

REVIEW ARTICLES PREGLEDNI ČLANCI

THE ROLE OF GLP-1 AGONISTS IN THE TREATMENT OF INFLAMMATORY DERMATOSES

ULOGA GLP-1 AGONISTA U TERAPIJI INFLAMATORNIH DERMATOZA

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Pregledni članak

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Abstract

Introduction. According to the latest studies, glucagon-like peptide-1 receptor agonists, in addition to reducing glycaemia and body weight, also exert strong anti-inflammatory and immunomodulatory effects and are increasingly used to treat chronic inflammatory dermatoses. **Glucagon-like peptide-1 receptor agonists and psoriasis vulgaris.** In practice, positive effects of glucagon-like peptide-1 receptor agonists on psoriasis severity associated with insulin resistance/diabetes mellitus type 2 and obesity have been observed. In various studies, glucagon-like peptide-1 receptor agonists resulted in significant reductions in psoriasis severity scores and improvements in quality of life. Studies have shown significant improvements in clinical picture and quality of life with **glucagon-like peptide-1 receptor agonists** in patients with **hidradenitis suppurativa** associated with obesity. **Discussion.** Psoriasis and hidradenitis suppurativa are dermatoses characterised by complex immune-mediated inflammatory processes. Clinical studies indicate that the use of glucagon-like peptide-1 receptor agonists leads to improvement of the clinical picture and skin changes in these patients who are obese and have type 2 diabetes/metabolic syndrome. **Conclusion.** Due to their metabolic, anti-inflammatory, and immunomodulatory effects, glucagon-like peptide-1 receptor agonists represent a promising therapeutic option for inflammatory dermatoses. Their effects are attributable not solely to weight loss but also to direct immunomodulatory action, which explains their efficacy independent of body weight reduction. Further randomised, placebo-controlled clinical trials are required to confirm their effectiveness.

Key words: Glucagon-Like Peptide-1 Receptor Agonists; Immunomodulating Agents; Psoriasis; Hidradenitis Suppurativa; Skin Diseases; Inflammation; Therapeutics; Diabetes Mellitus, Type 2; Treatment Outcome

Sažetak

Uvod. Agonisti receptora glukagonu sličnog peptida-1 utiču na snižavanje nivoa glikemije i smanjenje telesne mase te se koriste u lečenju dijabetesa melitusa tip 2 i gojaznosti. Prema nedavnim studijama, ovi lekovi imaju i antiinflamatorno i imunomodulatorno dejstvo, te sve više nalaze primenu u lečenju hroničnih inflamatornih dermatoza. **Agonisti receptora glukagonu sličnog peptida-1 i psoriasis vulgaris.** U praksi su uočeni pozitivni efekti agonista receptora glukagonu sličnog peptida-1 na težinu kliničke slike psorijaze udružene sa insulinskom rezistencijom/dijabetesom melitus tip 2 i gojaznošću. U različitim studijama upotrebom agonista receptora glukagonu sličnog peptida-1 došlo je do značajnog smanjenja skora zahvaćene površine i težine psorijaze i poboljšanja skora kvaliteta života. **Agonisti receptora glukagonu sličnog peptida-1 i hidradenitis suppurativa.** Studije su pokazale značajno poboljšanje kliničke slike i kvaliteta života kod upotrebe agonista receptora glukagonu sličnog peptida-1 kod pacijenata kod kojih je hidradenitis suppurativa udružen sa gojaznošću. **Diskusija.** U osnovi nastanka psorijaze i supurativnog hidradenitisa je veoma složen imunoposredovan inflamatorni proces. Kliničke studije i prikazi slučajeva ukazuju da upotreba agonista receptora glukagonu sličnog peptida-1 dovodi do poboljšanja kliničke slike i kožnih promena kod ovih pacijenata, a koji su gojazni i imaju dijabetes tip 2/metabolički sindrom. **Zaključak.** Zahvaljujući ne samo metaboličkom, već i antiinflamatornom i imunomodulatornom dejstvu, agonisti receptora glukagonu sličnog peptida-1 predstavljaju obećavajuću terapijsku opciju u lečenju inflamatornih dermatoza. Njihov povoljan efekat nije posledica samo gubitka telesne mase, već i direktnog imunomodulatornog dejstva, što objašnjava njihovu efikasnost nezavisno od redukcije telesne mase. Potrebna su dalja randomizovana, placebo kontrolisana klinička ispitivanja kako bi se potvrdila njihova efikasnost.

