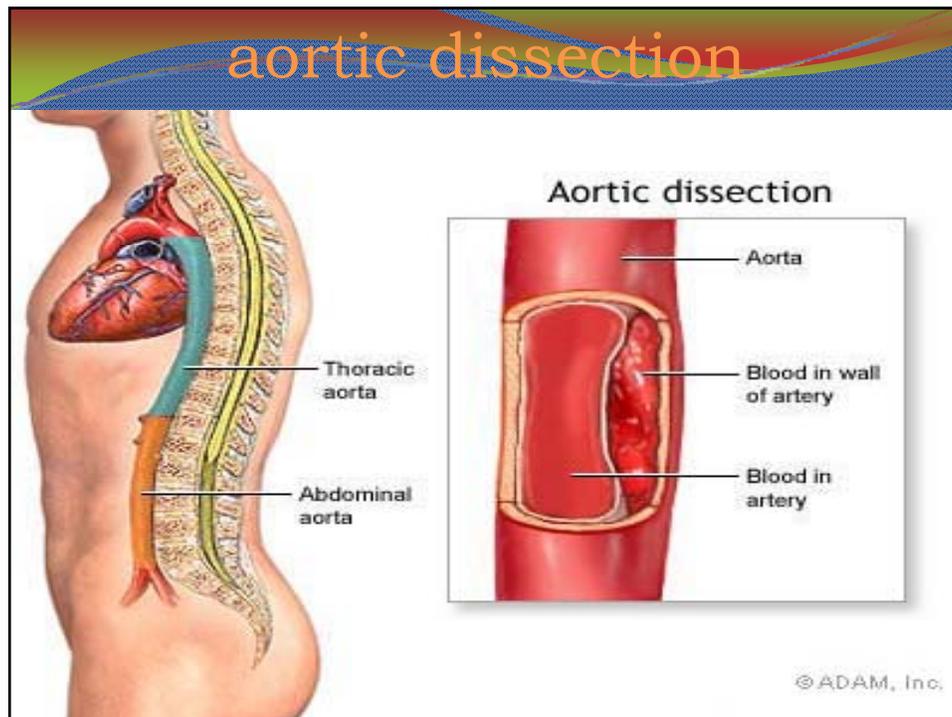


DISEASES OF THE HEART

- PRESENTERS :
- ❖ Patience B. Adjei
 - ❖ Patience Ogunbode
 - ❖ Peace

Introduction to Aortic Dissection

An aortic dissection also called dissecting aneurysm or dissecting hematoma is a fatal disorder in which the inner layer (lining) of the aortic wall tears.



Types of Aortic Dissection

- Type A dissections involve the ascending aorta and arch.
- Type B involves the descending aorta.
- Sometimes a patient could have both. It is uncertain as to why the initial tear occurs in the intima layer of the aortic wall.
- Aortic dissection tends to occur most commonly in men between the ages of 50 and 70 years of age.

The Process

- A small tear occurs in the tunica intima (the inside layer of the aortic wall in contact with blood)
- Blood enters this tear and cause the intima layer to strip away from the media layer
- In effect dividing the muscle layers of the aortic wall and forming a false channel or lumen.

The Process contd

- This channel may be short or may extend the full length of the aorta
- A distal tear in the intima layer can let blood re-enter the true lumen of the aorta
- In some cases the dissection will cross all three layers of the aortic wall and cause immediate rupture

Causes of Aortic Dissection

- High blood pressure (hypertension)
Most cases (over 70%) are associated with high blood pressure
- Cocaine use
- Pregnancy
- Trauma
- Surgical complications

Symptoms of aortic dissection

- Pain (tearing or ripping)
The pain usually begins suddenly and is centered in the chest, radiating directly into the upper back.
- Nausea and sweating,
- Shortness of breath
- Weakness

Symptoms contd

- Syncope
- Symptoms related to the location of the dissection
- significant abdominal or flank pain
- Sense of impending doom
- fluid build up in the lungs
- “ Heart attack”

People with certain genetic diseases

- Turner syndrome
- High blood pressure
- heart problems
- Marfan syndrome
- Ehlers-Danlos syndrome.

