

# Review On Cardiovascular Disease

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**Abstract-** Cardiovascular disease (CVD) is the leading cause of morbidity and mortality globally. The molecular etiology of CVD remains incompletely understood. Advances in omics technologies, together with improved annotations, allow for the in-depth analysis of multiomics measures on CVD to identify novel biomarkers and pathways. Here we introduce innovative technologies of proteomics and metabolomics and outline current insights of proteomics and metabolomics on CVD, as well as their interplay with genomics.

## I. INTRODUCTION

As the largest single cause of death on the planet,<sup>3</sup> cardiovascular disease (CVD) in all its forms is an important and life or death matter. CVD is not a single disease, but a cluster of diseases and injuries that affect the cardiovascular system (the heart and blood vessels). These are most commonly diseases of the heart and of the blood vessels of the heart and brain. In general they affect people in later life (with incidence rising sharply after the 30-44 age range), although, according to a leading cardiologist, by around 35 years old, most who will get a form of CVD already have the beginnings of the disease.<sup>4</sup>

## II. TYPOLOGY OF DISEASE

As mentioned, CVD is actually a collection of diseases affecting the cardiovascular system. These include: coronary heart disease; angina; stroke; rheumatic heart disease; congenital heart disease.

### 1. Coronary heart disease

Coronary heart disease (CHD), also called coronary artery disease (CAD) and atherosclerotic heart disease, is the end result of the accumulation of atheromatous plaques<sup>5</sup> within the walls of the arteries that supply the myocardium (the muscle of the heart). While the symptoms and signs of coronary heart disease are noted in the advanced state of disease, most individuals with coronary heart disease show no evidence of disease for decades as the disease progresses before the first onset of symptoms, often a "sudden" heart attack, finally arise.

### 2. Angina

The pain associated with very advanced CHD is known as angina, and usually presents as a sensation of pressure in the chest, arm pain, jaw pain, and other forms of discomfort. The word discomfort is preferred over the word pain for describing the sensation of angina, because it varies considerably among individuals in character and intensity and most people do not perceive angina as painful, unless it is severe. Angina is essentially a cramp in the heart muscle.<sup>7</sup>

### 3. Stroke

A stroke is an acute neurological injury whereby the blood supply to a part of the brain is interrupted, either by arterial blockage or rupture (haemorrhage). The part of the brain perfused by a blocked or burst artery can no longer receive oxygen carried by the blood; brain cells are therefore damaged or die (become necrotic), impairing the function of that part of the brain. Stroke can cause permanent neurological damage or death if not promptly diagnosed and treated.<sup>6</sup>

### 4. Rheumatic heart disease

Rheumatic heart disease is a condition in which the heart valves are damaged by rheumatic fever caused by streptococcal infection. Rheumatic fever is an inflammatory disease that can affect many of the body's connective tissues — especially those of the heart, joints, brain or skin.<sup>6</sup> Anyone can get acute rheumatic fever, but it usually occurs in children five to 15 years old. The rheumatic heart disease that results can last for life.

### 5. Congenital heart disease

Congenital heart disease is a broad term that can describe a number of different abnormalities affecting the heart, all of which are abnormalities of the heart's structure and function caused by abnormal or disordered heart development before birth.

### 6. Other cardiovascular diseases

These could include tumours of the heart, vascular tumours of the brain, disorders of the heart muscle (cardiomyopathy), heart valve diseases and disorders of the lining of the heart.

### III. OTHER RISK FACTORS

Several other risk factors are important in the onset of CVD. For example, physical inactivity is seen as a large risk factor. Physical activity can reduce cholesterol levels, decrease obesity and cause the heart and muscles to work harder in pumping blood around the body. Alcohol intake is also a risk factor, and one that is complex since low levels of alcohol can reduce the risk of heart disease (through antioxidant polyphenols inhibiting the oxidation of LDL cholesterol) but high levels of alcohol intake actually increase the risk of CHD and stroke (by increasing blood pressure).<sup>2</sup>

### IV. CONCLUSION

The objective of CVD prevention is to reduce the occurrence of major cardiovascular events thereby reducing premature disability and morbidity whilst prolonging survival and quality of life.<sup>7</sup>

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