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FEAR AND STRESS CAN CAUSE DIABETES

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Abstract: The article discusses the development of diabetes mellitus due to pressure and stress, as well as the physiological processes and stages of action of this factor. It also explains the dependence of diabetes on neurological factors.

Keywords: adrenaline, hypercortisolism, factor, neurotrophic, cortisol, stress.

It is known that "Diabetes", which is called the plague of the 21st century, is the most widespread disease in the world today. The origin of this disease depends on various factors. Currently, the number of such factors is increasing. Initially, the main cause was a malfunction of the pancreas, a lack of the hormone insulin, but at the same time, obesity, improper diet, and stress, depression were also the primary causes of the "sweet disease". It is precisely fear, depression and stress that are considered the causes of various diseases.

Diabetes is a disease related to the failure of the body's ability to produce insulin or to respond to the effects of insulin. Insulin is an important hormone that controls the amount of sugar in the blood. It is produced by the pancreas. In a state of stress (for example, fear, anxiety, depression), hormones such as adrenaline and cortisol are produced in the body. These hormones cause an increase the amount of sugar in the body. The main food of neurons and the brain is also glucose. In case of stress, the central nervous system (because in this situation, there is a great pressure on the central nervous system) uses glucose in large quantities and increases its immunity.

Adrenaline is a hormone released by the adrenal gland that prepares the body for "escape and defense" mode in the event of danger. Adrenaline works by the following mechanisms to increase blood sugar levels the body.

1. Liver and muscle tissues glycogenolysis process accelerates. During this process, glycogen was broken down into glucose molecules.

II. It accelerates the process of glycogenesis (glycogen synthesis) in the adrenal glycogen, which replenishes new glycogen stores and ensures that the available glycogen is converted into energy quickly.

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III. Adrenaline also increases glucose production in the liver, which further increases blood sugar levels.

Cortisol is another hormone released by the adrenal glands which is produced in response to stress. Cortisol's role in raising blood sugar levels.

I. Cortisol increases the production of glucose in the liver. This process is called gluconeogenesis, and it involves making new glucose from glycerol, amino acids, and other sources.

II. Extracts amino acids from muscle tissue and sends them to the liver. These amino acids are used in the process of gluconeogenesis in the liver

III Cortisol stimulates the process of glycogenolysis in the crude adrenal cortex, which accelerates the release of energy from available glycogen reserves

Diabetes, particularly type 2 diabetes, is a complex metabolic disorder characterized by chronic hyperglycemia resulting from insulin resistance, impaired insulin secretion, or both. Depression and anxiety are common comorbidities associated with diabetes, and are mental health conditions and diabetes. That is, diabetes can contribute to the development of depression and anxiety. Chronic fear and stress can increase insulin resistance and lead to the development of type 2 diabetes.

Glucose overload Chronic fear causes beta-cells (the insulin-producing cells in the pancreas) to overwork by maintaining persistently high blood glucose levels, which can lead to fatigue and decreased insulin production stress Effects People who live with stress and fear are often unable to maintain a healthy lifestyle. Poor diet, eating high-calorie foods, lack of physical activity, try to manage stress by smoking or drinking alcohol, all of which increase the risk of developing diabetes.

That is, diabetes can contribute to the development of depression and anxiety, long-term stress. Chronic fear and stress can increase insulin resistance and lead to the development of type 2 diabetes.

Glucose overload Chronic fear causes beta cells (insulin-producing cells in the pancreas) to overwork, maintaining a persistently high blood glucose level. This can cause them to become tired and reduce the production of insulin. Indirect effect of stress. People who live with stress and fear often fail to maintain a healthy lifestyle.

Mechanisms mediating the links between diabetes, depression and anxiety

1. Biochemical pathways.

• Oxidative stress. Increased oxidative stress is associated with diabetes and depression. An imbalance between reactive oxygen species (ROS) and antioxidants can cause cellular damage, affecting certain areas of the brain that control mood.

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• Social Isolation Individuals with diabetes may experience social stigma or isolation, which can exacerbate feelings of depression and anxiety Interactions between mental health and social support networks can create a vicious cycle.

Hormonal disruption Depression and anxiety often result in increased levels of cortisol, the stress hormone. Chronic hypercortisolism can lead to insulin resistance and elevated glucose levels, further complicating diabetes management.

2. Neurological factors

• Neurotransmitter imbalance Insulin resistance associated with depression and anxiety-controlling mood-controlling neurotransmitters (serotonin, norepinephrine, and dopamine) can also affect neurotransmitter systems, increasing stress-related diseases BDNF (Brain-Derived Neurotrophic Factor) is the neurotrophic factor BDNF that supports the growth, survival and plasticity of nerve cells in the brain is a protein important for learning, memory and emotional stability processes. Its level can change under the influence of a number of internal and external factors. Low BDNF levels are associated with depression and diabetes. Insulin resistance may disrupt BDNF signaling, which has implications for mood control.

3. Psychosocial factors

• Social Isolation Individuals with diabetes may experience social stigma or isolation, which can increase feelings of depression and anxiety The interaction between mental health and social support networks can create a vicious cycle.

4. Behavioral factors

Lifestyle Depression and anxiety can lead to unhealthy lifestyle habits, such as poor diet, lack of physical activity, and nonadherence to medication. These behaviors can worsen glucose control and increase the risk of complications

• Sleep disorders Diabetes and stress disorders are associated with sleep disorders Win Poor sleep quality can increase insulin resistance and disrupt glucose metabolism, while also having a negative effect on mood.

Conclusion. Fear could not cause diabetes, but it increases the risk of the disease through metabolic and hormonal mechanisms. The relationship between diabetes, depression, and anxiety is complex and involves biochemical, neurological, psychosocial, and behavioral factors. Understanding these interactions is important in developing comprehensive treatment approaches that address metabolic control and mental health simultaneously. Integrated care models that support mental health along with diabetes management may improve overall outcomes for individuals suffering from these conditions. Preventive measures include stress management techniques, such as meditation, breathing exercises, and psychotherapy. In addition, a healthy lifestyle including regular exercise, a balanced diet and good sleep can significantly reduce the risk of diabetes.

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