Cljučne reči: agonisti receptora GLP-1; imunomodulatorni agensi; psorijaza; hidradenitis suppurativa; bolesti kože; inflamacija; terapija; dijabetes melitus tip 2; ishod lečenja

Introduction

Glucagon-like peptide-1 (GLP-1) is an incretin hormone that regulates blood glucose levels by stim-

ulating insulin secretion and inhibiting glucagon secretion [1,2]. In addition, GLP-1 has physiological effects, including reducing nutrient absorption, delaying gastric emptying, suppressing appetite, improving

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Abbreviations

DPP-4	- dipeptidyl peptidase-4
NK cells	- natural killer cells
STAT1	- signal transducer and activator of transcription 1
NF-κB	- nuclear factor κB
T2DM	- type 2 diabetes mellitus
IL	- interleukin
iNKT	- invariant Natural Killer T-cells
PASI score	- Psoriasis Area and Severity Index score
DLQI score	- dermatology life quality index score
BMI	- body mass index
VAS	- visual analogue scale
CRP	- C-reactive protein
HS	- hidradenitis suppurativa
HS-PGA	- HS-Physician's Global Assessment
HSS	- Hurley Staging System
GLP-1	- glucagon-like peptide-1
GLP-1R	- glucagon-like peptide-1 receptor
TNF α	- tumour necrosis factor α
IFN-γ	- interferon-γ
GLP-1RA	- glucagon-like peptide-1 receptor agonists

lipid metabolism, inhibiting apoptosis, and inducing pancreatic β-cell neogenesis [2]. GLP-1 is produced predominantly by intestinal endocrine epithelial cells (L-cells) following food intake and then binds to glucagon-like peptide-1 receptors (GLP-1R). These receptors are present in various cells and tissues, primarily in the endocrine pancreas, where their activation leads to insulin secretion [2,3].

However, GLP-1 receptors are also found in other cells and tissues such as keratinocytes, endothelial cells, neurons, astrocytes, intraepithelial lymphocytes, neutrophils and eosinophils. Also, GLP-1R is expressed in the kidneys, lungs, heart, and hypothalamus, which suggests that GLP-1 may have additional roles in the body unrelated to glycaemia regulation [1,2,4,5].

GLP-1 also slows gastrointestinal motility, leading to delayed gastric emptying and a prolonged feeling of satiety [6]. It also acts through its receptors in the satiety and hunger centres in the hypothalamus, reducing food intake and making GLP-1 an important factor in weight control and obesity treatment [7].

GLP-1 also has cardioprotective, neurotropic and anti-inflammatory effects [8].

Impaired GLP-1 secretion, either reduced or excessively high, can lead to metabolic disorders, including obesity and reactive postprandial hypoglycaemia. Research shows that GLP-1 also has significant effects on cardiovascular function, including modulation of heart rate and blood pressure, further highlighting its therapeutic potential beyond glycaemic control [6].

Although GLP-1R expression in the skin has been confirmed, its role has not yet been fully elucidated [1,9]. Receptors for the GLP-1 hormone have also been found in immune cells that can infiltrate the skin. A study by Faurschou et al. examined the presence of GLP-1R in keratinocytes, immune cells and skin bi-

opsy samples from healthy volunteers and patients with psoriasis. GLP-1Rs were found in five of six skin biopsies from psoriatic plaques, one of six biopsies from non-psoriatic skin, and one of six healthy skin biopsies. When cultured keratinocytes were stimulated with tumour necrosis factor α (TNF-α) and interferon γ (IFN-γ), no GLP-1R expression was detected. This suggests that the presence of GLP-1R in biopsies from patients with psoriasis is likely due to infiltration of diseased skin by immune cells [10].

