

## Cardiovascular Examination

### 1. *General inspection (end of bed)*

Patient:

- Evidence of systemic disorder (Downs, Turners, Thyrotoxicosis, Marfans)
- Evidence of cyanosis
- Dyspnoea
- Attitude of patient

Around the bed

- oxygen, drips, cigarettes, monitoring, specific diet e.g. diabetic

### 2. *Hands*

- Clubbing (subacute bacterial endocarditis; cyanotic congenital heart disease; atrial myxoma)
- Peripheral cyanosis
- Capillary refill time (<3-4s)
- Infective endocarditis stigmata: splinter haemorrhages, Janeway lesion (palm), Osler nodes (pulp of finger)
- Tendon xanthomata

### 3. *Radial pulse*

- Rate
  - Bradycardia (athletes, hypothyroid, hypothermia, drugs, heart block, raised intracranial pressure)
  - Tachycardia (anxiety, fever, hyperthyroid, shock, drugs)
- Rhythm
- Radial-radial delay
- (Radial-femoral delay)
- Collapsing pulse (aortic regurgitation)

### 4. *Brachial pulse*

- ? Bisferiens pulse of mixed aortic disease

### 5. *Blood Pressure*

### 6. *Face and eyes*

- Malar flush / mitral facies indicative of mitral stenosis
- Sclera – pallor of anaemia; jaundice (haemolytic anaemia/hepatic congestion)
- Corneal arcus
- Xanthelasma
- (Roth spots on fundoscopy – infective endocarditis)

### 7. *Mouth*

- Central cyanosis
- Dentition – possible source for infective endocarditis
- Palate – high arched in Marfans

## **8. JVP**

- Non palpable, two waves, upper height determined, obliterated by gentle pressure, hepatojugular reflux
- Height
  - Increased
    - Heart failure – congestion
    - Pulmonary embolus
    - Pericardial effusion
    - SVC obstruction (non pulsatile)
  - Decreased
    - Hypovolaemia
- Character
  - Pulsatile
  - Non Pulsatile – svc obstruction
  - Kussmaul – jvp rises on inspiration – constrictive pericarditis
- Waveform
  - A-wave – atrial contraction
    - Absent – AF
    - Increased – pulmonary valve stenosis
    - Canon wave – third degree atrio-ventricular dissociation
  - V-wave – Ventricular systole
    - Increased – tricuspid regurgitation

## **9. Carotid pulse**

- Character
  - Slow rising – aortic stenosis
  - Collapsing – aortic regurgitation
  - Small volume – shock, heart failure – low output states
  - High volume – hyperdynamic circulation e.g. thyrotoxicosis, fever
  - Pulsus paradoxus (>10mmHg reduction in systolic blood pressure on inspiration – constrictive pericarditis or severe asthma)

## **10. Precordium Inspection**

- Inspection
  - Shape – pectus excavatum (displace heart)
  - Scars – midline sternotomy, mitral valvotomy, etc.
  - Symmetry
  - Abnormal pulsations

## **11. Apex beat**

- Position
  - Non palpable
    - Obese
    - Muscular
    - Emphysematous
    - Pleural thickening
  - Displaced
    - Tension pneumothorax and pleural effusion push
    - Pulmonary fibrosis and collapse pull
    - LVH
    - Skeletal abnormalities / dextrocardia
- Character
  - Heaving, diffuse – left ventricular dilatation and hypertrophy (aortic/mitral incompetence)
  - Forceful/thrusting, localised – concentric hypertrophy (aortic stenosis, systemic hypertension)
  - Tapping – palpable first heart sound of mitral stenosis
  - Double impulse – left ventricular aneurysm
- Left parasternal heave (RV dilatation)
- Systematic palpation for thrills

## ***12. Auscultation***

- Time all events with the carotid pulse
- Bell AND diaphragm over apex
- Diaphragm in tricuspid, pulmonary and aortic valve regions – including AXILLA if mitral regurgitation suspected
- Roll patient into left lateral position and listen with BELL in FULL EXPIRATION for mitral stenosis murmur
- Listen over the aortic area with the diaphragm with patient sitting forward in FULL EXPIRATION for aortic stenosis and aortic regurgitation
- Listen over carotids for radiation of aortic murmurs
- Sounds
  - First and second heart sound
    - Normal
    - Loud/Soft
    - Absent
    - Split
  - Added sounds
    - Third heart sound – early diastolic, passive ventricular filling = impaired LV function

- Fourth heart sound – late diastolic, rapid influx during atrial systole = resistance to ventricular filling – decreased compliance
  - Opening snap – mitral stenosis
  - Ejection click – mitral valve prolapse
  - Pericardial friction rub – viral pericarditis, MI, trauma, uraemia, connective tissue disease
- Murmurs
    - Timing – diastole/systole
    - Duration – beginning, middle, end
    - Character – harsh, blowing, rumbling...
    - Pitch – high/low
    - Intensity – 1-6
    - Location – maximum intensity
    - Radiation – extent and direction
    - Influence of respiration and position
    - Associated features

### ***13. Back***

- Inspection - ?scars, ?deformity
- Palpation - ? sacral oedema
- Percussion – lung bases for evidence of pleural effusion
- Auscultation – lung bases for evidence of pulmonary oedema, ie fine inspiratory crackles

### ***14. Abdomen***

- Palpation
  - hepatomegaly or splenomegaly as signs of right heart failure
  - Pulsatile liver – tricuspid regurgitation
  - AAA
- Percussion
  - Shifting dullness – ascites

### ***15. Legs***

- Inspection
  - Swelling
  - Ulcers
  - Cyanosis
  - Toe clubbing
- Palpation
  - ? pitting ankle oedema

### ***16. Additional tests***

- Basic observations: Blood pressure, temperature, respiratory rate, oxygen saturation
- Peripheral pulses
- ECG to confirm rhythm of heart
- Urinalysis – microscopic haematuria in infective endocarditis
- Fundoscopy – Roth spots in infective endocarditis