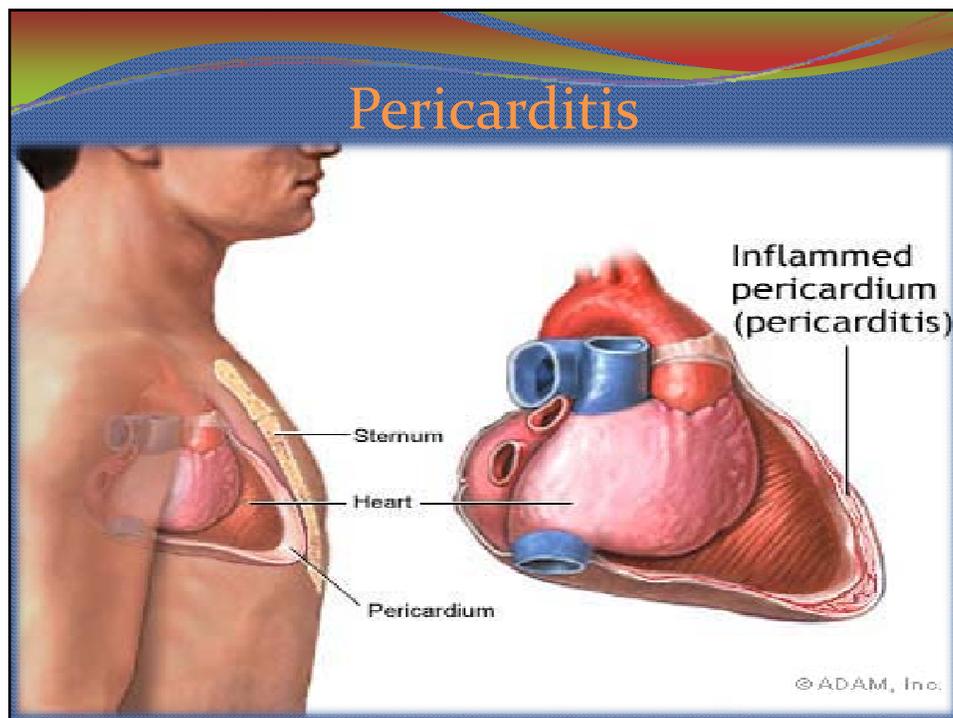
Complications

- Hypertension
- Atherosclerosis
- Cardiac Tamponade
- The most serious is Pericarditis
- Aortic aneurysm
- An aortic valve defect (bicuspid aortic valve)
- Constriction of the aorta (aortic coarctation)

Pericarditis

Pericarditis

- The heart sits in the center of the chest and is surrounded by a sac called the pericardium
- This sac has two layers one that fits tightly onto the heart muscle and another looser layer surrounding the inner layer
- Inflammation of these tissue layers surrounding the heart is referred to as pericarditis.



Causes

- Mechanical injury to the heart
- Heart attack (myocardial infarction) and Dressler's syndrome
- Heart surgery and post pericardiotomy syndrome
- Trauma
- Infection Bacterial: Viral, Fungal and HIV
- kidney failure
- Medication reactions
Dilantin and hydralazine etc

Constrictive Pericarditis

- If pericardial sac is damaged because of trauma or disease invades the space then there can be scarring of the space
- This scarring can prevent the heart from expanding to collect blood from the body
- This limits the ability of the heart to function because it cannot collect blood and pump it to the lungs and then back to the body.