GLP-1 analogues are drugs that act as glucagon-like peptide-1 receptor agonists (GLP-1RA). They are synthetic polypeptides that are more resistant to degradation by the enzyme dipeptidyl peptidase-4 (DPP-4) compared with natural GLP-1 and are also eliminated from the body more slowly. GLP-1R agonists lower glycaemia in hyperglycaemic states, reduce glucagon secretion in both hyperglycaemic and euglycaemic states, and slow gastric emptying [1,2,4]. In addition, GLP-1R agonists contribute to weight loss by acting on appetite centres in the hypothalamus [11]. In addition to their metabolic effects, GLP-1R agonists show cardioprotective effects, reducing the risk of cardiovascular events such as stroke and myocardial infarction [11]. Owing to all these effects, GLP-1R agonists are now used to treat patients with inflammation-dependent diabetic complications, such as diabetic retinopathy, neuropathy, nephropathy, and cardiovascular disease [2,12].

GLP-1Rs are present in distinct subpopulations of immune cells, allowing GLP-1R agonists to exert significant immunomodulatory effects [4].

Research has shown that GLP-1R agonists can prevent the recruitment of various types of immune cells (T-lymphocytes, NK (natural killer) cells, B-lymphocytes, leukocytes and dendritic cells) in inflamed tissue and reduce tissue infiltration by immune cells, which is one of the main mechanisms for weakening the inflammatory response [2].

In 2012, Lee and colleagues reported that GLP-1 reduced macrophage infiltration in adipocytes of obese mice. Likewise, GLP-1 exerts anti-inflammatory effects by reducing the expression of chemotactic factors, such as STAT1 (Signal transducer and activator of transcription 1), induced by IFN-γ, which are necessary for T-cell recruitment [13].

New research shows that GLP-1 can modulate the activities of NF-κB (Nuclear factor-κB). It is a family of protein complexes that act as primary mediators of pro-inflammatory gene induction and are activated in response to cellular stress, pathogens, and cytokines. Studies show that GLP-1 reduces NF-κB activity in inflamed tissues by reducing TNF-α synthesis. TNF-α plays a key role in the pathogenesis of inflammatory diseases, including hidradenitis sup-

purativa (HS), by promoting the expression of NF- κ B, thereby exacerbating inflammation [13,14].

In their research, the authors showed that *sitagliptin* exerts its anti-inflammatory effects by inhibiting NF- κ B, indicating that inhibition of NF- κ B signalling pathways is another potential mechanism by which GLP-1 exerts anti-inflammatory effects in both diabetic and non-diabetic settings [15].

There is strong evidence that GLP-1RAs reduce the inflammatory response by lowering oxidative stress and normalising the redox state in experimental rats and diabetic patients [16].

GLP-1R agonists are a new class of antidiabetic drugs; in addition to their hypoglycaemic effects, they can also have anti-inflammatory effects. They can prevent inflammatory events through at least five molecular mechanisms: improving glucose homeostasis and reducing glucotoxicity, normalising the redox state and reducing inflammation caused by oxidative stress, suppressing the recruitment of leukocytes to inflamed tissue, reducing lipotoxicity and downregulating various inflammatory mediators [13,16].

Because of all this, GLP-1R analogues have found wider application in clinical practice, not only for the treatment of patients with type 2 diabetes mellitus (T2DM) and its complications, but also in dermatology for inflammatory dermatoses [13,16].

GLP-1 agonists and psoriasis vulgaris

Psoriasis vulgaris is a chronic inflammatory dermatosis, affecting approximately 0.27 to 11.4% of the world's population, depending on the geographical area. Chronic inflammation of the skin is at the root of the disease, but systemic inflammation is also present in these patients. Up to 10-40% of patients with psoriasis also develop psoriatic arthritis [17]. Also, patients with psoriasis have a higher risk of adverse cardiovascular events, such as heart attack and stroke, and more often have comorbidities such as obesity, type 2 diabetes mellitus, metabolic syndrome, non-alcoholic fatty liver disease, and inflammatory bowel disease [18-20]. Frequent stigmatisation contributes to a significantly lower quality of life and to a higher incidence of psychiatric disorders such as depression and anxiety, abuse of alcohol or psychoactive substances [17,21].

