



Diabetes Mellitus, Dyslipidemia: Cause for Acute Myocardial Infarction

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The data from the International Diabetes Federation reveals that there were 463 million diabetics worldwide in 2019. By the year 2045 the number of diabetic patients is expected to increase by 66 % to 700 million (1). Diabetes currently affects more than 69.2 million Indians, which is more than 7.2% of the adult population. The average age on onset is 42.5 years. Nearly 1 million Indians die due to diabetes every year. According to the Indian Heart Association, India is projected to be home to 98 million individuals with diabetes by 2030. The high incidence is attributed to a combination of genetic susceptibility plus adoption of a high-calorie, low-activity lifestyle by India's growing middle class (2).

The burden of diabetes is growing more severe as a result of the increasing number of deaths from diabetes. Diabetic patients often combined with metabolic disorders like hypertension, and hyperlipidemia, easily lead to coronary heart disease, which is a risk factor leading to death. Diabetes complications, cardio-cerebrovascular diseases are the common factors that cause the death of patients (3,4).

According to statistics, more than 75% of diabetic patients die from cardio-cerebrovascular diseases every year. Acute myocardial infarction (AMI) is by far the most important form of ischemic heart disease (IHD), and it alone is the leading cause of death in the United States (US). About 1.5 million individuals in the US suffer from acute MI annually and approximately one-third of them die (5,6).

The dyslipidemia associated with Type 2 DM is typically more complex than simple elevation of systemic

low-density lipoprotein cholesterol (LDL-C) levels. High levels of TG and low levels of HDL cholesterol are the most prominent lipid abnormalities in chronic diabetic patients with AMI. These two lipid abnormalities constitute an important component of metabolic syndrome known as atherogenic dyslipidemia. The high atherogenicity associated with diabetic dyslipidemia is probably related to the characteristic finding of low plasma concentrations of HDL-C, elevated levels of apolipoprotein B and elevated TG levels, as well as to abnormalities in lipoprotein particle size and subclass distribution. Among the wide range of lipoprotein subclasses that have been described, disproportionate amounts of small, dense LDL particles and small HDL particles are thought to constitute a particularly atherogenic profile due to a high susceptibility to oxidation. (7,8).

Although genetic susceptibility is a key factor contributing to the onset of diabetes (the South Asian population is four times more likely to develop the disease than Europeans), environmental factors including diet have been found to contribute over 50 percent of the risk. As economic growth has spread across India, studies have shown this results in an excess of calories, mainly from refined carbohydrates, in both the rural and urban population. White rice consumption, due to its high-glycemic index which spikes insulin levels, was strongly linked to a risk of type 2 diabetes in the Indian population.

A focus on strategies to decrease TG levels and increase HDL cholesterol levels in diabetic patients along with cessation of smoking and alcohol and use of low fat diet high in polyunsaturated fatty acids and decreased

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consumption of saturated and trans fatty acids greatly reduce future coronary events.

The lipid profile must be assessed in every patient admitted with acute coronary syndrome within the first 24 hours and then periodically until a steady healthy state is achieved. The change within the first 24 hours is minimal, and then phasic changes follow. Hence, the first measurement can serve as a relatively reliable source to inform the selection of the lipid lowering therapy. Since a decreasing trend in TC, LDL, and HDL is seen periodically after MI, lipid-lowering therapy must be initiated even if the results are within the physiological range in the first few days (9).

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