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THE RELATIONSHIP BETWEEN OBESITY AND DIABETES: CAUSES, EFFECTS, AND PREVENTION

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ANNOTATSIYA:

Obesity and diabetes are two closely interconnected global health challenges that have reached epidemic levels in recent decades. Obesity significantly increases the risk of developing type 2 diabetes by contributing to insulin resistance, impaired glucose metabolism, and chronic inflammation. This paper examines the relationship between obesity and diabetes, explores physiological mechanisms linking the two conditions, and discusses the role of lifestyle, genetics, and environmental factors. Preventive measures such as proper nutrition, physical activity, and early diagnosis are highlighted as key strategies for reducing disease burden. Understanding this connection is essential for promoting healthy living and improving public health.

Introduction

Obesity is a major public health concern characterized by excessive fat accumulation that negatively affects health. Diabetes, particularly type 2 diabetes, is a metabolic disorder resulting in elevated blood glucose levels due to insulin resistance or insufficient insulin production. Numerous studies indicate that obesity is one of the strongest risk factors for type 2 diabetes, making these two diseases strongly linked. Fat tissue in individuals with

obesity produces inflammatory hormones and cytokines that interfere with insulin function, leading to insulin resistance. Over time, this disrupts normal glucose regulation, ultimately resulting in diabetes. With the global rise in obesity rates, diabetes cases have also increased dramatically, making prevention efforts crucial.

Obesity is defined as an excessive accumulation of body fat that negatively affects health. It is commonly measured using the Body Mass Index (BMI). A BMI above 30 kg/m² is classified as obesity. Adipose tissue is not only a fat storage organ but also an active endocrine organ that produces hormones such as leptin, adiponectin, and resistin. These hormones influence appetite, metabolism, insulin function, and inflammation.

In obesity, leptin levels increase significantly, but the body develops "leptin resistance," causing increased hunger and overeating. Meanwhile, adiponectin, which improves insulin sensitivity, decreases in obese individuals, contributing to insulin resistance.

Mechanisms of diabetes development

Type 2 diabetes is characterized by impaired insulin secretion or reduced sensitivity of tissues to insulin. In obese individuals, excess adipose tissue releases pro-inflammatory cytokines, such as TNF-alpha and IL-6, which interfere with insulin receptor function. This reduces the ability of cells to

absorb glucose, leading to insulin resistance. As a result, the pancreas compensates by producing more insulin, but over time, pancreatic beta

cells become exhausted, causing insulin deficiency. High blood glucose levels damage blood vessels, nerves, kidneys, eyes, and the cardiovascular system.

Conclusion

In conclusion, obesity and diabetes are closely related chronic diseases that significantly impact global health. The rise in obesity contributes directly to increasing rates of type 2 diabetes through complex metabolic and hormonal mechanisms. Preventive strategies, including regular physical activity, balanced nutrition, weight management, and public health education, are essential for reducing the incidence and complications of these conditions. Continued research and community awareness programs will play a critical role in improving health outcomes and preventing obesity-related diabetes worldwide.

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