

Coronary Artery Disease

CAD: a global problem

Coronary artery disease (CAD), also known as ischemic heart disease, is the most common manifestation of cardiovascular disease. Although the prognosis of patients with CAD has been greatly improved by advances in cardiovascular treatment, it is still the first cause of death and the World Health Organization (WHO) predicts it will remain as such for the next 20 years.¹ Just in the United States of America, every 26 seconds someone suffers from a coronary event and every minute someone dies from it.²

What is CAD?

CAD occurs to some degree as a natural result of aging, but the innermost layer of the artery incurs damage linked to certain risk factors, such as smoking, high blood pressure, diabetes, high blood levels of cholesterol, obesity, and other factors including sex, ethnic background, and family history of CAD. The coronary arteries harden and shrink and this leads to a diminished blood flow and reduces oxygen supply to the heart muscle (ischemia). This lack of oxygen supply to the heart muscle may cause angina (heart pain). If the coronary artery becomes completely blocked, a whole section of the heart muscle is deprived of oxygen and dies, resulting in a myocardial infarction (MI) or heart attack. The key problem however, is that CAD is a progressive and silent disease which still very often goes unobserved until the first symptoms of ischemia or MI occur. The presence of left ventricular dysfunction in patients with CAD contributes to a drastic and negative effect on survival.³

Heart rate and CAD

The risk of heart attack and death from this attack is very high in patients with CAD who have an elevated heart rate. Heart rate is a major determinant of oxygen consumption and can precipitate most episodes of ischemia, both symptomatic and silent. Consequently, lowering the heart rate in patients with CAD reduces the heart's need for oxygen and may have significant and beneficial effects on reducing cardiovascular events.



Treatment and prevention of CAD

The current management of CAD has two main objectives. To relieve symptoms (angina) and to reduce the risk of heart attack and heart failure and to prolong life. Lifestyle modification is very important to prevent CAD. Beta-blockers and Ca^{2+} channel antagonists are amongst the current treatment options to lower heart rate and so alleviate symptoms. Aspirin, statins, ACE antagonists, and beta-blockers are given to prevent coronary events.⁴⁻⁶

Despite lifestyle modifications, current treatment options, and surgical techniques, cardiovascular disease remains a problem and there is clearly a need for new and effective preventive treatments.

References

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