

Good term paper on disorders of the cardiovascular system

[Experience](#), [Failure](#)



Introduction

The human cardiovascular system includes the heart and the blood vessels. The heart is a hollow, four chambered organ. Internally, it is divided into the upper and the lower chamber called the atrium and the ventricle respectively. The blood vessels include arteries, arterioles, capillaries and veins. The arteries carry the blood away from the heart. Arterioles regulate the blood flow to a particular region of the body. Capillaries allow the diffusion of oxygen and nutrients from the blood to the tissues. Veins function in supplying blood from the periphery back to the heart. When blood exerts a hydrostatic pressure against the walls of the blood vessel, it forces the blood around the body causing blood pressure that can be measured by the sphygmomanometer. Blood pressure includes the systolic and the diastolic pressure.

Investigating cardiac function in health and disease

Electrocardiogram (ECG) is the record of the electric potentials that is measured by placing the electrodes on the chest and the limbs. A patient's ECG provides information on the heart rhythm and the cardiac morphology and thus can be used to diagnose the heart problems. This test is quick, painless, and simple. Echocardiography is another technique that uses high frequency waves to understand the various functions of the heart. It is used to indicate the extent of damage in the heart and can reveal abnormality in the blood vessels and also the contractibility of the muscle walls. Cardiac catheterization (angiography) is an invasive technique that uses catheter and

thus can reveal coronary artery disease. The exercise stress test is another test that can detect lung and heart disease in the early stage.

Abnormal heart rhythms

In humans, the normal heart rate is between 60 and 100 beats per minute. An abnormally fast heartbeat is known as tachycardia while, bradycardia is low rate than the normal. Arrhythmias may occur due to improper flow of electrical discharge. The main cause of arrhythmias is the heart disease. If necessary, antiarrhythmic drugs may be used. Due to atrial fibrillation and flutter, atria contract rapidly but the blood is not pumped into the ventricles properly. Ventricular tachycardia damages the ventricles and is characterized by the palpitations. Ventricular fibrillation is fatal and is caused due to rapid but ineffective contractions through the ventricles. Heart block is caused due to a delay in electrical conduction through the AV node and has different degrees of seriousness. Cardiac or heart failure is the result of the inability of the heart to maintain an adequate cardiac output. The most common cause of the heart disease is the coronary artery disease. Other causes are infections, diabetes and obesity. Heart failure may be chronic or acute. Symptoms include swelling of the feet, ankles, legs and liver. It can be diagnosed by chest X-ray, ECG, echocardiography and blood tests. Treatment involves determining the exact cause of the failure and then treating it.

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Cardiomyopathies

Cardiomyopathy impairs the function of the ventricular muscle walls. They are of different types. In dilated congestive cardiomyopathy, the ventricles enlarge. The symptoms include shortness of breath and a rapid onset of tiredness. In hypertrophic cardiomyopathy, the ventricular walls thicken. Symptoms include faintness and chest pain. The least common of all is the restrictive cardiomyopathy. Symptoms include the shortness of breath and an edematous swelling of the tissues.

Heart valve disorders

Heart's capacity to pump blood is affected due to improper closing of the valve that leads to leakage (regurgitation) or failure to open fully (stenosis). If required, repair or replacement of the valve can be an option.

Atherosclerosis and arteriosclerosis

It is the simultaneous development of an atheroma in the artery and the sclerosis of its wall. The arteries become occluded thus increasing the risk of stroke. Angina pectoris is the result of myocardial ischemia and are of different types like stable angina and variant angina. Symptoms include

shortness of breath, nausea, abdominal pain and dizziness. Another cause of atherosclerosis is the abnormal cholesterol concentration and an imbalance between the different types of lipoprotein particles.

Myocardial infarction

When the blood supply stops, it results in the death of the tissue. This is known as infarction. It occurs mostly in the kidney or brain. The symptom is severe intermittent chest pain. It is diagnosed by the characteristic changes in the plasma enzyme activities. Treatment includes administration of aspirin or a β -blocker or conducting coronary bypass surgery.

Disorders of arteries and veins

Peripheral arterial disease affects the abdominal aorta. The obstruction thus formed can be removed by emergency surgery. Aneurysm is used to describe the bulge that develops in the weak areas of an arterial wall due to high blood pressure and smoking. Aortic aneurysm can be fatal and its rupture may lead to severe internal bleeding. It can be treated by inserting a synthetic graft.

Clinical problems associated with blood pressure

Blood pressure varies with the age, sex, physical activity and emotional state of an individual. Hypotension is caused due to the pressures below 100/60mm Hg. This leads to dizziness and fainting known as syncope. High blood pressure or hypertension is the systolic pressure at rest of 140mm Hg and a diastolic pressure of 90mm Hg or greater. The causes may

be kidney disease or a hormonal disorder. If untreated, it may lead to cardiac failure or myocardial infarction.