**المحاضره السادسه/ ثاني أجهزه طبيه/ التشريح و الفسلجه / أ . د. خيري عبدالله العكيلي Lecture 6**

**الجهاز القلبي الوعائي Cardiovascular System**

**Heart : General characterizations :**

**1 – The heart is a complex organ that pumps blood through the body by blood vessels , blood reach to all organs except cartilage , eye lens , brain and skin (epidermis ) .**

**2 – Heart have four chambers( two atria and two ventricles ) , valves .**

**3 – It has own circulation system by coronary artery .**

**4 – It receives electric impulse that make it contract and relax , forming the cardiac cycle .**

**5 – Heart is enclosed in a sac called pericardium .**

**6 – Layers of heart wall ( Epicardium , myocardium , endocardium ) .**

**Movement of blood in the heart :**

**1 – The right atrium (RA) receive deoxygenated blood from the head , neck and other part of the body via superior and inferior vena cava .**

**2 – Blood pass from right atrium to the right ventricle via tricuspid valve .**

**3 – Right ventricle then pumps blood to the lungs through the pulmonary artery .**

**4 – The oxygenated blood is returned to the left atrium (LA) via the pulmonary veins .**

**5 – The blood pass from LA to the left ventricle (LV) through mitral valve ( bicuspid valve ) .**

**6 – Heart pumps blood from LV to the whole body through Aorta .**

**Cardiac Valves :**

**1 – Mitral valve ( bicuspid ) located between left atrium and left ventricle .**

**2 – Tricuspid valve located between right atrium and right ventricle .**

**3 – Pulmonary valve located between right ventricle and pulmonary artery .**

**4 - Aortic valve located between left ventricle and aorta .**

**Functions of heart valves :**

**1 - When the heart muscle contract and relax the valves are opened and shut letting blood flow pass .**

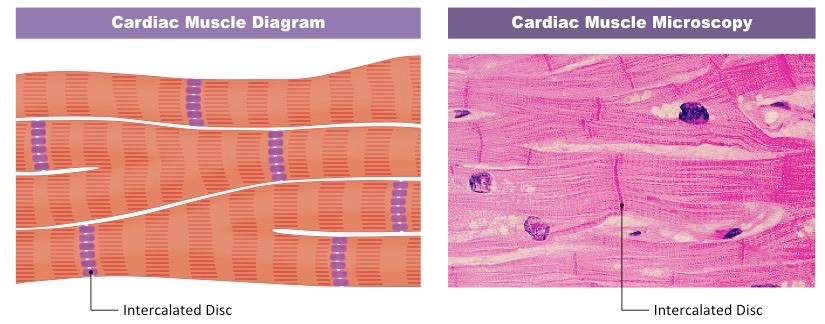
**2 – When the valves are shut prevent blood flow backwards .**

**Cardiac Muscle :**

**1 – Cardiac Muscle , involuntary muscle .**

**2 – Striated 3 - Cardiac muscle fibers are branched .**

**4 – Cardiac muscle cells have intercalated disc .**



**Conducting System and Heart Rhythm**

**Cardiac muscle involuntary muscle has ability to the contraction of the muscle cells .**

**1 – In the heart electrical changes needed to generate a cardiac impulse which starts with a specialized area of (Sinoatrial node SAN ) situated in the right atrium ) .**

**2 – SAN is a natural pacemakers , when working properly initiate impulses and stimulate cardiac contraction .**

**3 – The cardiac impulse passes from the SAN into atria which start to contract and transmitted to another specialized cells the atrioventricular node AVN .**

**4 – AVN is situated in the inter-atrial septum ( between RA and LA ) provided a pathway of conduction between atria and ventricles .**

**5 – The impulse then travels down into a large bundle of specialized tissue (bundle of His ) which conducts it down the ventricles .**

**6 – Bundle of His spilt into the right and left bundles in the interventricular septum .**

**7 - Purkinje fibers are a continuation to bundle of His , start before looping upwards and travelling in the lateral aspects of the RV and LV .**

**ECG (electrocardiogram ) : It is special technique used to know normal and abnormal heart rate ( rhythm or arrhythmias ) , using electrodes placed on the skin .**

