accompanying clinical photographs was obtained from both patients.

Patient A was a 44-year-old female physician with overweight (baseline body mass index [BMI] 29 kg/m²) who sought pharmacological management for weight reduction after unsuccessful attempts with lifestyle modification. She had no previous history of diabetes mellitus, hypertension, polycystic ovarian syndrome (PCOS), thyroid disease, autoimmune disorders, or chronic dermatological illnesses. She denied previous acne vulgaris, seborrheic dermatitis, pigmentary disorders, or abnormal hair growth. She was not taking hormonal medications, systemic corticosteroids, or other drugs known to influence skin pigmentation or acne development. Her routine skincare regimen consisted of a mild facial cleanser and daily sunscreen (SPF 25).

Patient B, her 41-year-old sister and a dental surgeon, had a baseline BMI of 27 kg/m² and similarly initiated semaglutide for weight reduction. Her past medical history was likewise unremarkable for diabetes mellitus, hypertension, endocrine disorders, chronic inflammatory skin disease, or previous acne requiring treatment. Although she reported pre-existing mild diffuse scalp hair thinning, she denied hirsutism, menstrual abnormalities, or previous diagnosis of PCOS. She was not receiving medications known to affect androgen status or cutaneous physiology.

Table 1: Diagnostic Laboratory Results Supporting the Diagnosis of Homocystinuria and DVT

Parameter	Baseline (Week 0)	Week 4 (Month 1)	Week 8 (Month 2)	Week 12 (Month 3)	Week 16 (Month 4)
	Patient A / Patient B	Patient A / Patient B	Patient A / Patient B	Patient A / Patient B	Patient A / Patient B
BMI (kg/m²)	29.0 / 27.0	28.7 / 26.8	28.0 / 26.3	26.7 / 25.5	24.7 / 25.1
Cumulative weight loss (%)	0 / 0	3–4 / 1–2	7–8 / 3–4	11–12 / 5–6	15 / 7
Gastrointestinal adverse effects	None	Nausea, vomiting, diarrhea/constipation	Symptoms improving; constipation persists	Mild constipation	Persistent constipation only
Acneiform eruption	Absent / Absent	Absent / Absent	Absent / Absent	Onset over T-zone and chin	Persistent mild-to-moderate acne with seborrhea
Seborrhea	Absent / Absent	Absent / Absent	Absent / Absent	Mild facial seborrhea	Facial, scalp and truncal seborrhea
Skin tone	Baseline complexion	No appreciable change	No appreciable change	Subjective improvement first noted	Subjective lightening (approximately 1–1.5 shades in Patient A; milder improvement in Patient B)
Hair changes	Normal / Normal	No change	No change	Reduced facial and body hair growth	Reduced body hair growth; Patient B also reported mild diffuse scalp hair thinning
Acanthosis nigricans	Present (Patient A); Absent (Patient B)	Unchanged	Mild improvement (Patient A)	Marked improvement (Patient A)	Complete resolution (Patient A); absent in Patient B
Semaglutide dose	0.25 mg weekly	0.50 mg weekly	1.0 mg weekly	1.5 mg weekly*	2.0 mg weekly

*Off-label intermediate dose administered before maintenance therapy.

Table 2: Chronological Timeline of Clinical Events During Semaglutide Therapy

Time Point	Clinical Events
Week 0 (Baseline)	Semaglutide initiated at 0.25 mg/week. Baseline BMI recorded (29.0 kg/m² for Patient A; 27.0 kg/m² for Patient B). Patient A had bilateral axillary acanthosis nigricans; neither patient had acne or seborrhea.
Week 4	Dose increased to 0.50 mg/week. Both patients experienced transient gastrointestinal symptoms (nausea, vomiting, intermittent diarrhea and constipation). Initial weight reduction observed.
Week 8	Dose escalated to 1.0 mg/week. Gastrointestinal symptoms improved except for persistent constipation. Progressive weight loss continued without cutaneous manifestations.
Week 12	Dose increased to 1.5 mg/week (off-label). Both patients developed acneiform eruptions over the T-zone and chin, accompanied by seborrhea. Subjective improvement in skin complexion and slowing of body hair growth were first reported.
Week 16	Maintenance dose of 2.0 mg/week commenced. Acne remained mild-to-moderate and was managed conservatively. Skin lightening became more noticeable, while body hair growth continued to decrease.
End of Month 4	Patient A achieved approximately 15% weight reduction and Patient B 7%. Complete clinical resolution of axillary acanthosis nigricans was observed in Patient A. Both patients remained satisfied with treatment and continued semaglutide therapy despite mild dermatological adverse effects.