Psoriasis is a chronic immune-mediated skin disease characterised by dysregulation of the immune system in terms of increased activation of immune cells, especially T-lymphocytes, together with other key inflammatory cells, such as macrophages and dendritic cells, which leads to the initiation of a cascade of inflammatory reactions that significantly contribute to the development and duration of the disease [22].

During this process, activated T cells and inflammatory cells release inflammatory mediators such as TNF- α and IFN- γ . Activation of interleukin (IL)-23 and Th17 cells leads to abnormal keratinocyte proliferation and further release of pro-inflammatory cytokines, forming a positive feedback loop. In addition, keratinocytes secrete antimicrobial peptides, cytokines, and chemokines that promote immune cell infiltration [1,22]. Previous research has shown that IL-17 plays a key role in the pathogenesis of psoriasis by triggering the secretion of three different classes of cytokines [23].

Research has shown that GLP-1R agonists reduce the activity of Invariant Natural Killer T-cells (iNKT), resulting in decreased secretion of proinflammatory cytokines such as IFN- γ , IL-2, IL-4, IL-17, and TNF- α . Also, it is believed that GLP-1R agonists can increase the production of anti-inflammatory cytokines, such as IL-10, and simultaneously reduce IL-17 production by attenuating the activation of dermal $\gamma\delta$ T-cells. GLP-1R agonists also reduce lymphocyte migration, inhibit signalling pathways involved in immune cell proliferation and migration, and reduce transcription of pro-inflammatory cytokines [24].

Considering the very complex immune-mediated inflammatory process underlying psoriasis, positive effects of GLP-1R agonists (*semaglutide*, *liraglutide*, *exenatide*) on the severity of the clinical picture of psoriasis associated with insulin resistance/T2DM and obesity have been observed in practice [1].

In these studies, the use of GLP-1R agonists resulted in a significant reduction in the affected area score and psoriasis severity index (PASI), and an improvement in the quality-of-life score (DLQI), over 3 months to 1 year [1,25].

In a 2012 case report, the introduction of *exenatide* into the therapy of a 61-year-old patient with psoriasis and T2DM resulted in a significant reduction in the PASI score (11 $\rightarrow$ 3) and improved glycaemic control over a period of one year [26].

Likewise, in a 73-year-old patient with psoriasis and T2DM, after 4 months of semaglutide use, there was a significant reduction in PASI (33.2 $\rightarrow$ 2.6) and DLQI (26 $\rightarrow$ 0) scores [27].

The use of semaglutide showed efficacy in another study conducted in 2023 in Italy, in an obese patient suffering from psoriasis and T2DM. After 4 months, there was a reduction in body weight, PASI and DLQI scores, as well as improved glycoregulation [28].

Also, two cases of liraglutide use in patients with diabetes and psoriasis have been reported in the literature. In one patient, a reduction in itching and desquamation was observed after a few days of liraglutide administration. After three months of administration, there was further improvement in both psoriasis and

glycaemic regulation, as well as weight loss [29]. Another patient who, in addition to psoriasis, was also obese, used acitretin for many years. One year after the introduction of liraglutide, there was a significant improvement in psoriasis and a reduction in body weight, accompanied by decreases in both PASI and DLQI scores [30].

Three prospective cohort studies and one case study analysed the use of liraglutide in the treatment of patients with psoriasis and T2DM. After liraglutide administration for 6 to 20 weeks, a significant reduction in PASI scores was observed in all four studies [26,31–33]. Three studies also showed significant improvements in quality of life among these patients and reductions in DLQI scores [26,31,32]. In these patients, there was also an improvement in lipid status parameters and HbA1c, and a decrease in body mass index (BMI) [26,31–33].

