**CARDIOMYOPATHY**

Definition: cardiomyopathy constitutes a group of disease that directly affect the structural or functional ability of the myocardium.

Causes:

* Primary cardiomyopathy: it refers to those conditions in which the etiology of the heart disease is unknown (idiopathic).
* Secondary cardiomyopathy: the cause of the disease is known and is secondary to another disease process. Secondary causes include:
* Cardiotoxic agents: like alcohol, cocaine
* Genetic causes
* Ischemic heart disease
* Hypertension
* Metabolic disorders
* Myocarditis
* Pregnancy
* Aortic stenosis
* Valve disease
* Post radiation therapy
* Neoplastic tumor

Types of cardiomyopathy:

1. Dilated cardiomyopathy: It is a condition in which the heart muscle becomes weakened and enlarged. As a result, the heart cannot pump enough blood to the rest of the body. (here enlargement of left ventricles cannot effectively pump blood of the heart.)
2. Hypertrophic cardiomyopathy: It is the enlargement of the cardiac muscle wall, more commonly in septum. Enlarged septum causes obstructs the outflow of blood through the aortic valve it is known as obstructive hypertrophic cardiomyopathy. (it involves the abnormal thickening of the heart muscle which makes it harder for the heart to work.)
3. Restrictive cardiomyopathy: It impairs ventricular stretch and limits ventricular filling. (heart muscles becomes stiff and less flexible, so it can’t expand and fill with blood between heartbeats.)

Signs and symptoms:

* Dyspnea on exertion
* Swelling of the legs, ankles and feet
* Orthopnea
* Bloating of the abdomen due to fluid buildup
* Cough
* Fatigue
* Rapid heartbeat
* Chest discomfort
* Dizziness, lightheadness and fainting

Diagnostic evaluation:

* History collection and physical examination
* Routine laboratory testing
* Electrocardiogram
* Chest X-ray
* Echocardiography
* Exercise testing or treadmill test

Complications:

1. Heart failure
2. Blood clots
3. Cardiac arrest and sudden death

**Management:**

**Medical management:**

* Low sodium diet
* Antiarrhythmic medications
* Fluid restrictions (2liter per day)

**Surgical management:**

* Implantable cardioverter defibrillator
* Pacemaker therapy
* Heart transplantation
* Ventricular assist devices
* Total artificial hearts

**Nursing management**

**Nursing Diagnosis:**[Decreased Cardiac Output](https://nursestudy.net/decreased-cardiac-output-nursing-care-plans/) related to damaged heart muscle as evidenced by irregular heartbeat, heart rate of 128, dyspnea upon exertion, and fatigue.

**Health education**

**Heart block**

Definition: A condition in which the faulty transmission of the impulses that controls the heartbeat results in a lack of coordination in the contraction of the atria and ventricles of the heart.

Or

Heart blocks refers to a delay in the normal flow of electrical impulses that cause the heartbeat.

Classification of heartbeat:

1. First degree block: The signal is just slowed down a little as it travels along the defective part of the conduction system so that it arrives late travelling from the atrium to the ventricle.
2. Second degree block: It is a disorder characterized by disturbance, delay, or interruption of atrial impulse conduction to the ventricles through the atrioventricular node and bundle of His.
3. Third degree heart block: Is the most serious. It is a medical condition in which the impulse generated in the sinoatrial node in the atrium of the heart can not propagate to the ventricles.

Causes:

* Cardiac diseases including, myocarditis, myocardial infarction, hyperkalemia, hypokalemia, acute rheumatic fever, endocarditis.
* Medications: beta blockers, calcium channel blocker, digitalis toxicity.

Signs and symptoms:

* Syncope
* Dizziness
* Fatigue
* Shortness of breath
* Chest pain

Diagnostic evaluation:

* History and physical examination
* ECG
* Holter monitoring
* Laboratory testing

Complication:

* Arrhythmia
* Cardiac arrest
* Sudden cardiac death

Management:

Treatment depends on the type of block first-degree heart block requires no treatment.

* Temporary transcutaneous or transvenous pacing is the treatment of choice for an emergency involving a slow heart rate (and for systole) caused by AV blocks.
* Intravenous fluids
* Cardiac monitoring
* Bp monitoring
* Medications for heart block: atropine, dopamine
* Pacemaker therapy for third degree block
* Digoxin

Stopping medications that cause heart block:

* Beta-blockers
* Digoxin

**Cor pulmonale**

Definition:It is the failure of the right side of the heart caused by prolonged high blood pressure in the pulmonary artery and right ventricle of the heart. It is also known as right side heart failure.

Etiology:

* It develops in response to acute or chronic changes in the pulmonary hypertension
* Chronic bronchitis
* COPD
* Cystic fibrosis
* Obesity
* Neuromuscular disease
* Drug induced lung disease
* Bronchiectasis
* Pneumoconiosis

Clinical manifestations:

* Dyspnea
* Orthopnea
* Nocturnal dyspnea
* Abdominal pain, ascites
* Lower extremity edema
* Shortness of breath
* Wheezing
* Elevated jugular vein distension
* Cyanosis
* Chest discomfort
* Enlargement of liver

Diagnostic evaluation:

* History collection and physical examination
* ECG
* Chest X-ray
* Echocardiogram
* Cardiac catheterization
* MRI

Treatment :

* Adequate oxygenation
* Diuretic agents
* Vasodilators
* Cardiac glycosides
* Theophylline
* Warfarin

Surgical management:

Lung transplantation

**PULMONARY EDEMA**

Definition: It is a condition characterized by fluid accumulation in lungs caused by extravasation of fluid from pulmonary vasculature into the interstitial and alveoli of the lungs.

Etiology:

Cardiogenic pulmonary edema: Pulmonary edema occurs due to cardiogenic abnormality.

Non cardiogenic pulmonary edema: Direct injury to the lung

Hematogenic injury to the lung: sepsis, cardiopulmonary bypass

Signs and symptoms:

* Shortness of breath
* Anxiety
* Cough with frothy sputum that may tinged with blood
* Excessive sweating
* Pale skin
* Chest pain
* Palpitation
* Orthopnoea
* Rapid weight gain
* Fatigue
* Ankle and leg swelling
* Confusion
* Tachycardia, tachypnoea
* Hypertension

Diagnostic measures:

* History collection and physical examination
* Chest X-ray
* ABG analysis (Arterial blood gas analysis)

Medical management:

NIV (non-invasive ventilator): CPAP

**Cardiac arrest**

Definition: Sudden cessation of heartbeat and cardiac function, resulting in the loss of effective circulation.

Causes:

* Congenital heart disease
* Valvular heart disease
* Cardiomegaly (enlarged heart)
* Heart attack
* Coronary heart disease

Risk factors:

* Smoking
* Diabetes
* High blood cholesterol
* High blood pressure
* Obesity
* Physical inactivity

Symptoms:

* Cardiac arrest symptoms are immediate and drastic
* Collapse
* No pulse
* No breathing
* Loss of consciousness
* Enlargement of pupils

Medical management:

* Start CPR
* Rapid defibrillation
* Circulation:Monitor Bp, administer IV fluids, haemodynamic monitoring, MONA (Morphine, oxygen, nitro-glycerine, aspirin)
* Maintain airway
* Monitor breathing: administer O2
* Drugs: epinephrine, atropine, amiodarone, magnesium sulphate, sodium bicarbonate, calcium.
* Lifestyle changes: reduce intake of fatty foods and eat more fruits and vegetables, walk for 30 min/day.