Clinical Findings

At baseline, both patients were systemically healthy and overweight without evidence of acute illness. General physical examination was otherwise unremarkable. Dermatological examination of Patient A demonstrated bilateral axillary acanthosis nigricans before initiation of treatment, consistent with insulin resistance associated with overweight status. No active acneiform lesions, seborrhea, pigmentary abnormalities, or excessive facial hair were observed at baseline.

During the first eight weeks of semaglutide therapy, both patients experienced transient gastrointestinal adverse effects, including nausea, episodic vomiting, alternating diarrhea and constipation, with constipation persisting after dose escalation. No treatment discontinuation was required.

Approximately 12 weeks after initiation of therapy, both patients independently noted new dermatological changes. They developed mild-to-moderate inflammatory acneiform eruptions predominantly involving the T-zone and chin, accompanied by increased facial and truncal seborrhea. In Patient A, inflammatory lesions were associated with subsequent post-inflammatory hyperpigmentation over the chin. Both patients also perceived gradual improvement in overall skin complexion, reporting subjective skin lightening compared with baseline. This observation was based solely on patient self-assessment and clinical observation, as no validated colorimetric or photographic skin pigmentation assessment was performed.

Patient A additionally reported marked reduction in the growth rate of facial, axillary, pubic, and body hair, requiring less frequent cosmetic hair removal. By the fourth month of therapy, complete clinical resolution of bilateral axillary acanthosis nigricans was documented photographically. Patient B experienced similar reduction in body hair growth together with mild progression of pre-existing diffuse scalp hair thinning. Throughout follow-up, neither patient developed urticaria, injection-site reactions, severe cutaneous adverse reactions, or systemic manifestations suggestive of drug hypersensitivity.

Timeline

Both patients commenced semaglutide at a dose of 0.25 mg administered subcutaneously once weekly for four weeks. The dose was increased to 0.5 mg weekly during weeks 5–8, followed by 1.0 mg weekly during weeks 9–12. An off-label intermediate dose of 1.5 mg weekly was subsequently administered before escalation to the maintenance dose of 2.0 mg weekly.

During the first two months of treatment, both patients experienced expected gastrointestinal adverse effects that gradually improved except for persistent constipation. By approximately week 12, both patients developed acneiform eruptions involving the T-zone and chin, accompanied by increased seborrhea and subjective improvement in skin complexion. Progressive reduction in body hair growth was also first appreciated during this period. At four months of treatment, Patient A had achieved approximately 15% weight reduction with complete clinical resolution of axillary acanthosis nigricans, whereas Patient B achieved approximately 7% weight reduction and demonstrated similar but less pronounced cutaneous improvements. Both patients continued semaglutide without interruption throughout the observation period.

Diagnostic Assessment

Diagnosis was established primarily through comprehensive clinical history, serial dermatological examinations, and assessment of the temporal relationship between semaglutide initiation and the onset of cutaneous manifestations. Baseline and follow-up body weight and BMI were documented to monitor therapeutic response. Acneiform eruptions, seborrhea, pigmentary changes, hair growth alterations, and acanthosis nigricans were evaluated clinically during follow-up visits.

No skin biopsy, dermoscopy, hormonal profile, fasting insulin measurements, androgen assays, glycated hemoglobin, or inflammatory biomarkers were obtained because these investigations were not performed during routine clinical management. Likewise, objective skin color assessment using standardized photography or validated pigmentation scales was unavailable. Although both patients denied a history suggestive of PCOS or other endocrine disorders, formal endocrine evaluation was not undertaken, and these conditions therefore cannot be definitively excluded. The observed resolution of acanthosis nigricans was considered more likely related to improved insulin sensitivity associated with substantial weight loss than to a direct pharmacological effect of semaglutide. Consequently, this report should be interpreted as hypothesis-generating rather than establishing causality. No concomitant medications, cosmetic procedures, or dietary supplements known to influence pigmentation, acne, or hair growth were introduced during follow-up.

Therapeutic Intervention

Both patients received semaglutide according to a gradual dose-escalation schedule beginning with 0.25 mg weekly and increasing to a maintenance dose of 2.0 mg weekly over approximately four months. Treatment adherence remained excellent, and no dose reductions or

treatment interruptions were necessary despite early gastrointestinal adverse effects.

Acneiform eruptions were managed conservatively with topical adapalene and benzoyl peroxide, together with continued use of a gentle facial cleanser and regular sunscreen application. No systemic antibiotics, oral isotretinoin, hormonal therapy, corticosteroids, or other dermatological medications were prescribed. Because the cutaneous manifestations remained mild to moderate and both patients were satisfied with the substantial weight-loss benefits, semaglutide therapy was continued throughout the observation period.

