Cardiomyopathies			
	Characterized	Information	Pathogenesis
Dilated cardiomyopathy (DCM) (90% of cases)	1- poorly contracting 2-dilated left ventricle 3-normal or reduced left ventricular wall thickness	**1-most common cause of Congestive Cardiac Failure (CCF)** **2-**Occurs more frequently(men+ages 20-60 years) **3**-Valvular and vascular lesions that can cause cardiac dilation secondarily **are absent**.((e.g. atherosclerotic coronary artery disease) **4**-Cardiac transplantation is the only definitive treatment.	1- Genetic causes: a.Autosomal Dominant 2-Acquired causes
Hypertrophic cardiomyopathy (HCM)	1-Characterized by massive left ventricular hypertrophy associated with reduced stroke volume due to a) impaired diastolic filling b) overall smaller chamber size	1- **In almost one third of cases of sudden cardiac death in athletes younger than 35 years of age, the underlying cause is HCM.** 2-increased left ventricular (LV) wall thickness (in a non-dilated chamber) that is not explained by abnormal loading conditions 3--Typically associated with a)defective diastolic filling, b)ventricular outflow obstruction 4-Systolic function usually is preserved in HCM 5-the myocardium does not relax and therefore exhibits primary diastolic dysfunction	1-Marked by massive myocardial hypertrophy without ventricular dilation 2-
Restrictive cardiomyopathy(RCM)	1-primary decrease in ventricular compliance, resulting in impaired ventricular filling during diastole. 2-	Commonest forms of restrictive cardiomyopathy include: 1.Cardiac Amyloidosis a) Caused by the deposition of extracellular proteins (amyloid) b) Can occur in the setting of: 1-Systemic Amyloidosis (e.g., Multiple Myeloma). 2-Restricted to the heart (e.g., Senile Cardiac Amyloidosis) 2. Endomyocardial fibrosis : A)Causes 1-Nutritional deficiencies. 2-Inflammation (helminthic infections with hypereosinophilia) B)Characterized 1-dense diffuse fibrosis of the ventricular endocardium and subendocardium , often involving the tricuspid and mitral valves 2-It's principally a disease of children and young adults. 3-The fibrous tissue markedly diminishes the volume and compliance of affected chambers, resulting in a restrictive physiology.	1-Idiopathic 2-Associated with systemic diseases that affect the myocardium, e.g.: A) radiation fibrosis B) amyloidosis C) sarcoidosis D) products of inborn errors of metabolism.

Cardiomyopathies			
	Histological features	Gross Morphology	Clinical features
Dilated cardiomyopathy (DCM) (90% of cases)	1-Myocytes exhibit hypertrophy with enlarged nuclei. 2-Interstitial and endocardial fibrosis	1-The heart assumes a globular shape 2-Ventricular chamber dilatation 3-Atrial enlargement 4-Mural thrombi are often present and may be a source of thromboemboli	1-The fundamental defect in DCM is ineffective contraction. 2-It typically manifests with signs of slowly progressive CHF, including; A)Dyspnea, easy fatigability, and poor exertional capacity. B)Secondary mitral regurgitation C)Abnormal cardiac rhythms. D)Embolism from intracardiac (mural) thrombi
Hypertrophic cardiomyopathy (HCM)	A) Myocyte hypertrophy. B) Myocyte disarray. (haphazard) C) Interstitial (pericellular-type) fibrosis (asterisk). D) Endocardial fibrosis (double-headed arrow)		Major clinical problems include 1-Atrial fibrillation with mural thrombus formation. 2-Ventricular fibrillation leading to sudden cardiac death. 3-CHF
Restrictive cardiomyopathy(RCM)			

Clinical Features (HCM)

- manifests during the postpubertal growth spurt
- Exertional dyspnea due to
  - reduced cardiac output
  - secondary increase in pulmonary venous pressure.
- A combination of massive hypertrophy,
- high left ventricular pressures
- compromised intramural arteries frequently
  - leads to myocardial ischemia (with angina),
    - even in the absence of concomitant CAD.