Randomised controlled studies have also been conducted on this topic. In a study conducted in China, 12 patients with psoriasis and T2DM received liraglutide, while a control group of 13 patients received acitretin, calcipotriol, and oral antidiabetics for 12 weeks. In the study group that received liraglutide, significant improvement in PASI and DLQI was observed, along with decreased expression of IL-23 and IL-17 in the skin of patients with psoriasis [34].

Another placebo-controlled study was conducted in Denmark. The test and control groups comprised 20 patients with psoriasis and preserved glucose tolerance, with one group receiving liraglutide and the other receiving placebo. This study showed no statistically significant differences in PASI and DLQI after 8 weeks of treatment with liraglutide (n=11) versus placebo (n=9) [35].

In addition to the positive effects on psoriatic skin changes with GLP-1R agonists, reductions in comorbidities were observed among the examined patients.

In the study by Nicolau et al., 20 obese patients with psoriasis were examined. They were treated with liraglutide 3 mg for 3 months. An average decrease in PASI score from 10 to 5.1 was recorded in almost 50% of subjects, as well as a significant decrease in body mass index, pain intensity on the Visual analogue scale (VAS), and levels of C-reactive protein (CRP), homocysteine, ferritin, and cortisol in plasma [36].

In a prospective cohort study of 7 patients with psoriasis and T2DM treated with *liraglutide* for 12 weeks, a mean reduction in PASI from 15.7 to 2.2 and an improvement in DLQI from 21.8 to 4.1 were observed. In addition, reductions in HbA1c, BMI and waist circumference were observed [33].

A 2025 study by Olbrich et al. involving more than 6,000 patients with psoriasis and diabetes or obesity

compared outcomes between patients who received GLP-1R agonists and those treated with other anti-diabetic or anti-obesity therapies. Psoriasis patients treated with GLP-1R agonists were found to have a 78% lower risk of death and a 44% lower risk of major cardiovascular events compared with those taking other drugs for diabetes or weight loss. Also, in these patients, treatment with GLP-1R agonists significantly reduced the risk of alcohol abuse by 65% and substance abuse by almost 50%. This risk reduction was more pronounced in patients with psoriasis compared with obese or diabetic subjects without psoriasis, suggesting a direct causal benefit of GLP-1R agonists [21].

Also, in the studies published so far, there is only one recorded case of worsening of the clinical picture of psoriasis after the use of the GLP-1R agonist - liraglutide. After the start of liraglutide administration, there was not only a worsening of psoriasis, but also the development of local resistance. After stopping liraglutide, the clinical picture of psoriasis improved. One possible explanation for the worsening of psoriasis is a cytokine imbalance, similar to the exacerbation of psoriatic changes in some people after biological therapy [37].

GLP-1 agonists and hidradenitis suppurativa

Hidradenitis suppurativa (HS) is a chronic, inflammatory skin disease affecting apocrine glands [38]. The prevalence of HS ranges from 0.5% to 1% of the general population [4]. It most often affects intertriginous areas where nodules, abscesses, cysts and sinuses are formed, which is accompanied by the persistent presence of purulent content and severe pain [4,38,39].

The aetiopathogenesis of HS is very complex and not fully understood. It is believed that genetic predisposition, environmental factors and immune system dysregulation play significant roles in the development of the disease [4]. In particular, obesity stands out as a risk factor, which represents both a predisposing and aggravating factor for HS [40]. In people with HS, obesity increases skin friction in the intertriginous areas, leading to increased expression of pro-inflammatory markers and an influx of neutrophils and macrophages. Increased immune cell activity induces oxidative stress and low-grade systemic inflammation, thereby promoting progression of HS lesions and increasing overall disease severity [40]. In addition, the micro-conditions within the skin folds of the obese, such as moisture, friction, maceration and an anaerobic environment, further contribute to the development of lesions [41].

A damaged skin barrier in obese people not only worsens existing lesions but also hinders their remission. Also, slower wound healing has been observed

in obese people and metabolic syndrome and T2DM are often present at the same time [42,43].

