Brachial → Radial 75

Femoral 75

GENERAL EXAMINATION

PULSE

- **Definition**
  - "pulse" is the waveform generated by the left ventricular systole which traverses the arterial tree in a peripheral direction at a rate faster than the blood column → 5m/s palpable by tip of fingers 0.5m/s
- **Assessment**
  - **Radial artery :** for rate and rhythm (RRR)
  - **Carotid artery :** for volume and character
  - **Femoral artery :** for radio femoral delay
- **Pulse rate**

One full minute count

60 / min — Bradycardia

Normal

100 / min — Tachycardia

Bradycardia

Physiological
Athlete
sleep

Pathological

Cardiac
Acute inf. Wall MI
Heart block
Sick sinus syndrome

CNS
↑ ICT
↑ IOP

Others
Myxedema
Obstr. Jaundice
Drug induced
Hypoxia
hypothermia

Tachycardia

Physiological
Emotion
Exertion
age

Pathological
Anemia
Fever
Acute ant. Wall MI
Thyrotoxicosis
Pheochromocytoma
Hypovolemia
CCF

- **Rhythm**

Regular

Regularly irregular
Atrial flutter/PAT (with fixed AV block)
Ventricular → bigemini, trigemini

Irregularly irregular
Atrial fibrillation
PAT / Atrial flutter (with varying AV block)

Atrial / ventricular pathology

Atrial pathology

- **Volume**
  - Assessed in the carotids
  - In exam comment on volume based on

Traction method

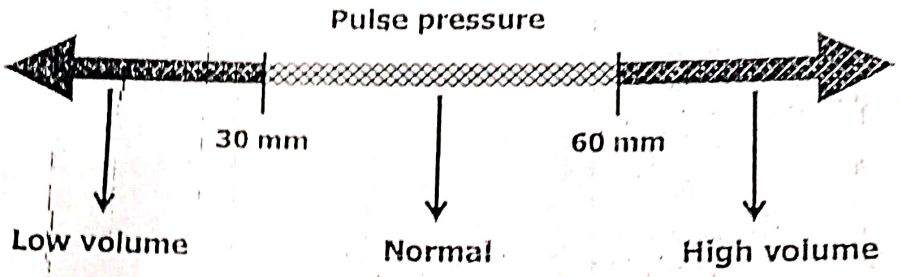
↓ three finger

Force - degree of expansile

Tension - degree able to palpa after proximal artery obliterate

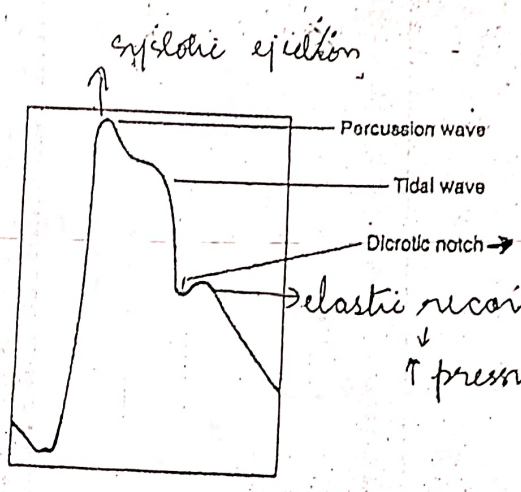
(N) - unable palpable ↓ diastolic hypert

Volume - Pressure req. to obliteral puls



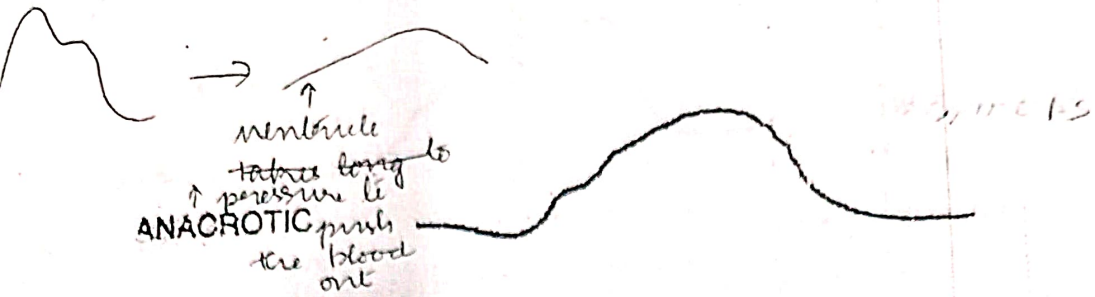
Pulse pressure = (Systolic – Diastolic) mm hg

- **CHARACTER**
  - **NORMAL**

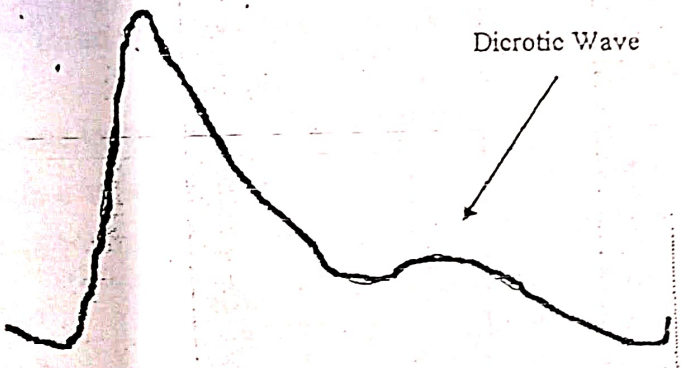


based on Bernoulli's theorem ↑ pressure ↓ as large volume of blood enters aorta

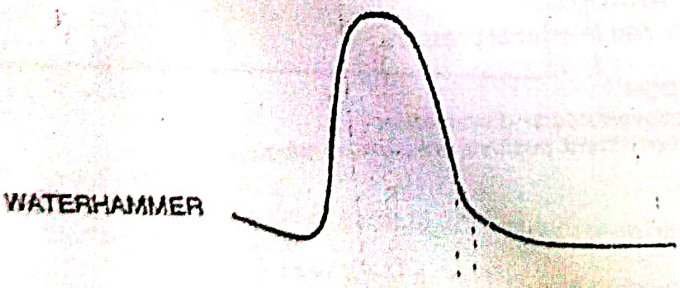
  - **HYPOKINETIC PULSE**
    - Small weak pulse
    - Small volume and narrow pulse pressure
    - Causes
      - Cardiac failure
      - Shock
      - MS
      - AS
  - **HYPERKINETIC PULSE**
    - High amplitude pulse with a rapid rise
    - Large volume with wide pulse pressure
    - Causes
      - High output states
      - Mitral regurgitation
      - VSD
  - **ANACROTIC (pulsus parvus et tardus)**
    - Low amplitude pulse with slow rising and late peak
    - Seen in severe aortic stenosis