Follow-up and Outcomes

Both patients completed approximately four months of follow-up while continuing semaglutide therapy. Patient A achieved approximately 15% reduction in body weight, whereas Patient B achieved approximately 7% weight reduction. Gastrointestinal symptoms improved substantially after dose escalation, although mild constipation persisted throughout treatment.

Dermatologically, both patients experienced persistent but clinically manageable acneiform eruptions associated with seborrhea. Topical therapy adequately controlled symptoms, and neither patient required systemic dermatological treatment or discontinuation of semaglutide. Patient A demonstrated complete clinical resolution of bilateral axillary acanthosis nigricans, documented with clinical photographs, while both patients reported noticeable improvement in overall skin appearance and reduction in secondary body hair growth. Patient B additionally continued to experience mild diffuse scalp hair thinning without progression requiring intervention.

At the final follow-up visit, both patients expressed overall satisfaction with treatment outcomes and elected to continue semaglutide because the metabolic and weight-loss benefits outweighed the relatively mild cutaneous adverse effects. No serious adverse events, hospitalizations, or treatment-limiting complications were observed during the follow-up period.

Patient Perspective

Both patients reported satisfaction with the weight-loss outcomes achieved with semaglutide. Although acneiform eruptions were cosmetically undesirable, neither patient considered them severe enough to discontinue treatment. Both expressed that the improvement in overall appearance and weight outweighed the mild dermatological adverse effects.

Ethics Statement

Ethical approval was waived because this report describes two individual clinical cases without experimental intervention. Written informed consent for publication of clinical details was obtained from both patients.

Discussion

Glucagon-like peptide-1 (GLP-1) receptor agonists have transformed the pharmacological management of obesity and type 2 diabetes mellitus because of their demonstrated efficacy in achieving clinically meaningful weight reduction while improving glycaemic control and cardiometabolic health. Although gastrointestinal adverse effects are well recognized and extensively documented, dermatological manifestations associated with semaglutide remain incompletely characterized, with the available literature consisting primarily of isolated case reports and small case series describing rare cutaneous adverse reactions rather than predictable skin-related changes [1,2].

The present report describes two biologically related female siblings who developed remarkably similar chronological cutaneous manifestations during semaglutide therapy, including new-onset acneiform eruptions, increased seborrhea, subjective improvement in skin complexion, reduced secondary body hair growth, and complete resolution of axillary acanthosis nigricans in one patient. The close temporal relationship between treatment initiation and the appearance of these findings suggests a possible association with semaglutide therapy. Nevertheless, because this is an observational case report, causality cannot be established, and these observations should be considered hypothesis-generating.

Among the observed findings, complete resolution of acanthosis nigricans in Patient A is clinically noteworthy. Acanthosis nigricans is widely recognized as a cutaneous marker of insulin resistance and is commonly associated with obesity and metabolic dysfunction. Weight reduction is known to improve insulin sensitivity and frequently results in regression of acanthosis nigricans. Therefore, the observed improvement is more plausibly explained by the substantial 15% weight loss and accompanying metabolic improvement rather than by a direct pharmacological action of semaglutide on the skin [2,5]. Similarly, the reported improvement in skin complexion may reflect reductions in systemic inflammation, improved metabolic homeostasis, enhanced tissue perfusion, and favorable changes in skin physiology that accompany successful weight reduction rather than a direct depigmenting effect of the drug [3,5].

Conversely, the development of acneiform eruptions and seborrhea in both patients raises interesting mechanistic considerations. Although acne has not been consistently recognized as an adverse effect of GLP-1 receptor agonists, rapid metabolic changes, alterations in insulin signalling, fluctuations in androgen activity, and changes accompanying significant weight loss could theoretically influence sebaceous gland function and follicular homeostasis. At present, however, evidence supporting these mechanisms remains limited, and no hormonal or biochemical investigations were performed in the present cases to substantiate these hypotheses [1,3]. Consequently, the acneiform eruptions observed in these patients should be interpreted cautiously until larger prospective studies become available.

Another noteworthy observation was the reduction in secondary body hair growth reported by both patients. Although the underlying mechanism remains speculative, alterations in insulin sensitivity and metabolic regulation may indirectly influence androgen-dependent hair growth. Patient B additionally reported mild diffuse scalp hair thinning, which may represent telogen effluvium associated with rapid weight reduction rather than a direct adverse effect of semaglutide. Similar transient hair shedding has been described following substantial weight loss achieved through pharmacological therapy or bariatric surgery [3,5].

The occurrence of nearly identical dermatological findings in two biologically related siblings may also suggest an underlying genetic or familial predisposition influencing the cutaneous response to metabolic changes. Shared genetic background, environmental exposures, dietary habits, and lifestyle factors could all have contributed to the concordance of the observed manifestations. Consequently, although the temporal association with semaglutide is compelling, these findings cannot be generalized to the broader population without further investigation.