Numerous studies have shown that the prevalence of HS is significantly higher in obese people. As many as 18-20% of obese patients may suffer from HS, which is a significantly higher rate compared with the general population [44,45].

Studies have also shown that weight loss is positively associated with reduced severity and prevalence of HS symptoms [46].

Likewise, research has shown that patients with HS have a threefold higher risk of developing diabetes compared with the general population, and that is why screening for DM in these patients is important [40].

In patients with HS and BMI >30 kg/m², increased expression of the IL-17 receptor (an important pro-inflammatory cytokine implicated in the pathogenesis of HS) was observed and is considered a key rationale for the use of GLP-1R agonists in their treatment. In addition to the metabolic benefits of using GLP-1R agonists, this therapy can also lead to positive effects due to its anti-inflammatory and immunomodulatory effects, as well as in psoriasis [47].

Unlike psoriasis, where in most patients the effectiveness of biological drugs interleukin-23 and -17 inhibitors has made completely clear skin a realistically expected treatment goal, in patients with hidradenitis suppurativa there are still no drugs that can achieve a similar degree of clinical improvement. Given these significant unmet needs in hidradenitis suppurativa, all mechanisms and drugs that can improve clinical response are of great importance [48].

So far, less research has been published on the potential benefit of GLP-1R agonists in the treatment of HS than in psoriasis [1].

In a systematic review, Krajewski et al. reported that in patients with HS, GLP-1R agonists, particularly liraglutide and semaglutide, significantly reduced clinical severity and systemic inflammation. Improvements in lesion severity (reduction of inflammatory nodules, abscess formation and overall disease severity) and quality of life were observed [4].

The anti-inflammatory effects of GLP-1RAs are based on the inhibition of key inflammatory pathways involving TNF- α , IL-17 and NF- κ B that contribute to the pathogenesis of HS. Also, GLP-1R agonists reduce iNKT levels, which is significant because activation of these cells increases the expression of pro-inflammatory cytokines such as IFN- γ , TNF- α , and IL-17 [14,32,49].

These positive anti-inflammatory effects correlate with improvements in the clinical picture and symptoms in patients with HS. In their work published in 2017, Jennings et al. describe the case of an obese pa-

tient who was a smoker and had a severe form of HS (DLQI score 24 and HS-Physician's Global Assessment (HS-PGA) score 4), with a significantly impaired quality of life. The patient used narcotic analgesics daily for pain regulation. Since the patient was resistant to local and systemic HS therapy, liraglutide was introduced into the therapy. After 4 weeks of treatment, there was a significant improvement in the clinical picture, a decrease in the HS-PGA score to 1, and the patient used analgesics less often. GLP-1R agonists have been shown to reduce the secretion of IL-17 and TNF- α induced cytokines, both of which are important in the development of HS. It is considered that the improvement of the clinical picture of HS (reduction of both scores) is probably due to both the direct anti-inflammatory effect of liraglutide, through activation of the GLP-1 receptor, and the indirect effect of liraglutide, through body weight reduction [50].

A prospective case series conducted in 2024 in Spain included 14 patients with HS and obesity who were treated with liraglutide for 3 months. The results of the study showed a statistically significant decrease in body mass index and waist circumference, as well as a decrease in markers of inflammation (CRP, homocysteine, cortisol). The Hurley Staging System (HSS) was used to assess the severity of HS lesions, and the DLQI score was used to assess the quality of life. After therapy, both scores decreased, but the change was not statistically significant [36].

Other studies have also shown a connection between HS and obesity, that is, that weight loss can alleviate the severity of HS. A study by Gupta et al. examined the use of semaglutide, tirzepatide, dulaglutide, and liraglutide in 22 obese subjects with diabetes and HS. The drugs were primarily given to treat obesity or diabetes; however, 68.2% of subjects also noted an improvement in the clinical picture of HS. The respondents observed a decrease in inflammation (61.9%), a decrease in the appearance of new lesions (66.7%), a decrease in pain (52.4%), a decrease in the drainage of contents (61.9%), a decrease in itching (47.6%) and an unpleasant odour (42.9%). About 59.1% of respondents said they would recommend using GLP-1RA [51].