Constrictive Pericarditis

- The heart is constricted and cannot dilate normally
- The heart is constricted and cannot dilate normally. There may or may not be fluid detectable around the heart.

causes

- Bleeding into the pericardium from trauma
- Bleeding from a heart operation
- Tumors
- Infections like tuberculosis or fungus
- Autoimmune diseases, such as rheumatoid arthritis
- Complications of Cancer

Symptoms

- Angina (pain is usually sharp and stabbing)
- It can arise slowly or suddenly and can radiate directly to the back, to the neck shoulderblade or to the arm.
- Irritation of the diaphragm
- Painful deep breathing (pleuritic)
- Shortness of breath
- Cough and fever
- Swelling in the legs and the abdomen

COMPLICATIONS

- Constrictive pericarditis
- Cardiac tamponade
- Arrhythmias (irregular heart rates)
- Pericardial effusion (fluid collection between the two layers of the pericardium)
- Chronic heart failure
- Pulmonary edema

Tetralogy of Fallots

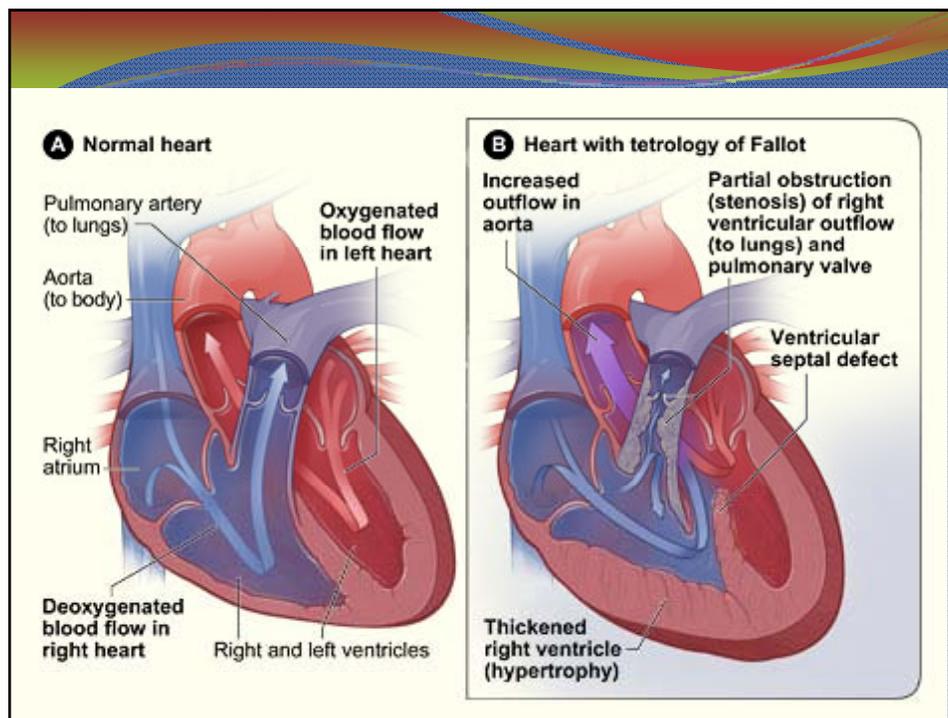
“The cry baby !!!!!!!”

Tetralogy of Fallots

- An embryologic failure of the right ventricular outflow tract to form properly.
- Loud murmur at first week of life
- Babies with TOF usually have a patent ductus arteriosus at birth
- This gives additional blood flow to the lungs, so severe cyanosis is rare early after birth
-

Tetralogy of Fallots

- Ductus arteriosus closes, Cyanosis becomes severe
- This results in the 4 cardiac abnormalities characteristic of TOF
- Right ventricular hypertrophy
- Ventricular septal defect (VSD)
- Abnormal position of the aorta
- Pulmonary valve stenosis (PS)



Causes

- Tetralogy of Fallot (TOF or "TET") is a complex condition of several congenital (present at birth) defects
- It occurs due to abnormal development of the fetal heart during the first 8 weeks of pregnancy
- An error occurs as the fetal heart separates into the chambers, valves, and other structures that make up the normal human heart

Causes contd

- Defect in a gene or chromosome abnormality
- Fetal alcohol syndrome (FAS)
- Mothers with phenylketonuria (PKU)
- Medications to control seizures
- Environmental exposure
- heart defect may occur sporadically

Symptoms

- Development of cyanosis in the first year of life
- Growth and development are slower, especially if the pulmonary stenosis is severe
- Child tires easily and begins panting with any form of exertion
- Toddlers squat in position to catch breath
- Episodes of extreme blue coloring (hypercyanosis)
- difficulty breathing and irritability or even faint.
- Spells often happen during feeding crying or awakening in the morning

TOF

Can Tetralogy of Fallots become very Fatal to the child ?

