Journal of Clinical Epigenetics
ISSN: 2472-1158

Open access Commentary

Addiction and Immune-enhancing Genomic Regions may be Affected by the Cardiovascular Epigenetics

James Agee*

Department of Clinical Epigenetics, University of Utah, USA

DESCRIPTION

Human Immunodeficiency Virus (HIV) is now considered a risk factor for Cardiovascular Disease (CVD). The advent of antiretroviral therapy and prophylaxis has significantly reduced HIV-related morbidity and mortality. Increased life expectancy leads to higher prevalence of geriatric diseases, including CVD-related morbidity and mortality, which occur earlier in people living with HIV compared to their uninfected peers. Several epigenetic biomarkers are now available as predictors of health and disease, and DNA methylation is one of the best studied. Epigenetic biomarkers are changes in gene expression unaccompanied by endogenous DNA sequence changes that may predict future cardiovascular disease risk and outcome and response to treatment in people living with HIV. We reviewed the available literature related to epigenetic markers to identify the underlying biological mechanisms that predispose people at high risk for cardiovascular disease and sought to elucidate potential areas for intervention.

Cardiovascular Disease (CVD) is usually caused by multifactorial events involving mutations in multiple genes. Epigenetic changes in cells are normal, but can change with age, lifestyle, and exposure to toxic substances. Key epigenetic modifications are DNA methylation, histone modifications, chromatin remodelling, and noncoding RNA. These key players are involved in the epigenetically induced alterations observed during CVD. Despite enormous efforts in epigenetic research over the last 50 years, clinical applications are still unsatisfactory.

Cardiovascular diseases such as ischemic heart disease and stroke are among the leading causes of death worldwide, and these diseases are multifactorial and complex interactions of genetic, environmental, and lifestyle factors. There is evidence that it is regulated by Genetic predisposition and chronic exposure to modifiable risk factors have been studied to play a role in CVD pathophysiology. Environmental factors contribute to the propensity of individuals to develop major cardiovascular risk factors through epigenetic modifications of DNA and histones through miRNA regulation of protein translation, one of the epigenetic mechanisms involved in disease development. Periodontitis (PD) is one of the most common human oral diseases characterized by mild inflammation and has been shown to increase the risk of CVD. Risk factors involved in PD and CVD are genetically and behaviorally determined. Epigenetic modifications involved in atherosclerosis initiation and progression play critical roles in plaque development and susceptibility. Epigenetics has opened a new world for understanding and managing human diseases such as cardiovascular disease and periodontal disease. Genetic medicine ushered in a new era of epigenetics to overcome human diseases using a variety of new methods. Epigenetic profiling can help to better diagnose and stratify patients with conditions that may predispose them to disease. A growing understanding of the precise regulatory mechanisms of the epigenetic pathways that drive inflammation will aid in the development of new tools to treat disease.

CONCLUSION

Blood vessels of the Central Nervous System (CNS) have unique barrier properties. Endothelial Cells (ECs), which make up CNS blood vessels, contribute to the barrier through strong tight junctions, specific transporters, and restricted endocytosis, which together protect the brain from toxins and maintain homeostasis. Blood-Brain Barrier (BBB) leakage is a serious secondary complication in various CNS disorders such as stroke, brain tumours, and neurodegenerative diseases. There are currently no drugs or treatments to treat her BBB damage after brain injury. Increasing knowledge in the field of epigenetics can improve our genetic-level understanding of the BBB and holds great potential for the development of new therapeutic strategies or targets to repair defective BBBs. In this brief overview, we summarize the epigenetic mechanisms or regulators that play a role in protecting or disrupting BBB components, along with promising approaches to restore BBB integrity.

Received:	29-June-2022	**Manuscript No:**	IPJCE-22-14167
Editor assigned:	01-July-2022	**PreQC No:**	IPJCE-22-14167 (PQ)
Reviewed:	15-July-2022	**QC No:**	IPJCE-22-14167
Revised:	20-July-2022	**Manuscript No:**	IPJCE-22-14167 (R)
Published:	27-July-2022	**DOI:**	10.21767/2472-1158-22.8.33

Corresponding author James Agee, Department of Clinical Epigenetics, University of Utah, USA, E-mail: jagee627@gmail.com

Citation Agee J (2022) Addiction and Immune-enhancing Genomic Regions may be Affected by the Cardiovascular Epigenetics. J Clin Epigen. 8:33.