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Short communication

Beyond caloric restriction: endocrine-oriented dietary approach in severe obesity and insulin resistance

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Introduction

Severe obesity is frequently associated with insulin resistance and complex endocrine-metabolic disturbances, including altered cortisol dynamics, thyroid dysfunction, hyperprolactinemia, vitamin D insufficiency, and impaired appetite regulation. Conventional aggressive caloric restriction and highly restrictive dietary approaches may intensify stress-related metabolic responses, reduce dietary adherence, and negatively affect long-term sustainability of weight management strategies (Hall and Kahan, 2018; Hassapidou et al., 2023). Recent clinical approaches increasingly emphasize endocrine-oriented nutritional interventions focused on metabolic stabilization, appetite regulation, and sustainable behavioral adaptation.

The Mediterranean dietary pattern, particularly when adapted as a protein-rich and glycemic management diet, has demonstrated beneficial effects on insulin sensitivity, satiety, cardiometabolic health, and long-term dietary adherence in patients with obesity and metabolic dysregulation (Vetrani et al., 2023; American Diabetes Association Professional Practice Committee, 2024). This study outlines an individualized endocrine-oriented dietary intervention in a patient suffering from severe obesity and insulin resistance.

Materials and methods

A 32-year-old female patient presented with severe obesity with an initial body weight of 118 kg, height of 164 cm, and BMI of 43.9 kg/m². Baseline laboratory evaluation revealed significant insulin resistance, with Homeostatic model assessment for insulin resistance (HOMA-IR) of 3.78 and fasting insulin levels of 16.53 μU/mL. Additional findings included elevated cortisol, hyperprolactinemia, and vitamin D insufficiency. The patient was receiving levothyroxine therapy, which was adjusted from 50 μg to 75 μg during follow-up. As recommended by the endocrinologist, metformin (1000 mg), spironolactone, and vitamin D supplementation were continued.

The patient underwent an 8-week individualized endocrine-oriented dietary treatment. The nutritional protocol focused on metabolic balance rather than strict calorie restriction, utilizing a protein-rich Mediterranean approach. The dietary intervention implemented a structured, practical, and portion-guided sustainable nutritional protocol. The regimen prescribed three primary meals and two daily snacks; however, snacks were occasionally omitted based on participant feedback of heightened satiety.

The glycemic load was managed through regular meal timing, adequate protein intake, use of healthy dietary fats, increased consumption of vegetables,

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moderate carbohydrate distribution, and avoidance of prolonged fasting or extreme dietary restriction. Additional lifestyle recommendations included moderate intensity physical activity, targeted at approximately 10,000 steps every second day. Throughout the intervention, psychological support and ongoing nutritional counseling were integrated in order to improve adherence and reduce psychological pressure associated with the specific dietary regimen.

Results and discussion

After 8 weeks, the patient achieved a clinically significant body weight reduction of 12 kg, from 118 kg to 106 kg. This corresponds to a BMI reduction from 43.9 kg/m² to 39.4 kg/m², reflecting a decrease of greater than 10% from baseline body weight. A reduction in the HOMA-IR from 3.78 to 2.68 indicated a significant mitigation of metabolic dysfunction, shifting the patient's physiological state from established to early-stage insulin resistance. HbA1c remained within the normal range (4.86%), while fasting glucose and lipid parameters remained clinically stable. A mild improvement was noticed in vitamin D levels.

During the intervention, the patient reported maintained baseline energy and sleep quality while exhibiting improved digestive regularity and increased satiety. The implementation of protein-dense meals elicited greater satiety, which facilitated dietary compliance. A transient increase in appetite was reported exclusively during the premenstrual period.

The present findings suggest that endocrine-oriented dietary intervention targeted to metabolic stabilization may support clinically significant weight reduction and improvement in insulin sensitivity without the need for highly restrictive dietary approaches. The practical and psychologically supportive structure of the intervention likely enhanced both long-term sustainability and patient adherence. Furthermore, this case highlighted the clinical importance of individualized nutritional protocols for patients with obesity-related endocrine dysfunctions, specifically in promoting bowel regularity and minimizing excessive hunger (Hassapidou et al., 2023; American Diabetes Association Professional Practice Committee, 2024).

Conclusion

This study shows that a protein-rich, Mediterranean-based, endocrine-oriented dietary approach can yield clinically significant improvements in body weight, satiety, and insulin resistance among patients with severe obesity and endocrine-metabolic dysregulation. By prioritizing a gradual, sustainable metabolic stabilization strategy coupled with targeted behavioral and psychological support, the conducted intervention notably enhanced the two months dietary adherence and overall metabolic resilience. Ultimately, these findings suggest a versatile, holistic framework for managing complex metabolic disorders. Future multicenter, randomized controlled trials are warranted to validate these long-term endocrine and metabolic benefits, and to explore the integration of this personalized nutritional paradigm into standard clinical practice.

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