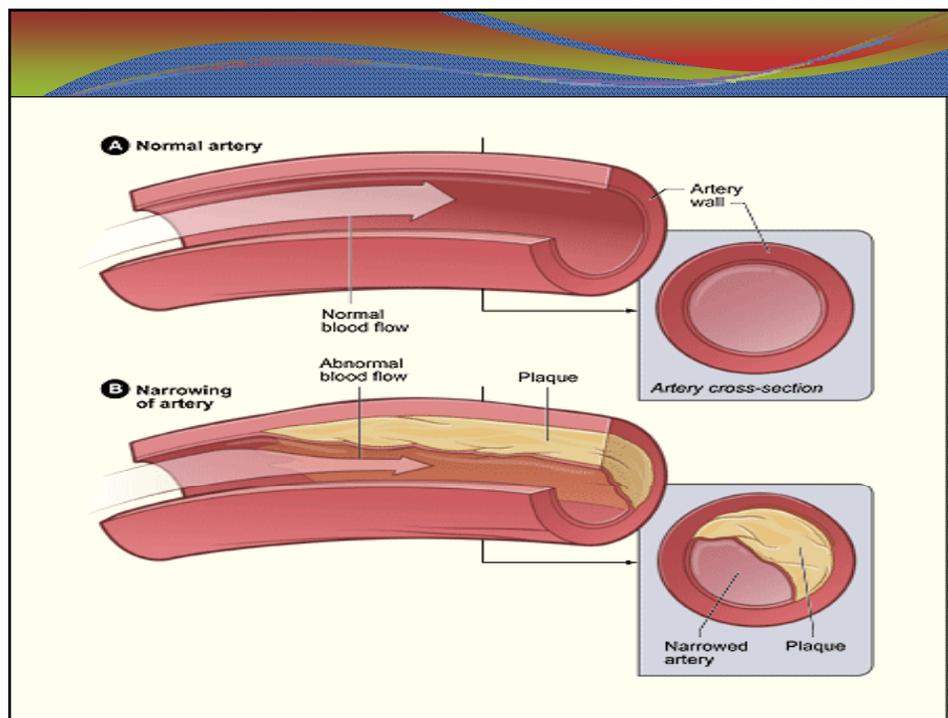
Complications

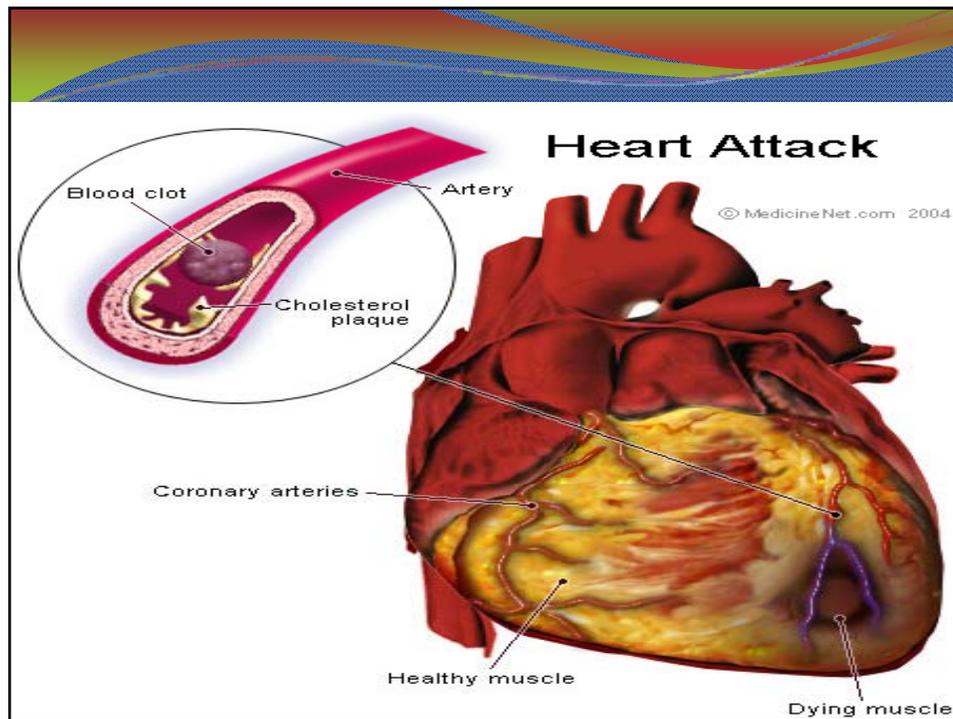
- Delayed growth and development
- Seizures during periods of insufficient oxygen
- Arrhythmias
- Decrease heart function
- Pregnancy may be risky
- Death