Pathogenesis (DCM)

- A. Genetic: 20-50% of cases,
  - Autosomal Dominant
    - mutations affecting cytoskeletal proteins
    - mutations affecting proteins that link the sarcomere to the cytoskeleton.
  - X-linked:
    - mutations in dystrophin
      - cell membrane protein that physically couples the intracellular cytoskeleton to the ECM.
- B. Acquired causes:
  - Infections
    - coxsackievirus
    - adenovirus
  - Nutritional deficiency
    - carnitine
    - selenium
  - Cardiotoxins
    - Adriamycin (chemotherapeutic drug)
  - Puerperium
    - Pregnancy-associated hypertension
    - volume overload
    - nutritional deficiency,
    - nutritional deficiency,
  - Alcohol
    - Direct toxic effect on the myocardium.
    - Thiamine deficiency

Myocarditis

Definition	an inflammatory disease of the myocardium caused by different infectious and noninfectious triggers.
Classified according to the cause into:	A. Infectious: Viral infections: coxsackie viruses A and B , enteroviruses, Cytomegalovirus (CMV), human immunodeficiency virus (HIV). B. Noninfectious: 1) Systemic diseases of immune origin, such as systemic lupus erythematosus and polymyositis. 2) Drug hypersensitivity reactions (hypersensitivity myocarditis)
Gross Morphology	1- Acute myocarditis: the heart may appear normal or dilated. 2- Advanced stages: the myocardium typically is flabby and pale and hemorrhagic areas. 3- Mural thrombi may be present.
Histological features	1-Edema and myocyte injury. 2- Interstitial inflammatory infiltrates: A) Lymphocytic type: numerous lymphocytes. B) Hypersensitivity myocarditis: abundant eosinophils. C) Giant cell myocarditis: multinucleate giant cells

Cardiac Tumors

Primary tumors:	Secondary Cardiac Tumors		
1-Uncommon; and usually benign. 2-In descending order of frequency, the most common tumors are: A) Myxomas (most common). B) Fibromas C) Lipomas D) Papillary fibroelastomas. E) Rhabdomyomas (most frequent in infants and children, often regress spontaneously). F) Angiosarcomas (most common primary malignant tumor of the heart).	1-The most frequent metastatic tumors involving the heart are: A) Lung Carcinomas. B) Brest Carcinoma. C) Melanomas D) Leukemia E) Lymphoma 2- Metastases can reach the heart and pericardium by: A) Lymphatic extension. B) Hematogenous seeding C) Direct contiguous extension. D) Venous extension		

Cardiac Tumors

Myxoma ;

1-Most common primary tumors of the heart.
2-Usually single in sporadic forms and mainly located in the left atrium.
3- May cause sudden death, usually due to mitral valveobstruction.
4- Echocardiography is the diagnostic modality of choice.
5- Surgical resection is almost uniformly curative.
6-Morphology:
A) Grossly : appear as sessile or pedunculated mass.
B) Microscopic: neoplastic cells within myxoid stroma

7-Clinical Manifestations:
A) Valvular “ball-valve” obstruction
B) Embolization
C) Fever and malaise

Carcinoid Heart Disease:

1- Results from bioactive compounds such as serotonin released by carcinoid tumors (tumor arising from Neuroendocrine cells).

2- Cardiac lesions typically do not occur until there is a massive hepatic metastasis (the liver normally inactivates circulating mediators before they can affect the heart).

3- Classically, the endocardium and valves of the right heart are primarily affected (they are the first cardiac tissues bathed by the mediators).

4- The mediators elaborated by carcinoid tumors include:
A) serotonin (5-hydroxytryptamine)
B) kallikrein
C) bradykinin
D) histamine
E) prostaglandins
F) tachykinins

5-Systemic manifestations include :
A) Flushing
B) Diarrhea
C) Dermatitis
D) Bronchoconstriction