

A critical link between diabetes and cardiovascular health: Risk factors and management

Burren Soragni*

Received: 22-Oct-2024, Manuscript No. FMDM-24-157427; **Editor assigned:** 25-Oct-2024, PreQC No. FMDM-24-157427 (PQ); **Reviewed:** 11-Nov-2024, QC No. FMDM-24-157427; **Revised:** 18-Nov-2024, Manuscript No. FMDM-24-157427 (R); **Published:** 25-Nov-2024, DOI: 10.37532/1758-1907.2024.14(6).675-676.

Description

Diabetes and Cardio Vascular Diseases (CVD) share a strong and detrimental connection, significantly influencing each other. People with diabetes, particularly those with Type 2 diabetes, are at a much higher risk of developing cardiovascular problems, including heart disease, stroke, and peripheral artery disease.

■ The exchange between diabetes and cardiovascular disease

Diabetes is a chronic condition characterized by elevated blood glucose levels, either due to insufficient insulin production (Type 1) or insulin resistance (Type 2). When left uncontrolled, high blood sugar levels can damage the blood vessels, nerves, and organs, including the heart. People with diabetes are more likely to develop conditions like atherosclerosis (plaque buildup in the arteries), high blood pressure (hypertension), and dyslipidemia (abnormal cholesterol levels), all of which are risk factors for cardiovascular disease.

Here are several ways in which diabetes contributes to cardiovascular health issues:

Insulin resistance and inflammation: In Type 2 diabetes, the body becomes resistant to insulin, leading to higher blood sugar levels. Insulin resistance also plays a role in the development of inflammation, which is a key factor in the development of atherosclerosis. Chronic inflammation weakens the arteries, making them more likely to become narrowed and blocked by plaques, increasing the risk of heart attacks and

strokes.

Endothelial dysfunction: High blood sugar can damage the endothelium, the thin layer of cells lining the blood vessels. This damage impairs the vessels' ability to dilate, leading to reduced blood flow and increased blood pressure. Over time, endothelial dysfunction contributes to the development of atherosclerosis and other cardiovascular problems.

Increased risk of hypertension: Diabetes and hypertension often occur together, and high blood pressure exacerbates the risks associated with diabetes. The combination of elevated blood sugar and high blood pressure accelerates the process of atherosclerosis and puts added strain on the heart.

Abnormal lipid levels: Diabetes is commonly associated with abnormal lipid levels, including high triglycerides and low good cholesterol levels. These lipid abnormalities contribute to the formation of plaques in the arteries, further increasing the risk of heart disease. The accumulation of Low-Density Lipoprotein (LDL) or "bad" cholesterol in the walls of the arteries is a central factor in atherosclerosis.

Autonomic neuropathy: Diabetes can lead to nerve damage, particularly autonomic neuropathy, which affects the nerves controlling the heart and blood vessels. This can lead to irregular heart rhythms (arrhythmias), reduced heart rate variability, and other cardiovascular complications that increase the risk of heart disease and stroke.



Department of Cardiology, University of Fribourg, Fribourg, Switzerland

*Author for correspondence: E-mail: Burrensoragni44@gmail.com

■ Risk factors

In addition to diabetes itself, several other factors often associated with diabetes contribute to the increased risk of cardiovascular disease. These include:

Obesity: Obesity, especially central obesity (fat around the abdomen), is a major risk factor for both Type 2 diabetes and cardiovascular disease. Fat accumulation can contribute to insulin resistance and the formation of atherosclerotic plaques.

Age: The risk of cardiovascular disease increases with age, and diabetes exacerbates this risk. Older individuals with diabetes often have additional complications, such as kidney disease, that further elevate the cardiovascular risk.

Family history: A family history of heart disease or diabetes increases an individual's likelihood of developing cardiovascular issues.

Smoking and physical inactivity: Both smoking and lack of exercise are risk factors for heart disease and can worsen the impact of diabetes on cardiovascular health.

■ Managing diabetes to protect heart health

Managing diabetes effectively is crucial to reduce the risk of cardiovascular disease. Several strategies can help prevent or delay cardiovascular complications in individuals with diabetes:

Blood sugar control: Maintaining blood sugar levels within a target range is the most important aspect of diabetes management. Regular monitoring of blood glucose and adjusting insulin or oral medications as needed can help reduce the risk of damage to the blood vessels and heart. Hemoglobin A1c (HbA1c), a marker of long-term blood glucose control, should be regularly monitored, with most guidelines recommending a target of less than 7%.

Blood pressure management: Keeping blood pressure within normal limits is vital for preventing cardiovascular events. The American Diabetes Association (ADA) recommends a target of <140/90 mmHg for most people with diabetes. Lifestyle changes, such as reducing salt intake, losing weight, and exercising regularly, along with medications like ACE inhibitors or angiotensin receptor blockers, can help manage hypertension.

Cholesterol management: People with diabetes should have their lipid profile checked regularly. Statins, a class of cholesterol-lowering drugs, are often prescribed to individuals with diabetes, especially those at high risk for cardiovascular disease. Lifestyle changes, including dietary modifications and physical activity, are also important in managing cholesterol levels.

Weight management and physical activity: Achieving and maintaining a healthy weight through a balanced diet and regular exercise can improve both blood glucose and cardiovascular health. The ADA recommends at least 150 minutes of moderate aerobic activity per week, such as brisk walking, and strength training exercises at least twice per week.

Smoking cessation: Smoking significantly increases the risk of heart disease in people with diabetes. Quitting smoking is one of the most important steps a person can take to reduce their cardiovascular risk.

Medications and new therapies: In addition to traditional diabetes medications, newer treatments such as Sodium-Glucose Co-Transporter-2 (SGLT2) inhibitors and Glucagon-Like Peptide-1 (GLP-1) agonists have been shown to have beneficial effects on both blood sugar control and cardiovascular health. These medications can lower the risk of heart failure and major cardiovascular events in individuals with diabetes.