* **Valvular Heart disease HVD**
* By
* **Dr. Ashraf Abdelfatah Deyab**
* **VHD- Objectives**
* ***By the end of this session, the student should be able to:***
* Define and classify valvular heart disease.
* Enlist the causes of acquired heart valve diseases.
* Identify the clinical consequences of valve dysfunction and complications.
* Describe different morphological features of valve dysfunction.
* **Valvular Heart Disease(HVD)**
* **Function of normal Valves** –
* Unidirectional blood flow, one-way flow of blood from the atria to the ventricles to the arteries.
* **Name of heart valves –**
* 1.Two atrioventricular valves:
* **Mitral valve:** Left heart - “Bicuspid valve” .
* **Tricuspid valve:**Right heart -“tricuspid”
* 2. Two semilunar valves:
* **Aortic valve:** Left heart .
* **Pulmonary valve:** Right heart.
* **Valve competency depends on –**
* 1. Annulus, 2. Leaflets, 3. Cords, 4. Papillary muscles, 5.Ventricular wall layers
* **The aortic valve**
* **Define HVD, and explain why its draw the clinical attention?**
* HVD is groups of critical clinical conditions involve heart valves, leading to different pattern of dysfunction.
* HVD come to clinical attention – because impose:
* **Hemodynamic** **instability**.
* **Increase susceptibility to infection** (infective endocarditis).
* Why **hemodynamic** burden precipitated?
* **Abnormal Valve Function**
* **1. Valve Stenosis**
* **Obstruction to valve flow.**
* **2. Valve Regurgitation, Insufficiency, Incompetence**
* **Inadequate valve closure---🡪 back leakage.**
* **3. A single valve can be both stenotic and regurgitant; but both lesions cannot be severe!!**
* **4. Combinations of valve lesions can coexist**
* **Single disease process**
* **Different disease processes**
* **One valve lesion may cause another**
* **Abnormal valve function**
* **Definition of Valvular stenosis ?**
* Stenosis is the failure of a valve to open completely, which obstructing forward flow.
* **Etiology**
* Almost caused by chronic primary cuspal abnormalities- (1)**Calcification or (2)Valve scarring.**
* Stenosis of the mitral valve is a common complication of rheumatic fever.
* **Definition of Valvular Regurgitation ?**
* Insufficiency results from failure of a valve to close completely, thereby allowing reversed flow.
* **Etiology**
* **(1) Intrinsic disease of the valve cusps= destruction.**
* **(2) Distortion of supporting structure (papillary M, cords,etc.)**
* **Classification**
* **Based on etiology can be classified into:**
* **1. Congenital heart disease**
* **2. Acquired heart disease.**

* **Heart Valvular Disease- Etiology**

1.**Congenital heart valve disease -**

e.g. Septal defect, Atresia, mal-position.

*to be discussed in separate session***.**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**2. Acquired heart valve disease :- (most frequent)**

* Endocarditis– **(MR & AR) most common is mitral valve.**
* Post-inflammatory healed scar (Rheumatic heart disease) **MS+MR & AS+AR**
* **Senile calcific aortic stenosis- AS**
* **Myxomatous - Mitral valve Prolapse- MR**
* Abnormalities of Leaflets and Commissures
* Abnormalities of Tensor Apparatus.
* Abnormalities of Left Ventricular Cavity and/or Annulus-
* **Valvular Heart Disease- Clinical consequences**

The clinical consequences depend on :

* **Type of valve involve.**
* **Degree of impairment.**
* **How fast it develops. (Acute form and chronic form)**
* **Rate of compensatory mechanism.**

**Clinical Outcomes:**

* 1) **Stenosis leads** to **pressure overload** of the heart.
* 2**) Insufficiency leads** to **volume overload** of the heart.

* **VALVULAR STENOSIS**

**Pressure in upstream chamber IS HIGHER than Pressure in downstream chamber *during time of flow* (when valve is normally open).**

**Hemodynamic abnormality = "PRESSURE GRADIENT"**   
 

* **VALVULAR REGURGITATION**

 

* Assessment for Valve Dysfunction
* Murmurs
* General malaise
* Dyspnea on exertion
* Dizziness
* Chest pain or discomfort
* Prior history of rheumatic heart disease
* Orthopnea
* Dyspnea, rales
* Pink-tinged sputum

**Complications:**

* Hemodynamic instability
* Heart failure
* Angina
* Syncope
* Death

**Diagnosis**:

* ECG
* Chest x-ray
* Cardiac cath
* Echocardiogram
* **Heart Valvular Disease- Clinical Outcomes**
* **Example:**
* **(1) Mitral stenosis: (comments type)**
* Complication of Rheumatic heart disease🡪 fibrotic\scarring
* Chronic - Well tolerated over years.
* **Calcific aortic disease**
* Most common **acquired** aortic stenosis in **elderly**.
* Consequence of age-associated **“wear and tear**” 🡪 **degeneration** , **fibrosis and calcification.**
* **Occasions**: (1) Normal valves. (2) Congenitally bicuspid valves
* **Pathological processes** for calcification🡪

(1) Disorder of elderly (2) Unknown.

* **The major clinical features of S**tenosis **:**
* **(1)** Left ventricular hypertrophy and (CHF) failure...
* (2) Angina.
* (3) Syncope (abrupt episodes of faintness) (hypoperfusion)

* Calcified aortic valve of old age
* **MITRAL VALVE PROLAPSE (MPV)**
* **Definition:**
* **Mitral valve leaflets (o**ne or both) are “floppy” and **Prolapse**, or balloon back, into the left atrium during systole.
* The histologic change in the tissue is called **myxomatous degeneration.**
* **MVP-**Uncommon, affects approximately 3% of adults in USA.
* Women 7times more frequently > Male
* **Pathogenesis of MVP**:
* (1)Unknown,
* (2) MVP is associated with heritable disorders of CT diseases **Marfan syndrome (fibrillin-1 mutation),** where there is intrinsic defect of CT either in its **Synthesis or Remodeling**.
* **MPV-MORPHOLOGY**
* **Macroscopic appearance**
* **The Leaflets**: Enlarged, redundant, thick, rubbery, Ballooning .
* **The Tendinous** : cords may be elongated, thinned, or even ruptured.
* The **annulus:** may be dilated.
* The tricuspid, aortic, or pulmonary valves may also be affected.
* **Mitral valve  
   Pronounced hooding of MV with thrombotic plaques**
* **Microscopy**:   
  \* **Thinning** fibrosa layer of the valve.   
    
  \* **Marked** **expansion** of the spongiosa layer with   
   deposition of mucoid (myxomatous) material.
* **Valvular Heart Disease  
    
  The end**  
  ?
* **1. Stenosis is the failure of a valve to close completely.**

**(T) OR (F)**

* **2. Insufficiency is the failure of a valve to close completely.**

**(T) OR (F)**