Coronary Artery Disease

CAD

- CAD happens when the arteries that supply blood to the myocardium (the muscle of the heart) with oxygen and nutrients become hardened and narrowed. This is due to the buildup of bad **cholesterol** and **other material** called **plaque** on their inner walls





causes

- Bad cholesterol build up in arteries
- Elevated levels of homocysteine
blood clots in veins and blood vessel narrowing
- Uncontrolled high blood pressure (*hypertension*)
- Smoking
- Lack of regular exercise
- High-fat diet
- Overweight or obesity
- Uncontrolled diabetes
- Chronic stress or depression

symptoms

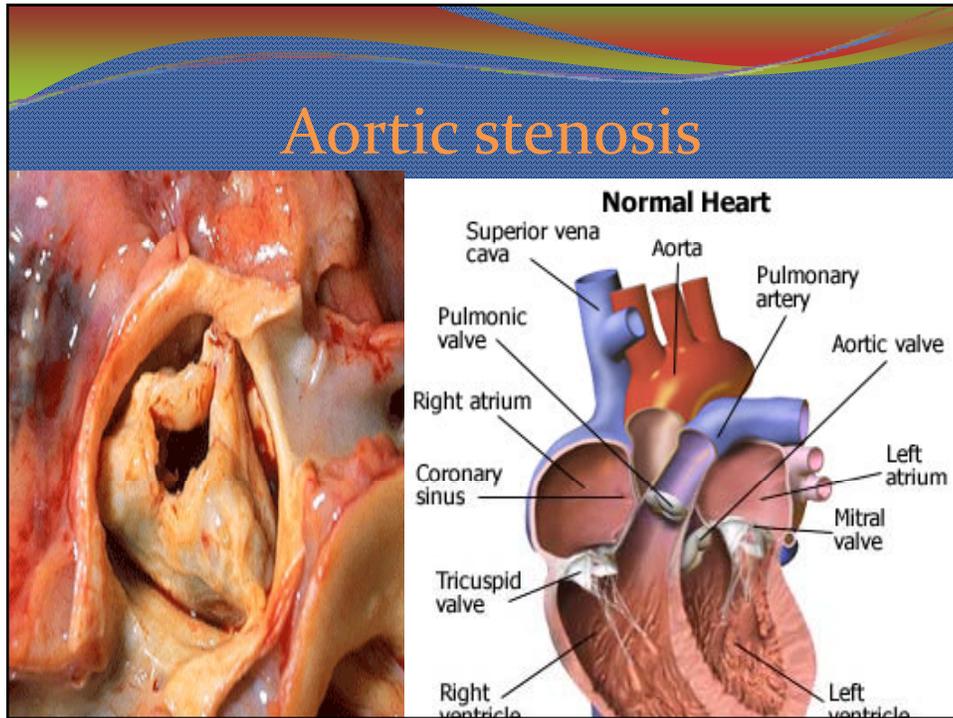
- Shortness of breath
- “Sudden” heart attack. After decades of unnoticed progress
- Chronic coronary ischemia
- Angina at rest and flash pulmonary edema
- Women with CAD may experience breast pain
- And a feeling of indigestion in the upper abdomen.