- **DICROTIC**
  - A single pulse wave with one peak in systole and one peak in diastole
  - Due to very low stroke volume and decreased peripheral resistance
  - Causes
    - Left ventricular failure
    - Typhoid fever
    - Dilated cardiomyopathy
    - Cardiac tamponade



- **WATER HAMMER PULSE**
  - It is a large volume pulse with rapid upstroke and a rapid downstroke
  - Causes
    - Aortic regurgitation
    - Patent ductus arteriosus
    - Arteriovenous fistula
    - Rupture of sinus of valsalva



- **PULSUS BISFERIENS**
  - Single pulse wave with two beats in systole
  - Causes
    - AS with AR
    - Severe AR
    - HOCM

Pulsus bounding - A.S. slow rising - plateau, slow falling

1st increased ventricular cont. (??)

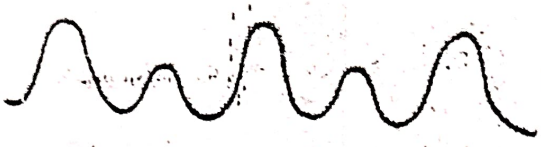
both peak in systole!

BISFERIENS

➢ **PULSUS ALTERNANS**

- Alternating small and large volume pulse in regular rhythm
- Best appreciated in radial and femoral artery
- Seen in severe left ventricular failure
- May be associated with S3 and electrical alternans

ALTERNANS



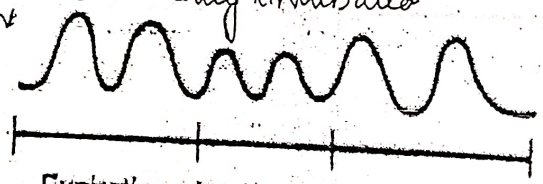
➢ **PULSUS BIGEMINUS**

- Alternating small and large volume pulse with a compensatory pause
- In pulsus alternans no compensatory pause
- Seen in digitalis toxicity

➢ **PARADOXICAL**

- Exaggerated reduction in the strength of arterial pulse during normal inspiration
- Exaggerated inspiratory fall in systolic BP > 10 mm hg during quiet breathing
- Causes
  - Cardiac tamponade
  - Constrictive pericarditis
  - Acute severe asthma
  - SVC obstruction
  - Mechanically intubated

PARADOXICAL



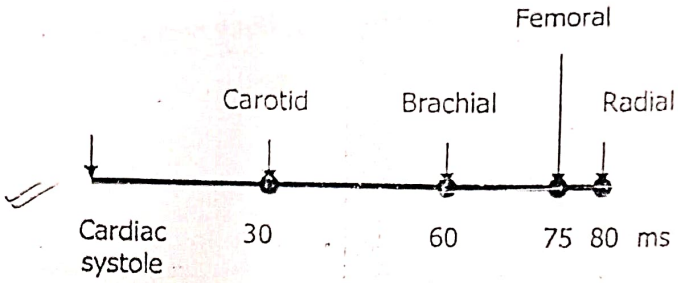
Expiration Inspiration Expiration

➢ **REVERSE PULSUS PARADOXUS**

- Inspiratory rise in arterial pressure
- Causes
  - HOCM
  - Atrioventricular dissociation
  - Intermittent positive pressure ventilation

RADIOFEMORAL DELAY

➢ Normally



Apex deficit
L5 (N)
5-10 - Ectopic ventricular
>10 - AF

- Normal : 5 ms
- Since this is beyond human perception, femoral and radial pulses are felt at the same time
- Radiofemoral delay is seen in coarctation of aorta

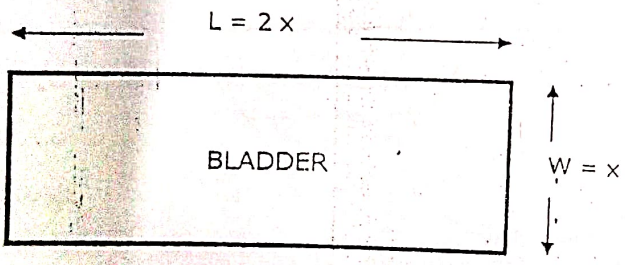
VESSEL WALL THICKENING -- Osler's method.

difference in BP between the two upper limbs -
- Takayasu's artrit
- Proximal coarctati
- supraaortic
- atherosclero block in one

Qwanda effect?

BLOOD PRESSURE

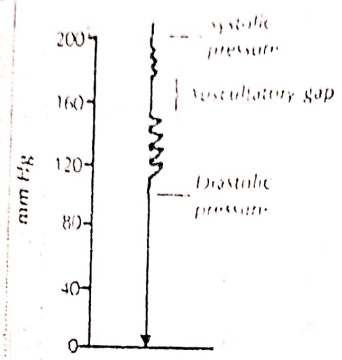
- It is the force exerted by the column of blood on the unit area of vessel wall
- Units : mm hg
- Method
  - With the bell of the stethoscope
  - Length of the bladder = 2 X width of the bladder

