Cardiovascular Investigations

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Novel Therapeutic Strategies for Managing Coronary Artery Disease: A Review of Current Approaches and Emerging Treatments in Cardiovascular Care

Daniel Harris*

Department of Cardiology, University of Toronto, Canada

DESCRIPTION

Coronary Artery Disease (CAD) is a leading cause of morbidity and mortality worldwide, characterized by the narrowing or blockage of coronary arteries due to atherosclerosis. CAD can lead to severe complications, including myocardial infarction and heart failure, making it crucial to develop effective therapeutic strategies for managing this condition. While traditional treatments, such as lifestyle modifications, pharmacotherapy, and revascularization procedures, have significantly improved patient outcomes, there remains a need for novel therapies to address the complexities of CAD and reduce its global burden. Recent advancements in cardiovascular care have introduced new therapeutic strategies aimed at enhancing the management of CAD. These include cutting-edge pharmacological therapies, such as PCSK9 inhibitors, which provide superior lipid control, and anti-inflammatory agents like colchicine, which target inflammation as a driver of atherosclerosis. Moreover, the development of novel stent technologies, bioresorbable scaffolds, and drug-coated balloons offers innovative approaches to coronary revascularization. Emerging treatments, including gene therapy, regenerative medicine, and personalized medicine, hold promise for revolutionizing CAD management by targeting the underlying molecular and genetic factors contributing to the disease. These approaches focus on halting or reversing atherosclerosis progression and promoting myocardial repair. This review provides an in-depth analysis of both current approaches and emerging therapeutic strategies for managing CAD. By exploring the latest developments in pharmacotherapy, revascularization techniques, and novel biologic therapies, this review aims to offer a comprehensive understanding of how these innovations are shaping the future of cardiovascular care and improving outcomes for patients with coronary artery disease. Coronary Artery Disease (CAD) is a chronic condition caused by the build-up of atherosclerotic plaques in the coronary arteries, leading to reduced blood flow to the heart. Managing CAD effectively requires a combination of traditional and novel therapeutic approaches to prevent complications such as myocardial infarction and heart failure. While conventional treatments, including lifestyle changes, medications like statins and antiplatelet, and revascularization techniques, have improved outcomes, on-going research has led to the development of innovative therapies to further reduce the burden of CAD. Recent pharmacological advancements include PCSK9 inhibitors, which offer superior cholesterol-lowering effects, and anti-inflammatory agents like colchicine, which target inflammation-a key driver of atherosclerosis. Additionally, newer revascularization technologies, such as bioresorbable scaffolds and drug-coated balloons, aim to improve long-term outcomes and reduce the risk of restenosis following interventions. Emerging therapies, such as gene therapy and regenerative medicine, are paving the way for personalized approaches to CAD management. These therapies target the underlying genetic and molecular factors that contribute to disease progression, offering potential for more effective and tailored treatments. The management of Coronary Artery Disease (CAD) is rapidly evolving with advancements in pharmacotherapy, revascularization techniques, and emerging treatments such as gene therapy and regenerative medicine. While traditional approaches like lifestyle modifications and medications remain foundational, novel strategies, including PCSK9 inhibitors and anti-inflammatory agents, offer enhanced outcomes.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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Corresponding author Daniel Harris, Department of Cardiology, University of Toronto, Canada, E-mail: daniel.harris@heartca-reinstitute.org

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