بسم الله الرحمن الرحيم

Cardiac diseases due to :
intrinsic myocardial dysfunction

Def:

Cardiomyopathies

Dilated cardiomyopathy (DCM)
(90% of cases)

مرتخي
- flabby, poorly contractile
- Systolic dysfunction
- Low ejection fraction <40%

Hypertrophic cardiomyopathy (HCM)

Restrictive cardiomyopathy(RCM).

- thick-walled, heavy, and hypercontractile
- diastolic dysfunction
- normal to high ejection fraction

Dilated Cardiomyopathy

Def :

Dilated cardiomyopathy (DCM) is characterized by a **poorly** contracting dilated left ventricle with a normal or **reduced left ventricular wall thickness**

more frequently in **men** 👨
between ages 20 and 60

most common cause of congestive cardiac failure 🥵

valvular and vascular lesions (e.g., atherosclerotic coronary artery disease) that can cause cardiac dilation secondarily are ***absent***.

Dilated Cardiomyopathy

Pathogenesis

Genetic

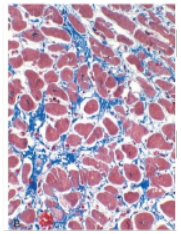
- **X-Linked**
  - mutation in dystrophin
- **Autosomal dominant**
  - mutation in cytoskeleton Proteins

Aquired

- Infections: e.g. coxsackievirus, adenovirus.
- Nutritional deficiency: carnitine selenium deficiencies
- Cardiotoxins: e.g. Adriamycin: a chemotherapeutic drug.
- Puerperium "post partum "
- Alcohol :
  - direct toxic effect on the myocardium.
  - thiamine deficiency

Histology

- Myocytes exhibit hypertrophy with enlarged nuclei.
- interstitial and endocardial fibrosis,



Clinical features

The fundamental defect in DCM is ineffective contraction.

- slowly progressive CHF, including dyspnea, easy fatigability, and poor exertional capacity.
- Secondary mitral regurgitation .
- abnormal cardiac rhythms
- embolism from intracardiac (mural) thrombi.

Treatment

Cardiac transplantation

2. Hypertrophic Cardiomyopathy

defined by the presence of increased left ventricular (LV) wall thickness (in a non dilated chamber) that is not explained by abnormal loading conditions

- associated with defective diastolic filling, and ventricular outflow obstruction. [myocardium does not relax and therefore exhibits primary diastolic dysfunction]
- Systolic function usually is preserved

2. Hypertrophic Cardiomyopathy

Pathogenesis

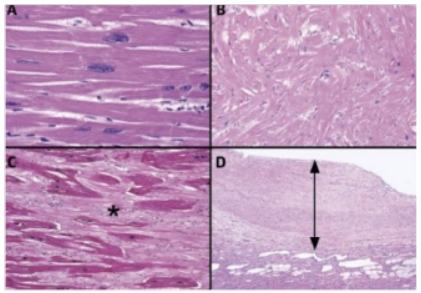
- Autosomal dominant mutations affect contractile apparatus
  - 1. β myosin Heavy chain
  - 2. Myosin binding protein C
  - 3. Troponin T

Clinical Features

- manifests during the postpubertal growth spurt
- smaller size chamber → impaired Diastolic filling
  - ↓ stroke volume
    - ↓ Cardiac output
      - ↑ Pulmonary Venous Pressure
- high LV pressure
  - Compromised intramural arteries
    - Angina
- Atrial & Ventricular fibrillation

Histology

- A) Myocyte hypertrophy.
- (B) myocyte disarray.
- (C) interstitial (pericellular-type) fibrosis (asterisk).
- (D) endocardial fibrosis (double-headed arrow).



one third of cases of sudden cardiac death in athletes younger than 35 years of age, the underlying cause is HCM.

