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Review

Use of GLP-1 Analogues in the Management of Obesity: An Updated Review

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ABSTRACT

Obesity is a chronic, multifactorial condition associated with an increased risk of a wide range of comorbidities, including type 2 diabetes mellitus, arterial hypertension and cardiovascular disease. Given its rising global prevalence and the consequent economic and social burden, new therapeutic strategies have been investigated to help control body-mass index (BMI). Glucagon-like peptide-1 (GLP-1) analogues were first introduced for type 2 diabetes because of their glucose-modulating and appetite-regulating actions. Subsequent evidence revealed significant benefits for BMI reduction in people with or without diabetes. Drugs such as liraglutide and semaglutide have been widely studied, delivering mean weight losses above 10 % and, in some trials, 15 % or more together with improvements in metabolic parameters such as blood glucose and lipid profile. Nevertheless, gastrointestinal adverse effects, treatment cost and unequal access still limit widespread use. This review discusses the efficacy, safety, limitations and future prospects of GLP-1 analogues in obesity management, emphasising the need for lifestyle modification and multidisciplinary follow-up.

Keywords: Obesity; GLP-1; Satiety; GLP-1 analogues; Energy metabolism; Adverse effects

Introduction

Obesity is a chronic, multifactorial and neurobehavioral disease characterized by abnormal or excessive fat accumulation and is linked to adverse health outcomes such as insulin resistance, dyslipidemia, hypertension and impaired quality of life. According to the World Health Organization, its prevalence has risen sharply in recent decades, making it a major public-health concern. Genetic, environmental and behavioral factors converge in its pathophysiology. Hypercaloric diets rich in sugars and fats combined with sedentary behavior underpin weight gain. Recent advances in gut-hormone physiology have opened new therapeutic avenues; glucagon-like peptide-1 (GLP-1) plays a pivotal role in appetite regulation and glucose homeostasis. GLP-1 analogues, initially approved for type 2 diabetes, have shown promising weight-loss effects in clinical trials, leading to specific dosing regimens for obesity. This article reviews the scientific evidence on GLP-1 analogues for obesity, covering mechanisms of action, clinical efficacy, safety profile, current limitations and future directions.

Objectives

To review the main scientific evidence on GLP-1 analogues in obesity, addressing mechanisms of action, clinical efficacy, safety, limitations and future prospects.

Materials and Methods

A narrative literature review was conducted using PubMed, ScienceDirect and SciELO databases.

Discussion

GLP-1 is secreted by intestinal L-cells in response to nutrient intake and improves glycaemic control by stimulating insulin secretion and inhibiting glucagon release in a glucose-dependent fashion. It also delays gastric emptying and induces satiety via hypothalamic centres that regulate appetite[1,2]. Therapeutic GLP-1 analogues feature structural changes that prolong half -life. Liraglutide and semaglutide are the best studied, yielding significant weight loss when combined with lifestyle modification[3,4]. Randomised trials show that once-weekly semaglutide can induce average losses > 15 % of initial body weight, with consistent improvements in glycaemia, blood pressure and lipid profile[5,6]. Daily liraglutide 3 mg produces 8-10 % reductions, outperforming placebo[7,8]. Even modest 5-10 % losses yield meaningful cardiometabolic benefits[9,10].

Gastrointestinal adverse events nausea, vomiting, diarrhoea and abdominal discomfort are most common[2,11]. They usually peak in the first weeks and diminish with gradual dose escalation. Other safety issues under investigation include pancreatitis and gall-bladder disease, although current data are inconclusive[12]. Close monitoring is advised, especially in patients with a history of these conditions. High cost and parenteral administration (daily or weekly, depending on the agent) hamper long-term adherence and equitable access[8]. Insurance coverage rarely extends to obesity-specific doses, limiting availability in many settings. Public-health strategies to expand access are therefore essential.

Ongoing genetic and pharmacological research may yield more selective molecules with fewer side-effects and combination therapy is being explored to enhance weight-control outcomes[13]. Nonetheless, obesity management must remain multidimensional, integrating behavioural, nutritional and physical-activity interventions. Psychological support and lifestyle-change programmes are critical for sustained weight loss, with GLP-1 analogues acting as a valuable adjunct[14,15].

Conclusions

GLP-1 analogues are among the most effective pharmacological options for obesity, producing clinically significant weight reductions and favorable metabolic effects. Their influence on satiety, gastric emptying and glycaemic control makes them particularly advantageous for patients with insulin resistance or obesity-related comorbidities. Optimal outcomes depend on individualized care, appropriate dose titration and guidance on gastrointestinal events. Cost and limited access remain major barriers.

Future obesity management should integrate pharmacological agents such as GLP-1 analogues with behavioral interventions and digital-health support to deliver comprehensive, effective care that lowers comorbidity rates and obesity-related mortality. Public-health policies must recognize obesity as a complex chronic disease, reduce stigma and improve evidence-based treatment access. Rational prescribing and specialized follow-up are essential to maximize clinical benefit and minimize misuse-related risks.

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