

Cardiovascular Risk and Primary-Prevention of Atherosclerosis



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Abstract

Various studies showed the possibility of the Risk Factors to promote a disease in the arterial wall and the following development and progression of the Atherosclerosis with its impact on future vascular events. The early stage of atherogenesis is the atherosclerotic plaque, and the primary-prevention had already proved itself efficacious in this early stage, because its erosion and rupture can lead to thrombus formation on the site of the plaque and vessel occlusion, culminating in Cardiovascular disease (CVD) with a variety of clinical manifestations. The most significant clinical manifestation, in terms of morbidity and mortality, is CHD.

The aim of the primary-prevention, dietary and lifestyle changes is the regression or slow-down and stability of atherosclerotic plaques, with the control of cardiovascular risk factors.

Cardiovascular Risk

Various studies showed the possibility of the Risk Factors to promote a disease in the arterial wall (inflammation promoted by T-cell mediated immune responses against antigens such as oxidized low density lipoprotein- ox LDL -) and the following development and progression of the Atherosclerosis with its impact on future vascular events.

The early stage of atherogenesis is the atherosclerotic plaque, and the primary-prevention had already proved itself efficacious in this early stage.

In the advanced stages of atherogenesis, that has been revealed as a complex process, the further lipid accumulation in the plaque and its progression and gradual increase in size, cause a reduction in lumen size of the artery (the stenosis with a following reduction in blood flow), preceded and accompanied by inflammation: the endothelium responds to damage by inducing a protective response, eventually leading to the formation of the atherosclerotic plaque, and the clinical outcome often depends on the stability of the plaque. The less stable the plaque, the more susceptible it is to erosion or rupture. Both erosion and rupture can lead to thrombus formation on the site of the plaque and vessel occlusion, culminating in Cardiovascular disease (CVD) with a variety of clinical manifestations, including:

- i. Coronary heart disease (CHD): angina pectoris, myocardial infarction, sudden cardiac death.

- ii. Cerebrovascular disease: transient ischaemia attacks (TIA), stroke.

- iii. Peripheral vascular disease (PVD): intermittent claudication, gangrene.

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The aim of the primary-prevention, dietary and lifestyle changes, is the regression or slow-down and stability of atherosclerotic plaques, with the control of cardiovascular risk factors.

Risk Factors for Cardiovascular Disease

Non-modifiable Risk Factors

- a) Age
- b) Gender
- c) Personal history of CVD
- d) Family history of CVD Ethnic race

Modifiable risk factors

- a. Smoking
- b. Dyslipidaemia
- c. Hypertension

- d. Diabetes Mellitus
- e. Overweight/Obesity
- f. Dietary factors
- g. Physical inactivity
- h. Excess alcohol consumption
- i. Thrombogenesis factors
- j. Stress

Some of the risk factors that predispose an individual to the development or progression of CVD are outlined above. Evidence has shown that lifestyles associated with a “western” culture such as a diet rich in saturated fats and high in calories, smoking and physical inactivity, are some of the modifiable risk factors leading to an increase in the prevalence of CVD. Of these, three are considered to be of prime importance:

Smoking

Smoking is responsible for 50% of all avoidable deaths, of which half are due to CVD.

Raised blood pressure

Raised blood pressure has been found to be an important risk factor for the development of CVD, heart failure and cerebrovascular disease. The greater the increase in blood pressure, the higher the risk. Greatest benefit of blood pressure lowering is seen in patients at higher risk, and even its modest reductions produce substantial benefits in those with multiple risk factors.

Dyslipidaemia

Dyslipidaemia in particular, raised low-density lipoprotein (LDL) cholesterol and triglyceride levels, and low high-density lipoprotein (HDL) cholesterol are associated with increased risk of CVD.

Multiple risk factors for CVD are usually present in an individual; rarely do they occur in isolation. When risk factors co-exist the effect is often exponential; their combined effect is greater than the sum of their individual effects.

Multiple risk factors are also associated with the metabolic syndrome which is characterised by dyslipidaemia, hypertension, insulin resistance, visceral distribution of body fat, and a prothrombotic state.

Primary-Prevention

Lifestyles and a diet poor in saturated fats and low in calories (Mediterranean Diet) are very important to control the modifiable risk factors.

Lifestyles

- i. Smoking cessation
- ii. Weight reduction (and with stabilization)
- iii. Reduction of excessive alcohol intake
- iv. Physical exercise
- v. Reduction of the stress factors

Diet

For a correct one and it heals feeding, is important reduction of salt intake, to prefer foods of vegetable origin (with decrease in saturated and total fats intake) regarding those of animal origin.

The foods of vegetable origin: (fresh fruit and vegetables, olive oil, pulses, etc) are poor of cholesterol and much poor of saturated fats (that they stretch to elevate the levels of cholesterol in the blood).

The foods of animal origin: (meat, milk, cheeses, eggs, butter, etc), excluded the fish and the crustaceans, are instead rich of saturated fats.

Conclusion

Rich in vegetables, fruits, cereal grains, legumes, fish, and olive oil, (two trials have shown that virgin olive oil protects against insulin resistance and the metabolic syndrome) and low in meat intake, the Mediterranean Diet has been found to be protective against coronary death. It also has been associated with a reduction in diabetes incidence among patients who have survived myocardial infarctions.

References

1. World Health Organization (2003) The World Health Report 2002. Midwifery 19(1): 72-73.
2. American Heart Association (2005) International Cardiovascular Disease Statistics, USA.
3. The World Health Organization (2005) Atlas of Heart Disease and Stroke, Switzerland.
4. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (2001) Executive Summary of The Third Report of The National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA 285(19): 2486-2497.
5. Fedder DO, Koro CE, L'Italien GJ (2002) New National Cholesterol Education Program III guidelines for primary prevention lipid-lowering drug therapy: projected impact on the size, sex, and age distribution of the treatment-eligible population. Circulation 105(2): 152-156.
6. Ross R (1999) Atherosclerosis-an inflammatory disease. N Engl J Med 340(2): 115-126.



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