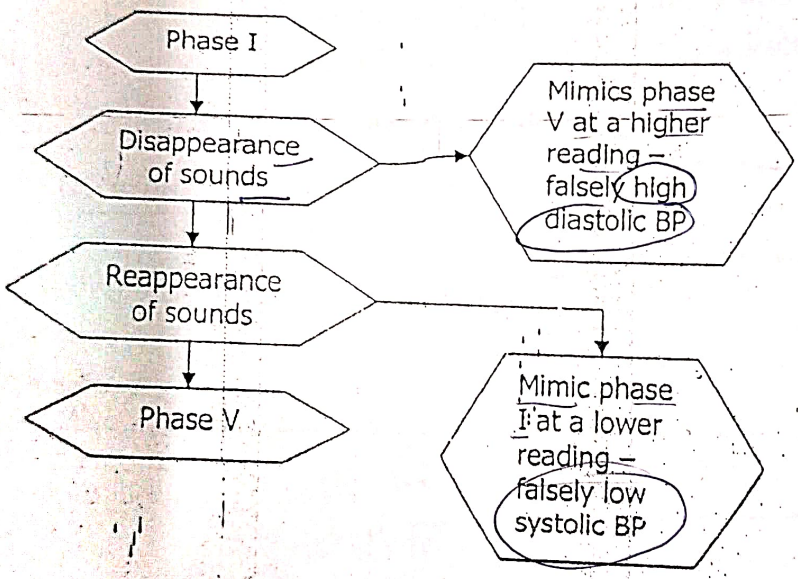


- Length of the bladder
  - More than or equal to 2/3rd of arm or thigh circumference
- Width of the bladder
  - More than or equal to 2/3rd of arm or thigh length
- Mid portion of the bladder
  - Should overlie brachial artery
- Deflate
  - 2 – 3 mm of hg per sec
- Korotkoff sounds
  - Phase I – clear and tapping
  - Phase II – soft murmur
  - Phase III – murmur becomes louder
  - Phase IV – muffling of sounds

- Phase V – disappearance of sounds
- Systolic BP corresponds to phase I
- Diastolic BP corresponds to phase V
  - Exception
    - In AR phase IV is taken as diastolic BP because phase 5 may reach zero

➢ Auscultatory gap





pulse not felt strongly
heart beat occurred
Pulsus paradoxus
Reverse pulsus paradoxus

➢ Seen in
  - Hypertension
  - Decreased arterial flow

➢ Correction by palpatory method for systolic BP

➢ Mean arterial pressure = diastolic BP + 1/3rd of pulse BP

HYPERTENSION

- Increase in more than or equal to 30 mm hg of systolic BP OR more than or equal to 20 mm of diastolic BP from baseline level
- Malignant hypertension
  - BP > 200 / 140
  - Papilledema
  - Renal dysfunction
- Hypertensive urgency
  - Markedly high BP
  - No end organ damage
- Hypertensive emergency
  - Markedly high BP
  - Plus end organ damage

RESPIRATORY RATE

- Expressed in breaths per minute
- Type
  - Abdominothoracic
  - Thoracoabdominal
- Normal rate
  - 14 – 18 breaths per minute 12-16 breaths/min
- Normal type
  - Male – abdominothoracic ✓
  - Female – thoracoabdominal ✓
- Tachypnoea
  - More than 20 breaths per minute 24 breaths/min
  - Causes
    - Anxiety
    - Exertion
    - Fever
    - Hypoxia
    - Acidosis
  - Respiratory causes
    - Pneumonia
    - ✓Acute pulmonary edema
    - ✓ARDS
- Bradypnoea
  - Causes
    - ✓Alkalosis
    - ✓Hypothyroidism
    - Increased ICT
- Hyperpnoea
  - Increased depth of breathing
  - Causes
    - Acidosis
    - Brain stem lesion
    - Hysterical state

TEMPERATURE

- Normal oral temperature
  - 6 AM - 37°C (98.6°F) → 99°F
  - 6 PM – 37.6°C (99.6°F) → 100°F.
- ✓This diurnal variation is due to
  - Increased BMR

- Increased skeletal muscle activity towards the evening

➢ Normal rectal temperature
- 1°F above oral temperature

➢ Normal axillary temperature
- 1°F below oral temperature

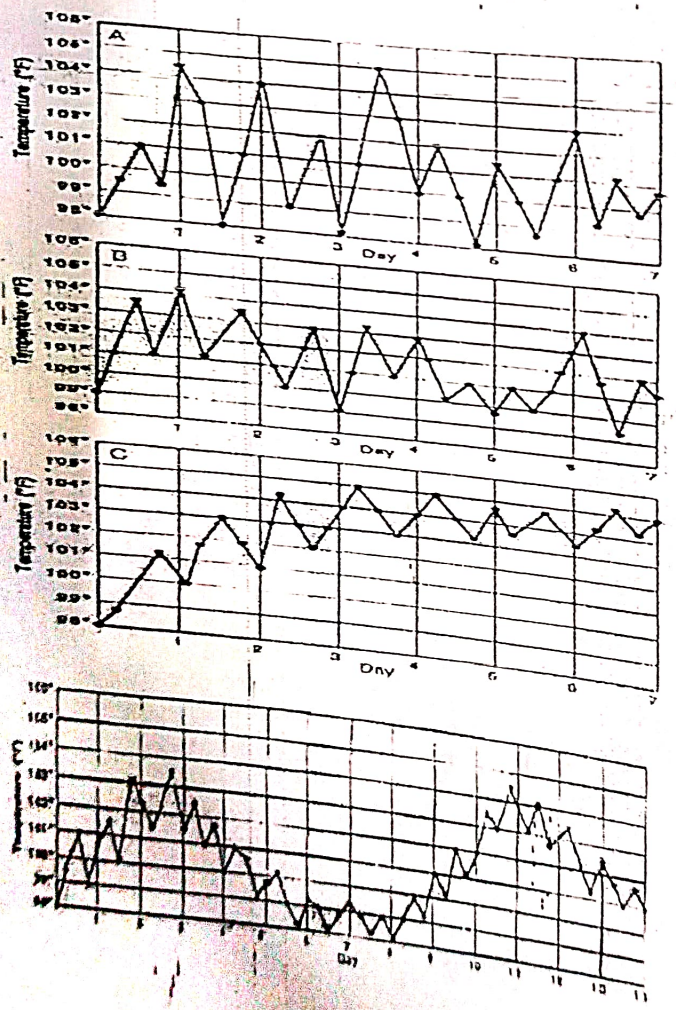
➢ Physiological variation
- Diurnal variation
- Post ovulatory period (1°F higher)

➢ Pathological variation
- Febrile
  - > 37.8°C (> 100°F)
- Hyperpyrexia
  - > 41°C (> 106°F)
- Hypothermia
  - < 35°C (< 95°F)

➢ Patterns of fever in clinical medicine

- Intermittent fever – temperature elevations which return to normal at least during most days. (touches the baseline)
- remittent fever – does not return to normal each day. > 1°F variation, does not touch baseline
- continuing fever – does not vary more than 1°F per day. (does not touch baseline)
- relapsing fever – recurrent over days or weeks and may have any of the above patterns.