Restrictive cardiomyopathy

- ↓ ventricular compliance
- Impaired ventricular filling during Diastole
- Causes : △ Radiation Fibrosis
  △ Amyloidosis △ Sarcoidosis

Fibrosis is caused by :
- nutritional
- helminthic infection

Myocarditis

⊙***Inflammatory disease of the myocardium***

⊙***Causes are*** :

1. ***Infectious causes*** ➡️ coxsackie viruses A and B , enteroviruses, Cytomegalovirus (CMV), ***HIV***

2.***Non infectious*** ➡️ ***SLE , drug hypersensitivity***

Cardiac Tumors

تتضمن

- cardiac tumors are rare. Cardiac tumors comprise primary and secondary metastatic tumors.
- Primary tumors:
- Primary cardiac tumors are uncommon; and usually benign.
- In descending order of frequency, the most common tumors are:
  - Myxomas (most common).
  - Fibromas.
  - Lipomas.
  - papillary fibroelastomas.
  - Rhabdomyomas (most frequent in infants and children, they often regress spontaneously).
    ↳ sk. muscles
- Angiosarcomas constitute the most common primary malignant tumor of the heart.

Myxoma

- Most common primary benign tumors of the heart
- usually **single** in **sporadic** forms
- mainly located in the **left atrium**.

📌clinical manifestations:

- sudden death, usually due to mitral valve obstruction.
- valvular “ball-valve” obstruction
- embolization.
- fever and malaise.

📌 **diagnostic** modality of choice : ■Echocardiography

📌 **surgical resection** is almost uniformly **curative**.

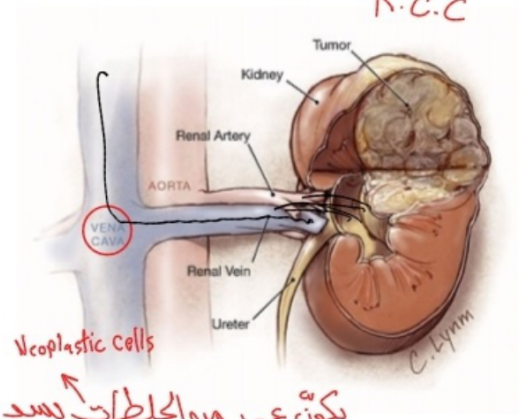
وَقُل رَّبِّ زِدْنِي عِلْمًا

Secondary cardiac tumors

[mets]

- The most frequent metastatic tumors involving the heart are:
  - carcinomas of the lung.
  - Carcinoma of the breast.
  - melanomas. [skin]
  - leukemia's and lymphomas.
- Metastases can reach the heart and pericardium by:
  - lymphatic extension.
  - hematogenous seeding
  - direct contiguous extension. → Lung - breast
  - venous extension

R.C.C



Neoplastic cells ↑ يكوّن عود من الخلايا يصد الـ IVC

Carcinoid Heart Disease

- The carcinoid syndrome results from bioactive compounds such as serotonin released by carcinoid tumors (tumor arising from Neuroendocrine cells).
- Cardiac lesions typically do not occur until there is a massive hepatic metastasis since the liver normally inactivates circulating mediators before they can affect the heart.
- Classically, endocardium and valves of the right heart are primarily affected since they are the first cardiac tissues bathed by the mediators.

↳ Not Left side

- The mediators elaborated by carcinoid tumors include serotonin (5-hydroxytryptamine), kallikrein, bradykinin, histamine, prostaglandins, and tachykinins.
- systemic manifestations include :
  - Flushing.
  - diarrhea.
  - Dermatitis.
  - bronchoconstriction.

"لا يوجد في
هذه الحياة
كلمة أكثر رأفة
ورحمة من كلمة
-ياربّ- ونبرة
الالتجاء
المصاحبة لها..
أن تترك العالم
كلّه، وتبتعد عن
الأهل والصحب،
وتنادي -ياربّ- ،
بيقين أنّه
يسمعك ويفهم
كلّ ما تخبّئه وراء
هذه الكلمة..
الحمد لله
الرؤوف الرحيم."