

Chapter 10. Hyperlipidemia: An Overview

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Abstract:

Hyperlipidemia is a medical condition characterized by an increase in one or more of the plasma lipids, including triglycerides, cholesterol, cholesterol esters, phospholipids and or plasma lipoproteins including very low-density lipoprotein and low-density lipoprotein along with reduced high-density lipoprotein levels. This elevation of plasma lipids is among the leading risk factors associated with cardiovascular diseases. Introduction, type of lipoprotein, classification of hyperlipidemia, Complications of hyperlipidaemia, causes; Symptoms of hypelipedemia, Pathogenesis of hyperlipidemia, Pathogenesis of hyperlipidemia, diagnosis, prevention, treatments.

Keywords: Hyperlipidemia, Cholesterol, Lipids, Causes, Risk factors

Introduction

Hyperlipidemia is a general term used to describe an abnormal elevation of lipids in the blood, primarily cholesterol, triglycerides, or both. Lipids are essential biological molecules that play a vital role in energy storage, cellular membrane integrity, and hormone synthesis. However, when their concentrations exceed normal physiological levels, they can lead to the development of serious cardiovascular complications such as coronary artery disease, stroke, and peripheral vascular disease. The growing prevalence of hyperlipidemia has become a global public health concern, largely driven by changing dietary habits, reduced physical activity, and increased obesity rates. According to the World Health Organization (WHO, 2024), cardiovascular diseases account for nearly 32% of all global deaths, and dyslipidemia is considered one of the most modifiable risk factors contributing to this burden.

Hyperlipidemia may occur as a primary disorder, resulting from inherited genetic mutations that affect lipid metabolism, or as a secondary disorder, caused by lifestyle factors and systemic illnesses such as diabetes mellitus, hypothyroidism, kidney disease, and chronic alcohol consumption. Regardless of its origin, persistent elevation of lipids accelerates atherosclerosis—the buildup of fatty deposits within arterial walls—which eventually narrows blood vessels and restricts blood flow to vital organs. The clinical importance of hyperlipidemia lies not only in its association with atherosclerosis but also in its role in metabolic syndromes and inflammatory processes that affect overall vascular health. With advances in biomedical science, understanding the molecular mechanisms of lipid regulation and receptor function has paved the way for the development of novel therapeutic approaches.

This comprehensive study aims to provide an updated and structured overview of hyperlipidemia, covering its types, causes, pathophysiology, diagnostic criteria, treatment strategies, and preventive measures. By enhancing awareness and promoting evidence-based management, the long-term goal is to reduce the burden of cardiovascular diseases linked to lipid abnormalities.