typhoid, pneumonia, endocarditis



INTERMITTENT FEVER ✓
- Sepsis
- Abscess

REMITTENT FEVER
- Viral URI
- Mycoplasma

CONTINUOUS FEVER ✓
- Brucellosis
- RMSF

RELAPSING FEVER ✓
Infectious ✓
- Borrelia recurrentis
- Tuberculosis
- Histoplasmosis

Non - Infectious
- Bechet's disease
- Crohn's disease

- **Tertian fever**
  - 3rd day fever relapses
  - Seen in p.vivax,ovale,falciparum malaria
- **Quartan fever**
  - 4th day fever relapses
  - Seen in p. malariae infection
- **Pel-ebsteins fever**
  - 3-10 days fever
  - Then 3-10 days afebrile
  - Cycle continues
  - Seen in hodgkin's lymphoma
- **Saddle back fever**
  - 2-3 days febrile
  - 2 days afebrile
  - Dengue fever
- **Hyper pyrexia**
  - **>106 F**
  - SEEN IN
    - Rheumatic fever
    - Pontine haemorrhage
    - Cerebral malaria
    - Septicemia
    - Meningo coccal meningitis

clinical assessment of R♡ pressures.

JUGULAR VENOUS PRESSURE

JVP ~ right atrial pressure ~ central venous pressure

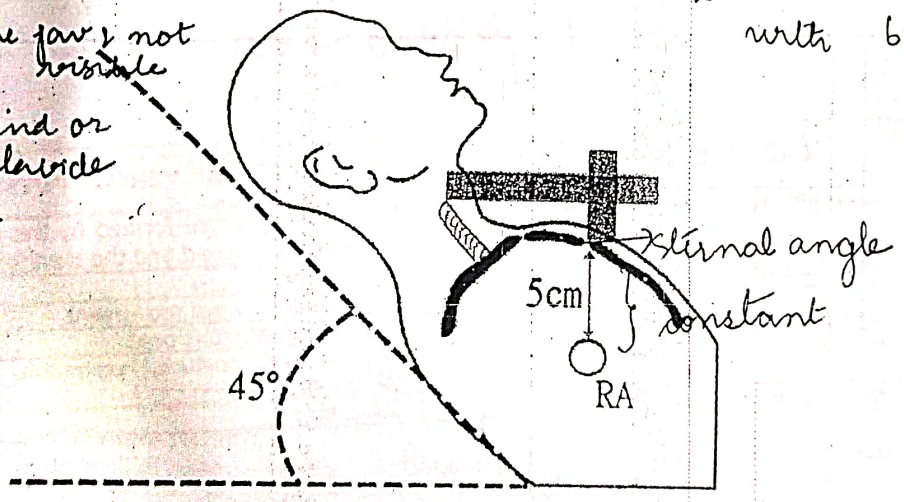
Definition : Jugular venous pressure is expressed as the vertical height from the sternal angle to the zone of transition of distended and collapsed internal jugular veins. When measured with the patient reclining at 30-45°, it is normally abour 4-5cm.

Measurement :

does not vary with 60, 45, 30°

at 30° - JVP above jaw ; not visible

90° - JVP behind or just at clavicle



1. Position the patient supine with the head of the table elevated 30 degrees.
2. Use tangential, side lighting to observe for venous pulsations in the neck.
3. Look for a rapid, double (sometimes triple) wave with each heart beat. Use light pressure just above the sternal end of the clavicle to eliminate the pulsations and rule out a carotid origin.
4. Upper column of pulsation seen, 2 scales are used.

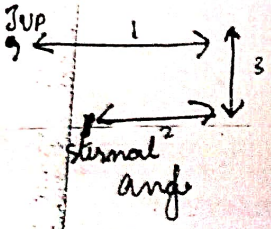
- JVP
- waves?
- hepatojugular reflux?

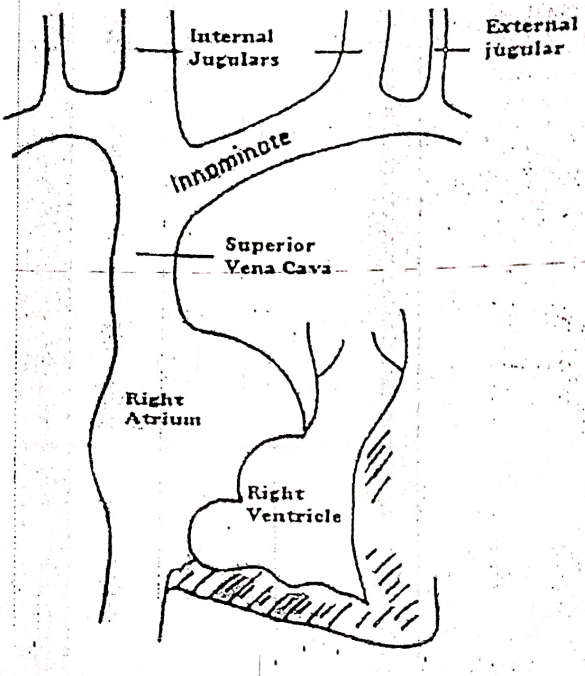
5. Vertical scale is kept perpendicular to the ground at the sternal angle and the horizontal scale is kept from the highest point of pulsation and parallel to the ground.
6. The point where the horizontal scale meets the vertical scale marks the height of JVP.
7. CVP=5+JVP because the right atrium is 5 cm below the sternal angle.
8. Normal CVP 5-9 cm of water.

Why Internal Jugular Vein?

1. Direct continuation of the right atrium.
2. No Valves
3. Doesn't go through muscular plane.
4. Right Internal Jugular Vein is much straighter compared to the Left Internal Jugular Vein. So, it reflects the Right Atrial Pressure.
5. It is located between the two heads of the Sternocleidomastoid.

3 scale method?





CAROTID ARTERY PULSE	JUGULAR VENOUS PULSE
Seen internal to the sternomastoid.	Seen in the triangle formed by the two heads of the sternomastoid and the clavicle.
Better Palpable.	Better visible.
Predominant outward movement.	Predominant inward movement.
One peak per heart beat.	Two peaks per heart beat.
No variation with posture or respiration.	Variation with posture, respiration, abdominal compression.
Not obliterable.	Obliterable.

