

# Physical Examination of Heart

## INSPECTION

- Patient reclining at 45° to bed
- General appearance: pain, distress, restlessness, mental status, cachexia, breathlessness etc.
- Face: pallor, malar flush, cyanosis, jaundice etc.
- Neck: thyroid & lymph swellings, venous & carotid pulsations
- Chest: thoracic cage abnormalities, swelling, scars, pulsations, venous collaterals
- Abdomen: ascite, dilated veins
- Hands: clubbing, splinter hemorrhage
- Legs: edema, varicosities, ulcer, atrophy

## Palpation

- Palpating pulses
- Point of maximum impulse (apex beat) = left 5<sup>th</sup> intercostal space, midclavicular line.
- Thrills (=palpable murmurs)
- **Jugular venous pressure & wave form:-**
  - jugular venous pulse denoted hemodynamic of right atrium and ventricle = bedside equivalent of central venous pressure.  
a wave (presystolic, RA contraction)  
X descent (atrial relaxation)  
c (bulging of tricuspid valve into RA), v wave (systolic)  
Y descent (diastolic, tricuspid valve open and blood flow to RV)  
a, v wave → P, QRS
  - elevated JVP if sternal angle (angle of Louis) to top of venous pulsation > 3-5 cm
  - Abdomino-jugular reflex (JVP increase > 3 cm after consistent pressure over right upper quadrant of abdomen) → heart failure
  - Kussmaul sign (If inspiration increase JVP) → constrictive pericarditis, restrictive cardiomyopathy, pulmonary embolism, RV infarction, heart failure

# AUSCULTATION

## Heart Sounds

- **First heart sound (S1)** = mitral & tricuspid valve closure
- Loud S1 : MS, atrial myxoma, MVP, TS, ASD
- Soft S1 : severe MR or TR, calcified nonpliable valve, severe AR or AS, systolic dysfunction, pericardial effusion, obesity, COPD
- Alternate loud and soft S1 (auscultatory alterans) → cardiac tamponade, severe ventricular dysfunction.
  
- **Second heart sound(S2)**= aortic & pulmonic valve closure
- Loud S2 : hypertension, aortic aneurysm
- Loud P2 : pulmonary hypertension
- Fixed splitting of S2 → atrial septal defect (ASD)
- Wide splitting S 2 → RBBB, WPW, severe MR, VSD, ASD

- **Third heart sound (S3)** = rapid left ventricular filling
- S3 = low frequency, low pitch ventricular filling sound, due to high flow or ventricular dysfunction
  
- **Fourth heart sound(S4)**= presystolic gallop → □ heart failure
- S4 = low frequency, low pitch ventricular filling sound during atrial contraction → hypertension, AS, HOCM, coronary artery disease

# Murmurs

## **Systolic murmurs:-**

- MR - early, late or pansystolic blowing, best heard at apex, radiating to axilla
- TR - early, late or pansystolic, best heard at left lower sternal border, increase during inspiration
- MVP - mid systolic click, late ejection murmur
- AS - ejection, midsystolic, radiating to neck (carotids)
- PS - ejection, midsystolic, increase during inspiration
- VSD - pansystolic, blowing, best heard at mid-left sternal border

## ***Diastolic murmurs:-***

- MS – opening snap, mid-diastolic, rumbling
- TS - mid diastolic
- AR - early diastolic, high-pitched blowing
- PR - early diastolic
- Continuous systolic & diastolic machinery murmur → PDA