The metabolic burden of PCOS: Addressing obesity, diabetes, and cardiovascular risks.

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Introduction

Polycystic ovary syndrome (PCOS) is a prevalent endocrine disorder affecting women of reproductive age, characterized by hormonal imbalances and metabolic dysfunctions [1]. Beyond its reproductive implications, PCOS poses a significant metabolic burden, elevating risks for obesity, type 2 diabetes, and cardiovascular diseases [2].

Obesity is a common comorbidity in PCOS, affecting 40-80% of patients depending on ethnicity and diagnostic criteria. The condition is often associated with abdominal or visceral fat accumulation, which exacerbates insulin resistance and hyperandrogenism, the hallmarks of PCOS [3]. Excess adiposity also contributes to chronic inflammation and dyslipidemia, further compounding metabolic risks. Studies suggest that weight loss of as little as 5-10% can significantly improve symptoms, including menstrual irregularities, insulin sensitivity, and androgen levels [4]. Lifestyle interventions focusing on dietary modifications and physical activity are widely recommended as first-line treatments [5].

Insulin resistance is another cornerstone of the metabolic disturbances in PCOS, present in up to 70% of women with the condition [6]. Elevated insulin levels contribute to excessive ovarian androgen production, worsening symptoms such as hirsutism and acne. Insulin resistance also predisposes individuals to type 2 diabetes, with women with PCOS exhibiting a 4- to 5-fold increased risk compared to the general population [7]. Pharmacological interventions like metformin and inositol supplements have shown promise in improving insulin sensitivity and reducing diabetes risk in PCOS patients [8].

Cardiovascular risks in PCOS are multifaceted, stemming from a combination of obesity, insulin resistance, hypertension, and dyslipidemia. Women with PCOS are more likely to exhibit atherogenic lipid profiles, including elevated LDL cholesterol and triglycerides and reduced HDL cholesterol levels [9]. Additionally, they have a higher prevalence of endothelial dysfunction, a precursor to atherosclerosis. Long-term studies indicate that women with PCOS may face a higher risk of myocardial infarction and stroke, necessitating early screening and management of cardiovascular risk factors [10].

Conclusion

The interplay between obesity, insulin resistance, and cardiovascular risk in PCOS underscores the importance of a holistic management approach. Early diagnosis, lifestyle modification, pharmacological therapies, and regular monitoring of metabolic health are critical in mitigating long-term risks. With growing awareness and research, tailored interventions can significantly improve the quality of life and health outcomes for women with PCOS, addressing both reproductive and metabolic challenges.

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