- Causes of Elevated JVP
  - Unilateral non-pulsatile
    - Innominate vein thrombosis
- Bilateral Non-pulsatile
  - SVC Obstruction
  - Massive Right-sided Pleural Effusion

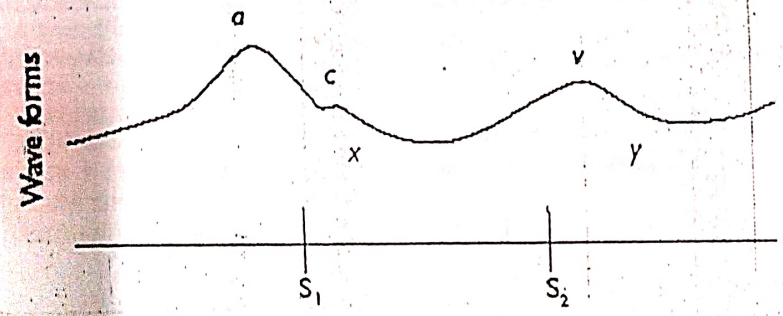
does not move in respiration

- Bilateral Pulsatile
  - Cardiac
    - Cardiac Failure
    - Tricuspid Stenosis
    - Tricuspid Regurgitation
    - Constrictive Pericarditis
    - Cardiac Tamponade
  - Pulmonary
    - COPD/Cor pulmonale
  - Abdominal
    - Ascites
    - Pregnancy
  - Iatrogenic
    - Excess IV Fluids

- ***MOST COMMON CAUSE OF RAISED JVP IS CCF.***
- Causes of Fall in JVP
  - Hypovolemia
  - Shock
  - Addison's Disease

Jugular venous pulse

NORMAL WAVE FORMS



descents are prominent in normal JVP

WAVES IN JVP	CARDIAC EVENT
'a' wave	Right atrial contraction
'c' wave	Tricuspid valve ascends Carotid artery impact
'x' descent	Right atrial relaxation
'v' wave	Venous filling into atrium
'y' descent	Tricuspid valve opens Atrial emptying

- **Abnormalities of wave pattern**
  - Giant Prominent 'a' wave
    - TS
    - PAH
    - PS
  - Cannon 'a' wave
    - Complete heart block
  - Absent 'a' wave
    - AF
    - Atrial stand still

- Prominent 'v' wave
  - TR
  - RVF
  - Restrictive cardiomyopathy
- 'a' wave = 'v' wave
  - Cardiac tamponade
  - Constrictive pericarditis
  - Hypoyolemia
  - ASD
- Prominent 'x' descent
  - Cardiac tamponade
  - ASD
- Prominent 'y' descent
  - Constrictive pericarditis
  - TR
  - ASD
  - Restrictive cardiomyopathy
- Blunted 'x' descent
  - TR
  - AF
- Blunted 'y' descent
  - Cardiac tamponade
  - TS
  - Right atrial myxoma

➢ KUSSMAL'S SIGN

- During inspiration, mean JVP falls → Increase.
- [illegible] is known as kussmal's sign
- This is due to inability of the heart to accommodate increased venous return caused by negative intra pleural pressure
- Seen in
  - Constrictive pericarditis
  - Restrictive cardiomyopathy
  - RVF
  - Right ventricular infarction

➢ ABDOMINAL JUGULAR REFLUX

- Slow steady abdominal pressure to the middle of the abdomen for 30 sec
- Normal response
  - JVP rises transciently by less than 3 cm and falls down even when pressure is continued
- Positive response
  - Elevation of JVP > 3 cm
  - Sustained > 15 sec
  - Seen in
    - RHF
    - TR
- Absent in
  - Bud chiarri syndrome

PALLOR

✓ *Definition :* Paleness of the skin and mucous membranes.

✓ *Sites :*

- ✓Lower palpebral conjunctiva.
- ✓Tongue.
- ✓Finger nailbed.
- ✓Palms of the hands.

- ✓ *Significance :*
  - Indicates anaemia
  - Palmar crease pallor : Hb < 8gm%.
- ✓ Pallor + lymphadenopathy + splenomegaly ——→ S/O lymphoproliferative disorder.
- ✓ Pallor + petechiae : Platelet dysfunction.

ICTERUS

- ✓ *Definition :* Yellowish discolouration of the skin, mucous membranes & the sclera (seen through the bulbar onjunctiva.)
- ✓ *Significance :*
  - Indicates HYPERBILIRUBINEMIA.
  - Usually Serum bilirubin > 2mg%.
- ✓ *Diagnostic significance when associated with other findings:*
  - ❖ Jaundice + malnutrition :
    - Pancreatic malignancy.
    - Cirrhosis.
  - ❖ Jaundice + Virchow's nodes +/- Sister Mary Joseph's nodules :
    - Intra abdominal malignancy.
  - ❖ Jaundice + elevated JVP + tender hepatomegaly :
    - Hepatic congestion.
  - ❖ Jaundice + ascites + pleural effusion :
    - Advanced cirrhosis.
    - Disseminated malignancy.
  - ❖ Jaundice + tender heoatomegaly :
    - Viral hepatitis.
    - Alcoholic hepatitis.
  - ❖ Jaundice + Murphy's sign :
    - Acute cholecystitis.
    - Ascending cholangitis.

CLUBBING

- ✓ *Definition:* Selective bulbous enlargement of the distal portion of the distal phaalanx due to proliferation of subungual connective tissue.
- ✓ **Lovibund angle:** (N) angle b/w nail & nail bed - 160°.
- ✓ *Duration:*
  - Takes 2-3 weeks, from the time of insult for the clubbing to develop.
  - Appears in the **index finger** first.
- ✓ *Grading :*
  - I : Obliteration of the nail bed angle.
  - II: Parrot- beak appearance.
  - III: Drumstick appearance.
  - IV: Hypertrophic Pulmonary Osteo Arthropathy (HIPOA).
- ✓ **Schamroth's sign:** To demonstrate clubbing.
  Approximate the dorsum of the distal phalanx.

