CORRECTION OF CLINICAL AND METABOLIC DISORDERS IN WOMEN WITH POLYCYSTIC OVARY SYNDROME

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Background:
Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine disorders in women of reproductive age and characterized by pronounced clinical and metabolic heterogeneity. In addition to obesity, a significant proportion of patients have a normal body mass index (BMI) but exhibit metabolic disturbances consistent with metabolically obese normal weight (MONW) phenotype. Reliance solely on BMI as a risk stratification criterion leads to underestimation of cardiometabolic complications in this group. Current treatment approaches, including lifestyle modification and the use of metformin, have limited long-term effectiveness, which justifies the search for new metabolically targeted therapeutic strategies, particularly GLP-1 receptor agonists.

Objective:
To evaluate the role of GLP-1 receptor agonists in correcting metabolic and hormonal disturbances in PCOS, taking into account different metabolic phenotypes, and to analyze existing gaps in relation to patients with normal BMI and the MONW phenotype.

Materials and Methods:
A narrative review of contemporary literature was conducted, including publications from international databases (PubMed, Scopus, Web of Science). The analysis included systematic reviews, meta-analyses, randomized controlled trials, and key fundamental studies addressing the pathogenesis of PCOS, insulin resistance, and the use of GLP-1 receptor agonists. Particular attention was paid to studies evaluating the effects of therapy on body weight, visceral adiposity, insulin resistance indices (HOMA-IR), hyperandrogenism, and reproductive outcomes.

Results and Discussion:
Insulin resistance is considered a central pathogenetic mechanism of PCOS, contributing to the development of hyperandrogenism and ovulatory dysfunction regardless of body weight. GLP-1 receptor agonists have been shown to exert beneficial effects on key aspects of the disorder, including reducing body weight and visceral fat, improving insulin sensitivity, and lowering androgen levels. In several studies, their efficacy exceeds that of metformin, particularly in patients with obesity. Combination therapy with metformin demonstrates an additive effect. However, most studies have been conducted in overweight populations, whereas data on patients with normal BMI and the MONW phenotype remain limited. Furthermore, insufficient phenotypic stratification and limited attention to long-term reproductive outcomes reduce the generalizability of the findings.

Conclusions:
GLP-1 receptor agonists represent a promising direction in metabolically targeted therapy for PCOS, with the ability to influence key pathogenetic mechanisms of the disease. However, further studies are required to optimize personalized treatment approaches, taking into account metabolic phenotypes, including MONW, as well as deeper patient stratification and evaluation of long-term clinical and reproductive outcomes.

Abstract
Polycystic Ovary Syndrome (PCOS) is one of the most prevalent endocrine disorders in women of reproductive age and is characterized by significant metabolic and hormonal heterogeneity. Although obesity is a well-recognized risk factor, many patients with normal body mass index (BMI) demonstrate metabolic abnormalities consistent with the metabolically obese normal weight (MONW) phenotype, which may lead to underestimation of cardiometabolic risk when BMI is used as the sole stratification criterion. This narrative review aimed to evaluate the role of GLP-1 receptor agonists in the correction of metabolic and hormonal disturbances in PCOS, with particular emphasis on different metabolic phenotypes, including MONW. A review of contemporary literature from PubMed, Scopus, and Web of Science was conducted, including systematic reviews, meta-analyses, randomized controlled trials, and key fundamental studies. Current evidence indicates that insulin resistance represents a central pathogenetic mechanism of PCOS, contributing to hyperandrogenism and ovulatory dysfunction irrespective of body weight. GLP-1 receptor agonists demonstrate beneficial effects on multiple aspects of the disorder, including reduction of body weight and visceral adiposity, improvement of insulin sensitivity, and decrease in androgen levels. In several studies, these agents showed greater efficacy than metformin, particularly in patients with obesity, while combination therapy produced additive metabolic benefits. Nevertheless, evidence regarding women with normal BMI and MONW phenotype remains limited, and insufficient phenotypic stratification reduces the applicability of existing findings. GLP-1 receptor agonists therefore represent a promising metabolically targeted therapeutic strategy for PCOS; however, further research is required to optimize personalized treatment approaches and to evaluate long-term metabolic and reproductive outcomes across different phenotypes.

Keywords:
Polycystic Ovary Syndrome; PCOS; GLP-1 receptor agonists; insulin resistance; metabolically obese normal weight; MONW; hyperandrogenism; obesity; visceral adiposity; metformin; reproductive endocrinology.