Also, Lyons et al. found in a study of 30 obese patients with HS that *semaglutide*, even at a low dose (0.8 mg per week), can help control HS by reducing body weight and improving patients' quality of life (DLQI 13 $\rightarrow$ 9). However, its effect on inflammatory markers and frequency of exacerbations was less pronounced. The rationale for using semaglutide in HS stems from its ability to reduce body weight and modulate metabolic and inflammatory pathways, which are strongly associated with the severity and progression of HS. These results suggest that se-

maglutide could be a useful adjunctive therapy in the treatment of HS, but further placebo-controlled trials are needed to confirm its efficacy [52].

Discussion

In recent years, there has been increasing interest in the use of GLP-1R agonists in the treatment of chronic inflammatory dermatoses, such as psoriasis and HS, which are often associated with pronounced metabolic dysfunction, due to their significant anti-inflammatory and immunomodulatory effects [2,9,25,38].

The expression of GLP-1 receptors in skin tissue and the presence of proglucagon peptides suggest that this signalling pathway may play a direct role in regulating inflammatory processes in the skin [9,25,32]. The GLP-1 signalling pathway can influence iNKT cell activity, which plays a key role in the pathogenesis of psoriasis [31]. Likewise, Buysschaert et al. reported a decrease in dermal $\gamma\delta$ T-lymphocytes, suggesting a possible direct effect of GLP-1R agonists on key effector cells in the pathogenesis of psoriasis [26].

Clinical studies and case reports indicate improvement of skin changes in patients with psoriasis associated with obesity and T2DM after the introduction of GLP-1R agonists such as exenatide, liraglutide and semaglutide [26,27,29,31,33]. However, the question arises as to the extent to which this effect is independent of the simultaneously achieved reduction in body mass, given the well-documented relationship between obesity and the severity of psoriasis [25]. However, individual cases of psoriasis worsening during *liraglutide* therapy have also been reported, indicating heterogeneity in response and the need for caution and individualisation of therapy [37].

When it comes to HS, interest in GLP-1R agonists has been driven by the strong association of this disease with obesity and metabolic syndrome [38]. Emerging evidence indicates the potential benefit of GLP-1R agonists, primarily through reductions in body mass

and systemic inflammation [4,36,38,51]. Clinical studies and case reports describe significant reductions in body weight and improvements in the clinical course of the disease in HS patients treated with liraglutide, and indicate improved subjective quality of life and reduced symptom severity during GLP-1R agonist therapy [36,50]. The finding that semaglutide can contribute to better disease control when used as adjuvant therapy in patients with severe obesity is particularly significant [51]. However, unlike psoriasis, evidence for hidradenitis suppurativa remains in its early stages and is largely based on observational data [4,50]. Nevertheless, the increased risk of psoriasis in these patients, and the shared pathophysiological mechanisms further justify the use of GLP-1R agonists in both diseases [38].

Although liraglutide and semaglutide are currently the only GLP-1 analogues used in HS, the potential for other GLP-1R agonists such as dulaglutide to produce similar effects warrants further investigation. Continued research is needed to fully determine the role of GLP-1 agonists in the treatment of HS [4].

Conclusion

Although psoriasis and hidradenitis suppurativa differ in clinical presentation, they share numerous characteristics as chronic inflammatory dermatoses, including common risk factors such as obesity, insulin resistance, and type 2 diabetes mellitus, similar underlying inflammatory mechanisms, and a substantial negative impact on quality of life.

Owing to their metabolic, anti-inflammatory, and immunomodulatory effects, glucagon-like peptide-1 receptor agonists represent a promising therapeutic option for inflammatory dermatoses. Their beneficial effects are attributable not only to weight loss but also to direct immunomodulatory effects, which may explain their efficacy independent of body weight reduction. Further randomised, placebo-controlled clinical trials are required to confirm their effectiveness.

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