Effects

- **If coronary artery disease is untreated it could result in**
 - Heart failure
- **Abnormal heart rhythms (arrhythmia)**
 - Heart attack

Aortic Stenosis

- ## Aortic stenosis
- Aortic stenosis (AS), also called **aortic valve stenosis**, is a condition in which the aortic valve has become narrowed or constricted (stenotic) and does not open-and-close properly



Aortic stenosis

*How does Aortic Stenosis Impact
The Heart And Body*

Aortic stenosis

- The aortic valve is located between the left ventricle, or lower chamber of the heart
- The left ventricle pumps oxygen-rich blood into the aorta which carries blood to the brain and the rest of the body.
- When the aortic valve becomes stenotic the ability of the left ventricle to pump blood out of the heart to the aorta and other arteries is impaired

Aortic stenosis

- With A.S the heart valve leaflets do not open normally and the volume of blood ejected from the left ventricle is reduced
- As a result, the heart's ability to supply the body with blood decreases and blood backs up into the lungs
- The left ventricle compensates for increased resistance caused by aortic stenosis by thickening to help eject blood through the stenotic aortic valve into the aorta

Aortic stenosis

- In essence the heart is forced to "work overtime"
- The left ventricle progressively increases in diameter (dilates) stiffens and gradually loses its ability to generate enough contractile force to compensate for aortic stenosis

causes

- Degeneration and calcification
- Bicuspid aortic valve
- Rheumatic heart disease
- Congenital aortic stenosis

symptoms

- Shortness of breath, especially with exertion or when you lie down
- Fatigue, especially during times of increased activity
- Cough, especially at night or when lying down
- Heart palpitations — sensations of a rapid, fluttering heartbeat
- Swollen feet or ankles
- Heart murmur
- Excessive urination
- Chest pain (angina) or tightness
- Feeling faint or fainting with exertion
- Dizziness

Can Aortic Stenosis Be Harmful, Or Even, Fatal ?

Complications Aortic stenosis

- Dilation of the left ventricle
- Ultimately congestive heart failure
- **Endocarditis** is an uncommon complication
This is an infection of the valve
- Abnormal Heart Rhythms
- Angina

High Blood Pressure
The silent killer !!!!!

High blood pressure

- High blood pressure (HBP) or hypertension means high pressure (tension) in the arteries. Arteries are vessels that carry blood from the pumping heart to all the tissues and organs of the body
- Normal blood pressure is below 120/80; blood pressure between 120/80 and 139/89 is called "pre-hypertension", and a blood pressure of 140/90 or above is considered high

Two forms of high blood pressure

- Essential hypertension
Accounts for 95% of hypertensive cases
The cause of essential hypertension is multifactorial, that is, there are several factors whose combined effects produce hypertension.
- People who consume high quantities of salt, exceeding 5.8 grams daily
- Genetic factors
- A particular abnormality of the arteries

Secondary Hypertension

- Caused by a specific abnormality in one of the organs or systems of the body.
- Certain unusual genetic disorders affecting the hormones of the adrenal glands may lead to hypertension
- It accounts for 5% of hypertensive cases

causes

- Age and Race
- Family history
- Being overweight or obese
- Not being physically active
- Too much salt (sodium) in your diet
- Too little potassium in your diet
- Drinking too much alcohol and tobacco use
- Stress and
- Certain chronic conditions such

symptoms

- The silent killer
- Severe headache,
- Dizziness
- Shortness of breath, and
- Blurred vision
- Nausea and visual symptoms.