Given the rapidly increasing global use of GLP-1 receptor agonists, clinicians should remain aware of both expected and unexpected dermatological manifestations during treatment. Recognition of these changes may facilitate appropriate patient counselling, early dermatological evaluation when required, and avoidance of unnecessary discontinuation of otherwise effective therapy. Larger prospective cohort studies incorporating standardized dermatological examinations, validated skin pigmentation assessment, hormonal profiling, insulin resistance markers, inflammatory biomarkers, and longer follow-up are required to determine the prevalence, mechanisms, and clinical significance of these observations [1–5].

Limitations

This report has several limitations that should be acknowledged. First, it describes only two patients from the same family, thereby substantially limiting external validity and generalizability. Second, the sibling relationship introduces potential genetic and environmental confounding because both patients shared similar hereditary background, lifestyle characteristics, and environmental exposures. Third, the dermatological findings, including improvement in skin complexion, reduction in body hair growth, and acne severity, were evaluated primarily through clinical observation and patient self-report without standardized assessment tools, validated acne grading systems, colorimetric skin pigmentation measurements, dermoscopic examination, or trichoscopic evaluation. Fourth, no laboratory investigations—including fasting glucose, insulin, HOMA-IR, glycated haemoglobin, androgen profile, thyroid function tests, inflammatory biomarkers, or nutritional parameters—were performed to explore potential biological mechanisms or exclude alternative explanations. Furthermore, formal endocrine evaluation for polycystic ovarian syndrome was not undertaken despite its potential association with acne, seborrhea, hirsutism, and acanthosis nigricans. Finally, the observed dermatological improvements, particularly the resolution of acanthosis nigricans and perceived enhancement of skin complexion, may represent secondary consequences of substantial weight loss and improved metabolic health rather than direct pharmacological effects of semaglutide. Consequently, causal inference cannot be established from this case report, and the findings should be interpreted as preliminary clinical observations requiring confirmation in larger prospective studies.

Conclusion

This CARE-compliant case report describes a distinctive constellation of cutaneous manifestations observed during semaglutide therapy in two biologically related female siblings, including acneiform eruptions, seborrhea, subjective improvement in skin complexion, reduction in secondary body hair growth, and complete resolution of axillary acanthosis nigricans in one patient following significant weight reduction. Although the temporal relationship suggests an association with semaglutide therapy, the beneficial dermatological changes are likely multifactorial and may primarily reflect improvements in insulin sensitivity and metabolic health accompanying weight loss rather than direct pharmacological effects of the drug. As the use of GLP-1 receptor agonists continues to expand worldwide, clinicians should recognize that cutaneous manifestations may accompany treatment and should counsel patients accordingly while continuing careful dermatological monitoring when appropriate.

Further prospective multicentre studies incorporating objective dermatological assessments, metabolic biomarkers, endocrine evaluation, and longer follow-up are needed to determine the frequency, mechanisms, and clinical relevance of these observations and to distinguish true drug-related effects from physiological consequences of successful weight reduction.

Authors' Contributions:

All authors meet the ICMJE criteria for authorship.

Author 1: Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.

References

1. Salazar CE, Patil MK, Aihie O, Cruz N, Nambudiri VE. Rare cutaneous adverse reactions associated with GLP-1 agonists: a review of the published literature. *Arch Dermatol Res*. 2024 May 25;316(6):248. https://doi.org/10.1007/s00403-024-02969-3
2. Smits MM, Van Raalte DH. Safety of Semaglutide. *Front Endocrinol (Lausanne).* 2021 Jul 7;12:645563. https://doi.org/10.3389/fendo.2021.645563
3. Naharro-Rodriguez J, Bacci S, Hernandez-Bule ML, Perez-Gonzalez A, Fernandez-Guarino M. Decoding Skin Aging: A Review of Mechanisms, Markers, and Modern Therapies. *Cosmetics*. 2025; 12(4):144. https://doi.org/10.3390/cosmetics12040144
4. Jalleh RJ, Rayner CK, Hausken T, Jones KL, Camilleri M, Horowitz M. Gastrointestinal effects of GLP-1 receptor agonists: mechanisms, management, and future directions. *Lancet Gastroenterol Hepatol*. 2024 Oct;9(10):957-964. https://doi.org/10.1016/S2468-1253(24)00188-2
5. Haykal D, Hersant B, Cartier H, Meningaud JP. The Role of GLP-1 Agonists in Esthetic Medicine: Exploring the Impact of Semaglutide on Body Contouring and Skin Health. *J Cosmet Dermatol.* 2025 Feb;24(2):e16716. https://doi.org/10.1111/jocd.16716