Pharyngeal depth ratio

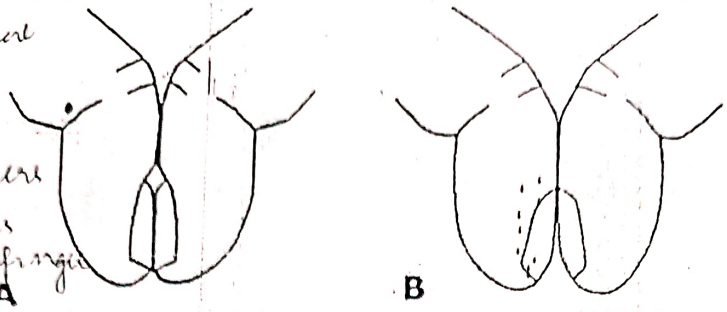
Distal depth / anteroposterior depth > 1

for all fingers of both hands ratio of each finger > 10.2

Pseudoclubbing

due to bone resorption

- Hansen's
- hyperparathyroid
- PVC exposure



Schamroth sign. (A) Negative for Schamroth sign. Diamond-shaped aperture between fingers is present. (B) Positive Schamroth sign. Aperture between fingers is absent.

✓ *Etiology (Clinical significance of clubbing):*

Unilateral (AAP)

1) AV Malformation
2) Aneurysm of any major vessel
3) Pancoast's tumor
4) Hemiplegia (TTS) (clubbing on (N) side)

Unidigital

1) Trauma
2) Tophaceous gout
3) Sarcoidosis

Differential

1) PDA

✓ *Bilateral:*

- **Pulmonary:**
  - Bronchogenic carcinoma.
  - Secondary metastasis.
  - CSLD.
  - Chronic bronchitis.
  - Pulmonary TB.
  - Mesothelioma.
  - ILD.
- **Cardiovascular:**
  - Cyanotic heart disease.
  - Infective endocarditis.
  - Eisenmenger's syndrome.
- **GIT:**
  - Cirrhosis.
  - Inflammatory bowel disease.
  - Malignancy.

✓ *Miscellaneous causes :*

- Syphilis.
- Acromegaly.
- Syringomyelia.
- Thyrotoxicosis.

✓ *Pathogenesis:*

- Most acceptable : PDGF mediated.

TGA + PDA + reversal
↓
UL clubbing not LL
(reverse differential clubbing)

Normally, large MEGAKARYOCYTES in the circulation are broken down while passing through the pulmonary circulation and hence do not interact with vascular endothelium.
In certain diseases (above mentioned) this fragmentation doesn't take place.
Therefore,

Megakaryocytes
↓
Endothelium of small arteries
↓
Forms plugs
↓
Activated
↓
PDGF production
↓
CT proliferation.

In any chronic infection/inflammation, PDGF is also produced.

- Other theories of clubbing:
  - **Vagal stimulation (Neurogenic):**
    Points for:
    Vagotomy helped decrease symptoms in patients with lung carcinoma.
    Points against:
    Vagal stimulation doesn't occur in congestive heart disease & aneurysms.
  - **Humoral substances (GH, PTH, Estrogen, PG, Bradykinin, Ferritin.)**
    Points for:
    Impaired clearance from diseased lungs.
    Points against:
    People with elevated humoral substances did not have clubbing.
    Cannot explain localized clubbing.

Pseudo clubbing
Seen in
Hansen's disease
Leukemia
Hyperparathyroidism
Vinyl chloride worker

CYANOSIS

✓ ***Definition:*** Bluish discolouration of the skin & mucous membranes due to increased concentration of reduced Hb or of Hb derivatives.

✓ ***Indicates:***

Reduced Hb levels of

- >4g/dL or
- >30% of total Hb or
- PaO2 <85% (fair-skinned)
  <75% (dark-skinned)

✓ ***Sites of the body:***

- Lips.
- Nailbeds.
- Ears.
- Malar eminence.
- Conjunctiva.
- Oral cavity.

✓ ***Principle:***

1. Cyanosis reflects ABSOLUTE QUANTITY of reduced Hb.
   a. This means that only when reduced Hb >/= g/dL, cyanosis will be evident.
   Therefore, if the Hb level is <4g/dL i.e. severe anemia, cyanosis will not develop.
   b. This means that if Hb level is very high i.e. polycythemia, reduced Hb level will easily touch 4g/dL.

Therefore, greater tendency towards cyanosis.

2. Cyanosis due to NON-FUNCTIONAL Hb:
Eg:-Sulfhemoglobin, Methhemoglobin.

✓ *Clinical classification:*

I. CENTRAL:

- R to L shunt or lung disorder.
- Whole body cyanosed.
- Clubbing + polycythemia.
- Warm extremities.
- Slight improvement on O2 inhalation because PaO2 < 85%.

A. Decreased arterial O2 saturation:

- High altitude.
- Alveolar hypoventilation.
- Impaired O2 diffusion.
- V-P mismatch.
- Cyanotic heart disease.
- Pulmonary AV fistula.
- Multiple pulmonary shunts.

B. Hb anomalies:

- Methhemoglobinemia (>1.5 g%)
- Sulfhemoglobinemia (>0.5 g%)
- Carboxyhemoglobinemia (smokers).

II. PERIPHERAL:

- Peripheral stasis.
- Peripheral sites.
- Cold extremities & on warming, cyanosis decreases.
- No change in inhaled O2 since PaO2 = 85-100%.

- CHF.
- Frost bite.
- Arterial obstruction.
- Venous obstruction.
- Redistribution of blood flow from extremities.

✓ **III. DIFFERENTIAL:**

A. In lower limbs only:

- PDA with Eisenmengers.

B. In upper limbs only:

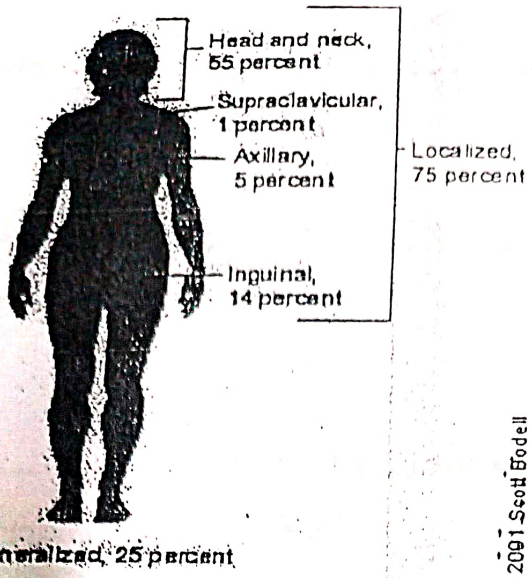
- PDA + TGV + Eisenmengers.