Complications

- Damage to your arteries
- Aneurysm. Increased blood pressure can cause your blood vessels to weaken and bulge
- Heart failure
- A blocked or ruptured blood vessel in your brain
- Weakened and narrowed blood vessels in your kidneys
- Thickened, narrowed or torn blood vessels in the eyes
- Metabolic syndrome. This syndrome is a cluster of disorders of your body's metabolism

Arrhythmia

Arrhythmia

- An irregular heartbeat is an arrhythmia (also called dysrhythmia). Heart rates can also be irregular. A normal heart rate is 50 to 100 beats per minute. Arrhythmias and abnormal heart rates don't necessarily occur together

Arrhythmia CONTD

- Normal heart rate
- Heart rates that are slow (bradyarrhythmias -- less than 60 beats per minute)
- Rapid heart rates (tachyarrhythmias -- faster than 100 beats per minute)

Types of Arrhythmia

- Premature atrial contractions : extra beats in the atria
- Premature ventricular contractions the skipped heartbeat
- Atrial fibrillation : AF is irregular heart rhythm
- Atrial flutter : arrhythmia caused by one or more rapid circuits in the atrium. Atrial flutter is usually more organized and regular than atrial fibrillation

Types of Arrhythmia contd

- Ventricular tachycardia (V-tach). A rapid heart rhythm originating from the lower chambers (or ventricles) of the heart.
- Ventricular fibrillation. An erratic, disorganized firing of impulses from the ventricles
- Bradyarrhythmias. These are slow heart rhythms, which may arise from disease in the heart's electrical conduction system

Causes

- Coronary artery disease
- Electrolyte imbalances in your blood (such as sodium or potassium)
- Changes in your heart muscle.
- Injury from a heart attack
- Healing process after heart surgery. Irregular heart rhythms can also occur in "normal healthy" hearts

symptoms / signs

- It could be SILENT with no symptoms
- Palpitations (a feeling of skipped heart beats, fluttering or "flip-flops," or feeling that your heart is "running away").
- Pounding in your chest.
- Dizziness or feeling light-headed.
- Fainting
- Shortness of breath
- Chest discomfort.
- Weakness or fatigue (feeling very tired)

Eventually,

Arrhythmia could lead to :

- Stroke
- Congestive heart failure
- Sudden death

Myocarditis

WHAT IS IT?

Myocarditis

Myocarditis is inflammation of heart muscle.

This is caused by a variety of infections and condition such as viruses, sarcoidosis and immune diseases (such as systemic lupus etc.)

Other causes

- Pregnancy
- Viruses ;
- The virus invades the heart muscle to cause local inflammation
- After the initial infection subsides, the body's immune system continues to inflict inflammatory damage to the heart muscle. This immune response actually prolongs the myocarditis

Symptoms

- Myocarditis can be mild and cause virtually no noticeable symptoms
- Angina
- Which leads to weakening of the heart muscle
- Shortness of breath
- Fatigue
- Fluid accumulation in the lungs
- Heart rhythm irregularities from inflammation and/or scarring of the electrical system of the heart

Complications

- Damage to heart muscles
- Heart failure
- Stroke or Heart attack
- Arrhythmias
- Sudden death

- Congestive Heart Failure

WHAT IT MEANS

(CHF) contd

- Congestive heart failure (CHF) is a condition in which the heart's function as a pump to deliver oxygen rich blood to the body is inadequate to meet the body's needs

Causes

- Diseases that weaken the heart muscle
- Diseases that cause stiffening of the heart muscles or
- Diseases that increase oxygen demand by the body tissue beyond the capability of the heart to deliver.
- Hypertension
- Alcohol abuse

Symptoms

- Edema
- Shortness of breath
- Nausea
- Sleeplessness
- Abdominal pain
- Fatigue and lethargy

Complications

- Irregular heart rhythms (can be deadly)
- Pulmonary edema
- Total heart failure (circulatory collapse)
- Stroke
- Gastrointestinal - Hepatic congestion and hepatic dysfunction; malabsorption
- Musculoskeletal - Muscle wasting
- Respiratory - Pulmonary congestion; respiratory muscle weakness; pulmonary