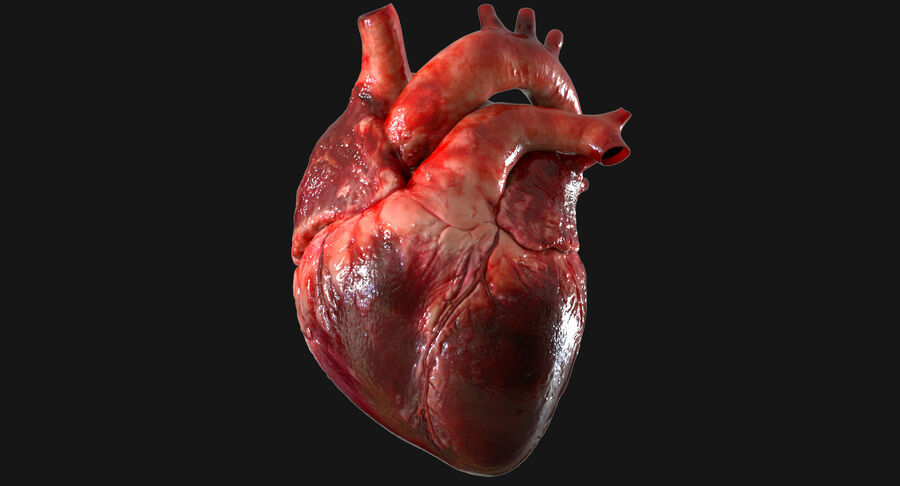
**Tachycardia ; Fast heart beat Bradycardia : slow heart beat**

**Chest pain due to Angina pectoris**

**Atrial fibrillation .**



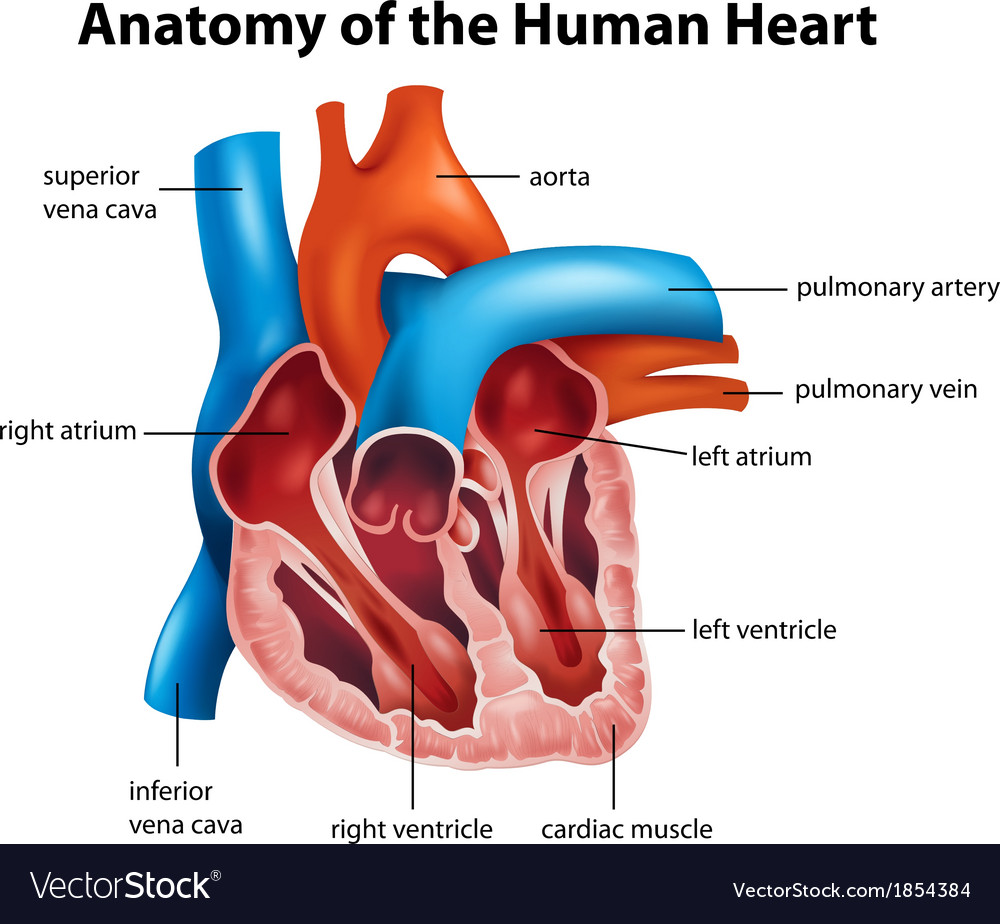
**Electrodes of ECG technique to know heart rate ?**



H**eart of human / blood vessels left vena cava , middle aorta , right pulmonary artery .**

**Coronary thrombosis ( blood clot ) inside blood vessels .**

**Infarction of heart : Blood flow decreases or stop cause necrosis in heart muscle .**

**Last picture : Conducting system / Electricity of heart**