IV. INTERMITTENT: Ebstein's anomaly.

Lymphadenopathy:

Definition:-

- **Generalized** = lymph nodes are enlarged in two or more noncontiguous areas;
- **Localized** = if only one area is involved.
- **Persistent Generalised** = if duration of lymphadenopathy > 3 months.



II) History TAKING :-

1. Localizing symptoms or signs to suggest infection or neoplasm in a specific site.
2. Constitutional symptoms =
   - fever (tuberculosis)
   - weight loss,
   - fatigue or
   - hight sweats (lymphoma)
   - Others- collagen vascular diseases, unrecognized infection or malignancy?
3. Epidemiologic clues / occupational exposures / travel / high-risk behaviors
4. medication = e.g., phenytoin ,cephalosporins, penicillins or sulfonamides,

III). Physical Examination:-

- examine the region drained → infection, skin lesions or tumors
- Other nodal sites → generalized or localized lymphadenopathy
- Five characteristics –

1. **Size.**
   - normal → up to 1 cm in diameter;
   - abnormal →
     - epitrochlear nodes larger than 0.5 cm ,
     - inguinal nodes larger than 1.5 cm

Little information exists to suggest that a specific diagnosis can be based on node size.

2. **Pain/Tenderness.**
   - Indicates = rapidly increases in size (stretches capsule)
   - Pathology =
     - Inflammatory process or suppuration.
     - Hemorrhage into the necrotic center of a malignant node.
   - Does not reliably differentiate benign from malignant nodes.

3. ***Consistency.***

- Stony-hard nodes = sign of cancer, usually metastatic.
- Very firm, rubbery nodes = lymphoma.
- Soft nodes = infections or inflammatory conditions.
- Fluctuant nodes = Suppurant.
- "Shotty" = small nodes that feel like buckshot under the skin, as found in the cervical nodes of children with viral illnesses.

4 ***Matting.***

- Matted. = A group of nodes that feels connected and move as a unit
- Benign = e.g., tuberculosis, sarcoidosis or lymphogranuloma venereum
- Malignant = e.g., metastatic carcinoma or lymphomas

5. ***Location***

GROUP	DRAINAGE AREA	PATHOLOGY
Submandibular	Tongue, submaxillary gland, lips and mouth, conjunctivae	Infections of head, neck, sinuses, ears, eyes, scalp, pharynx
Submental	Lower lip, floor of mouth, tip of tongue, skin of cheek	Mononucleosis syndromes, Epstein-Barr virus, cytomegalovirus, toxoplasmosis
Jugular	Tongue, tonsil, pinna, parotid	Pharyngitis organisms, rubella
Posterior cervical	Scalp and neck, skin of arms and pectorals, thorax, cervical and axillary nodes	Tuberculosis, lymphoma, head and neck malignancy
Suboccipital	Scalp and head	Local infection
Postauricular	External auditory meatus, pinna, scalp	Local infection
Preauricular	Eyelids and conjunctivae, temporal region, pinna	External auditory canal
Right supraclavicular node	Mediastinum, lungs, esophagus	Lung, retroperitoneal or gastrointestinal cancer
Left supraclavicular	Thorax, abdomen via thoracic duct	Lymphoma, thoracic or retroperitoneal cancer, bacterial or fungal infection
Axillary	Arm, thoracic wall, breast	Infections, cat-scratch disease, lymphoma, breast cancer, silicone implants, brucellosis, melanoma
Epitrochlear	Ulnar aspect of forearm and hand	Infections, lymphoma, sarcoidosis, tularemia, secondary syphilis
Inguinal	Penis, scrotum, vulva, vagina, perineum, gluteal region, lower abdominal wall, lower anal canal	Infections of the leg or foot, STDs (e.g., herpes simplex virus, gonococcal infection, syphilis, chancroid, granuloma inguinale, lymphogranuloma venereum), lymphoma, pelvic malignancy, bubonic plague

- **Valsalva's maneuver** during palpation of the supraclavicular fossae increases the chance of detecting a node
- **Supraclavicular lymphadenopathy**
  - risk of malignancy = 90 percent in patients > 40 years ,and 25 percent in those < 40.

- **Sister Joseph's**
  - sign of an abdominal or pelvic neoplasm
- **Splenomegaly and lymphadenopathy**
  - mononucleosis-type syndromes,
  - lymphocytic leukemia,
  - lymphoma
  - sarcoidosis.

IV). Etiology of Generalized lymphadenopathy

A. Infections
1. Viral
   - Common upper respiratory infections
   - ✓Infectious mononucleosis
   - ✓CMV
   - ✓Acquired immunodeficiency syndrome
   - Rubella
   - Varicella
   - Measles
2. Bacterial
   - Septicemia
   - ✓Typhoid fever
   - ✓Tuberculosis
   - ✓Syphilis
   - Plague
3. Protozoal – Toxoplasmosis ✓
4. Fungal – Coccidioidomycosis ✓

B. Autoimmune disorders and hypersensitivity states
1. ✓Juvenile rheumatoid arthritis (Juvenile idiopathic arthritis)
2. ✓Systemic lupus erythematosus
3. Drug reactions (eg, phenytoin, allopurinol)
4. Serum sickness

C. Storage Diseases
1. ✓Gaucher disease
2. ✓Niemann-Pick disease

D. Neoplastic and proliferative disorders
1. ✓Acute leukemias
2. ✓Lymphomas (Hodgkin, non-Hodgkin)
3. Neuroblastoma
4. ✓Histiocytoses

EDEMA

- Pitting | no
- Tender | no
- extending till ?
- Sacral / face edema ?

✓ ***Definition:*** **Collection of excess fluid in the body interstitium.**

✓ ***Sites:***
- **Pleural space :** Hydrothorax or pleural effusion.
- **Percardial cavity:** Pericardial effusion.
- **Peritoneal cavity:** Ascites.
- **Generalized : Anasarca.**

✓ ***Pathophysiology:***

According to Frank Starling's forces, edema will occur if:-

I) Increase in HYDROSTATIC FORCES within the vessels.
e.g. Congestive heart failure, renal failure.

II) Decrease in the PLASMA ONCOCTIC PRESSURE.
e.g. Liver cell failure, Nephrotic syndrome.
Mainly, hypo-albuminemia.

iii) Altered capillary permeability.
- Vascular injury: mechanical, thermal, chemical.
- Cytokine/Humoral(Inflammatory).

