Cardiovascular Diseases and Their Treatment

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Annotation. The article deals with important information about diseases of cardiovascular system and their treatment. Moreover, main cause and types of diseases connected with heart system were noted.

Key words: coronary artery diseases, high blood, poor diet, blood lipids, alcohol consumption, obesity, genetic predisposition, drug treatment.

Cardiovascular disease (CVD) is any disease involving the heart or blood vessels. CVDs constitute a class of diseases that includes: coronary artery diseases (e.g. angina, heart attack), stroke, heart failure, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, abnormal heart rhythms, congenital heart disease, valvular heart disease, carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, and venous thrombosis. The underlying mechanisms vary depending on the disease. It is estimated that dietary risk factors are associated with 53% of CVD deaths. Coronary artery disease, stroke, and peripheral artery disease involve atherosclerosis. This may be caused by high blood pressure, smoking, diabetes mellitus, lack of exercise, obesity, high blood cholesterol, poor diet, excessive alcohol consumption, and poor sleep, among other things. High blood pressure is estimated to account for approximately 13% of CVD deaths, while tobacco accounts for 9%, diabetes 6%, lack of exercise 6%, and obesity 5%. Rheumatic heart disease may follow untreated strep throat. It is estimated that up to 90% of CVD may be preventable. Prevention of CVD involves improving risk factors through: healthy eating, exercise, avoidance of tobacco smoke and limiting alcohol intake. Treating risk factors, such as high blood pressure, blood lipids and diabetes is also beneficial. Treating people who have strep throat with antibiotics can decrease the risk of rheumatic heart disease. The use of aspirin in people who are otherwise healthy is of unclear benefit.

Cardiovascular diseases are the leading cause of death worldwide except Africa. Together CVD resulted in 17.9 million deaths (32.1%) in 2015, up from 12.3 million (25.8%) in 1990.[1] Deaths, at a given age, from CVD are more common and have been increasing in much of the developing world, while rates have declined in most of the developed world since the 1970s. Coronary artery disease and stroke account for 80% of CVD deaths in males and 75% of CVD deaths in females. Most cardiovascular disease affects older adults. In the United States 11% of people between 20 and 40 have CVD, while 37% between 40 and 60, 71% of people between 60 and 80, and 85% of people over 80 have CVD. The average age of death from coronary artery disease in the developed world is around 80, while it is around 68 in the developing world. CVD is typically diagnosed seven to ten years earlier in men than in women.

There are many cardiovascular diseases involving the blood vessels. They are known as vascular diseases. There are many risk factors for heart diseases: age, sex, tobacco use, physical inactivity, non-alcoholic fatty liver disease, excessive alcohol consumption, unhealthy diet, obesity, genetic predisposition and

family history of cardiovascular disease, raised blood pressure (hypertension), raised blood sugar (diabetes mellitus), raised blood cholesterol (hyperlipidemia), undiagnosed celiac disease, psychosocial factors, poverty and low educational status, air pollution, and poor sleep.[2] While the individual contribution of each risk factor varies between different communities or ethnic groups the overall contribution of these risk factors is very consistent. Some of these risk factors, such as age, sex or family history/genetic predisposition, are immutable; however, many important cardiovascular risk factors are modifiable by lifestyle change, social change, drug treatment (for example prevention of hypertension, hyperlipidemia, and diabetes). People with obesity are at increased risk of atherosclerosis of the coronary arteries. Cardiovascular disease in a person's parents increases their risk by ~3 fold, and genetics is an important risk factor for cardiovascular diseases. Genetic cardiovascular disease can occur either as a consequence of single variant (Mendelian) or polygenic influences. There are more than 40 inherited cardiovascular disease that can be traced to a single disease-causing DNA variant, although these conditions are rare. Most common cardiovascular diseases are non-Mendelian and are thought to be due to hundreds or thousands of genetic variants (known as single nucleotide polymorphisms), each associated with a small effect.

Age is the most important risk factor in developing cardiovascular or heart diseases, with approximately a tripling of risk with each decade of life.[3] Coronary fatty streaks can begin to form in adolescence. It is estimated that 82 percent of people who die of coronary heart disease are 65 and older. Simultaneously, the risk of stroke doubles every decade after age 55. Multiple explanations are proposed to explain why age increases the risk of cardiovascular/heart diseases. One of them relates to serum cholesterol level. In most populations, the serum total cholesterol level increases as age increases. In men, this increase levels off around age 45 to 50 years. In women, the increase continues sharply until age 60 to 65 years. Aging is also associated with changes in the mechanical and structural properties of the vascular wall, which leads to the loss of arterial elasticity and reduced arterial compliance and may subsequently lead to coronary artery disease.

Blood pressure medication reduces cardiovascular disease in people at risk, irrespective of age, the baseline level of cardiovascular risk, or baseline blood pressure. The commonly-used drug regimens have similar efficacy in reducing the risk of all major cardiovascular events, although there may be differences between drugs in their ability to prevent specific outcomes. Larger reductions in blood pressure produce larger reductions in risk, and most people with high blood pressure require more than one drug to achieve adequate reduction in blood pressure. Adherence to medications is often poor, and while mobile phone text messaging has been tried to improve adherence, there is insufficient evidence that it alters secondary prevention of cardiovascular disease. Statins are effective in preventing further cardiovascular disease in people with a history of cardiovascular disease. As the event rate is higher in men than in women, the decrease in events is more easily seen in men than women. In those at risk, but without a history of cardiovascular disease (primary prevention), statins decrease the risk of death and combined fatal and non-fatal cardiovascular disease. The benefit, however, is small. A United States guideline recommends statins in those who have a 12% or greater risk of cardiovascular disease over the next ten years. Niacin, fibrates and CETP Inhibitors, while they may increase HDL cholesterol do not affect the risk of cardiovascular disease in those who are already on statins.[4] Fibrates lower the risk of cardiovascular and coronary events, but there is no evidence to suggest that they reduce all-cause mortality. Anti-diabetic medication may reduce cardiovascular risk in people with Type 2 diabetes, although evidence is not conclusive. A meta-analysis in 2009 including 27,049 participants and 2,370 major vascular events showed a 15% relative risk reduction in cardiovascular disease with more-intensive glucose lowering over an average follow-up period of 4.4 years, but an increased risk of major hypoglycemia.

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