✓ *Types of edema:*

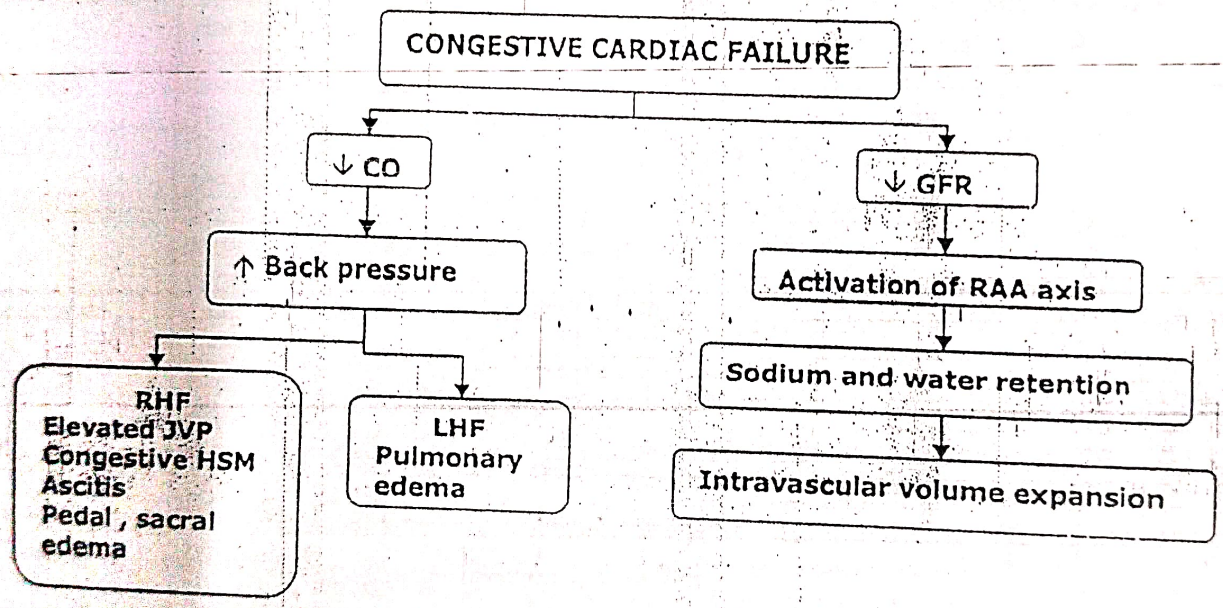
Generalized:
- Cardiac edema.
- Renal edema.
- Hepatic edema.
- Nutritional edema.

Localized:
- Venous causes.
- Lymphatic causes.
- Inflammatory causes.
- Allergic causes.

Fast edema:(Pitting disappears <40 secs.)
- Hypoalbumenic states.

Slow edema: (pitting disappears >1 min.)
- CCF.

CARDIAC EDEMA



RENAL EDEMA

- Acute glomerulonephritis
  - Acute sodium and water retention
- Nephrotic syndrome
  - Massive albuminurea
  - Leads to hypoalbuminemia
- Involves loose connective tissue
  - Periorbital edema
  - More in the early mornings

HEPATIC EDEMA

- Usually forms ascitis
- Pathophysiology
  - Portal hypertension due to cirrhosis
  - Hypoalbuminemia due to decresed synthesis by liver
  - Activation of RAA axis
  - Due to massive depletion of intravascular volume

ASSESSMENT OF HYDRATION IN ADULTS :-

Common Signs of Dehydration

- Change in mental status → Anxiety, Restlessness, speech difficulty and confusion
- Cool , Clammy skin
- Delayed capillary refill
- Dry mucous membranes (lips) and skin, decreased saliva
- Tachycardia
- Tachypnoea
- Hypotension with orthostatic changes
- Oliguria
- Poor skin turgor over sternum
- Postural hypotension and dizziness (after standing up for 1 minute)
- Sunken eyes
- Tongue dry; longitudinal furrows
- Weight loss of 3-5% in less than 30 days or acute weight loss
- upper body muscle weakness
- Absent radial pulse + low BP = Severe Dehydration

NUTRITION

- Integral and important variable of general examination
- There are 4 ways of assessing state of nutrition

  - Ideal body weight (IBW)
    - IBW = 22.5 X[Height (m)]2 – male
    - Female IBW = male IBW X 0.94
      - Body weight > 10 % of IBW is overweight
      - Body weight > 20 % of IBW is obese
  - **Body mass index (BMI)**
    - **BMI = weight (kg) / [height(m)]2**
    - **Grading of obesity**
    - **Grade I – overweight**
      - **BMI 25 – 30**
    - **Grade II – obese**
      - **BMI 30 -40**
    - **Grade III – very obese**
      - **BMI > 40**
  - **Skin fold thickness**
    - **Method**
      - **By using a special pair of callpers to measure the thickness of skin fold over triceps, biceps, subscapular, suprailiac**
    - **Interpretation**
      - **Triceps skin fold thickness normal values in adults**
      - **Male – 12.5 mm**
      - **Female 16.5 mm**

- Equations and normograms are used for exact interpretations
- Drawbacks
  - Interpretation needs charts and graphs
  - Non specific

- Broca's index
  - Requirement
    - Height > 100 cm
  - Very crude method of estimation
  - Desired body weight(kg) = observed height (cm) – 100
  - OR desired body weight (kg) = height in inches
- Assessment of regional distribution of fat
  - Done for patients who is obese
  - That is BMI > 30 or body weight > 20 % of IBW
  - Waist/hip ratio
    - Waist measurement
      - Narrowest circumference at any point between rib cage and iliac crest
    - Hip measurement
      - Maximum circumference at any point over the buttocks

RATIO

<= 0.8 : PEAR SHAPED OBESITY

Lower risk of developing complications of obesity

>= 0.9 : APPLE SHAPED OBESITY

Greater risk of developing complications of obesity

Types of obesity	Identification	Significance
Generalized	Double chin	Overeating
Android	Excess fat over waist	Nil
Gynoid	Excess fat over hip/thigh	Nil
Central	Excess fat over face, neck and trunk and thin extremities	Cushing's syndrome

UNDERWEIGHT

- **Definition**
  - When BMI <= 18
- Etiology
  - Malnutrition
  - Endocrine
    - Thyrotoxicosis
    - Diabetes mellitus
    - Addison's disease
  - Infection
    - TB