

# كيف تفحص مريضًا؟

How to examine your patient

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# حقوق الطبع محفوظة ©

اسم الكتاب: كيف تفحص مريضاً؟

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الناشر: دارالزيات للنشر والتوزيع

القطع: 25X17

سنة النشر: 2024

تم الإيداع بدارالكتب والوثائق المصرية برقم: 2024 / 2925

الترقيم الدولي ( ISBN ): 5 - 499 - 844 - 977 - 978



## دارالزيات للنشر والتوزيع

المشهرة قانوناً بسجل تجاري رقم/ 49351

جميع الحقوق محفوظة للمؤلفين، ولا يجوز إعادة طرح المؤلف أو تداول نسخة إلكترونية منه أو تصوير أي من صفحاته إلا في ضوء الاتفاق المبرم بين الناشر والمؤلف الثاني، وبإذن كتابي من الأخير

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# GENERAL SHEET

## I. HISTORY

### Personal History:

-  **Name:** To be familiar with the patient. اسمك إيه؟
-  **Age:** Certain diseases are common in certain age groups. عندك كام سنة؟
- e.g. ⇒ Rh. Fever common between 5-15 year.
-  **Sex:** certain diseases are common in ♀ ⇒ Atherosclerosis.  
While others are Common in ♂ ⇒ pulmonary hypertension.
-  **Occupation:** Certain occupation leads to certain diseases ⇒ pneumoconiosis  
بتشتغل إيه؟
-  **Marital State:** Single, married, divorced, widower or widow. انت متجوز ولا لا؟  
و عندك كام عيل؟ youngest + number of children & age of!
-  **Residence:** Rural area for parasitic disease. إنت منين؟
-  **Special habits:**
- Alcoholic.
  - Smoker.
  - others: Goza, Hashish. إنت بتدخن أو بتشرب حاجة؟
-  **Handedness:** To detect dominant hemisphere (in neuro). إنت بتكتب بإيدك اليمين ولا الشمال؟

 e.g. ⇒ Male patient Mohamed Imam 38 yrs. old, worker From Cairo, married 16 years ago and has 4 children! youngest is 7 years old. He is heavy smoker '30 cig. /Day for 15 yrs.' with no other special habits of medical importance.

### Complaint: إيه اللي جابك المستشفى؟

- ★ In patient's own words (no medical terms).
- ★ Short (in brief).
- ★ with its duration.
  - e.g. ⇒ Complaint of! patient is shortness of breath 10 yrs. ago.

## History of present illness?

### A. Analysis of Complaint:

- Onset -course - duration
- Specific analysis (e.g. analysis of cough ...)؟ خاصة بكل شكوى على حدة؟
- Associated Symptoms.
- Investigation. عملت أي تحاليل أو إشاعات؟
- Treatment خدت علاج ولا لأ؟ وإيه نتيجة العلاج؟

### B. Symptoms of the affected System (leading questions): Sheet كل حسب

- Main part of sheet.
- Arranged in specific manner with positive data at first, then negative data later on. (+ve data arranged in chronological manner).

### C. Review of other Systems:

- e.g. With no Symptoms of other System affection.

## Past History

### Ask about:

1. Similar condition in! past.
2. Previous illness: D.M., B, T.B., Hypertension, Hepatitis.
3. Trauma.
4. operation.
5. previous medication or hospitalization.

## Family history:

### Ask about:

- Similar Condition in family. في حد في العيلة عنده نفس المرض؟
- Related condition (Bronchial asthma with allergic rhinitis or urticaria).
- Hereditary D. في أمراض وراثية ف العيلة؟
- Infectious D.
- Consanguinity. هل والدك ووالدتك أقارب؟

## II. EXAMINATION

1. General examination.
2. Local examination. حسب كل sheet
3. Other Systems examination.

### 1. General Examination

- General overview:
  1. Mentality.
  2. Appearance.
  3. Decubitus.
  4. Body built.
- Vital Signs:
  1. Pulse.
  2. Blood pressure.
  3. Temperature.
  4. Respiration.
- Complexions:
  1. Pallor.
  2. Jaundice.
  3. Cyanosis.
  4. Pigmentation.
- Regional examination:
  1. Head exam.
  2. Neck exam.
  3. UL. Exam.
  4. L.L. exam.

#### 1. Mentality:

IF affected in:

- Neurological or psychiatric cases.
- Major organ failure:
  - Respiratory Failure (CO<sub>2</sub> narcosis).
  - Hepatic encephalopathy.
  - Uraemic encephalopathy.

#### 2. Appearance:

- Healthy
- Ill:
  - Mild.
  - Moderate.
  - Severe.

### 3. Decubitus:

- Normal: Lying Comfortable in bed
- Abnormal:
  - ★ Semisitting (orthopnic)  $\Rightarrow$  Lt. Sided H.F., Cop & Tense ascites.
  - ★ prayer position  $\Rightarrow$  pericardial effusion & cortic aneurysm.
  - ★ Squatting position  $\Rightarrow$  Fallot's tetralogy.
  - ★ Restless  $\Rightarrow$  Myocardial infarction.
  - ★ Opisthotonus  $\Rightarrow$  Meningitis, tetanus & Subarachnoid hge.
  - ★ Platypnea  $\Rightarrow$  pulmonary embolism.
  - ★ Trepopnea (lies on affected side)  $\Rightarrow$  pleurisy & lung abscess.
  - ★ Coiled up  $\Rightarrow$  Intestinal colic.
  - ★ Leaning forward  $\Rightarrow$  pancreatitis.
  - ★ Prone decubitus  $\Rightarrow$  Pott's  $\mathfrak{D}$ .

### 4. Body built

#### A. Height:

- Average
- Dwarf
- Giant.

#### B. Weight:

- Average
- Overweight
- Underweight.

#### ➤ Overweight:

patient considered obese when body weight  $>$  ideal weight by 10-20%.

#### Causes:

1. Familial.
2. Simple obesity (no endocrinal  $\mathfrak{D}$  or any abnormality):
  - ~ over Feeding.
  - ~ In  $\text{♀}$  near menopause or after pregnancy.
3. Hormonal disorders:
  - ~ Cushing Syndrome (special Type of obesity).
  - ~ Frolich Syndrome.
  - ~ polycystic ovary.
  - ~ Insulinoma.
  - ~ Hyperprolactinaemia.
  - ~ Laurance Moon peidle Syndrome.

4. Any brain lesion affecting hypothalamus.
5. Drug induced (iatrogenic):
  - ~ Contraceptive pills.
  - ~ Steroids For long period.
  - ~ phenothiazine.
6. perikym disease (adiposa gliosa): Confirmed to L.L. of unknown aetiology which is painful.

➤ Underweight (emaciation):

**Causes:**

1. General debilitating D:
  - ~ Chronic infection.
  - ~ T.B.
2. Malignant diseases.
3. Chronic renal failure.
4. GIT D:
  - ~ Dysphagia
  - ~ Loss of teeth.
  - ~ Malabsorption Syndrome
  - ~ Repeated Vomiting.
5. Endocrinal D:
  - ~ D.M.
  - ~ Addison ⇒ loss of appetite.
6. psychiatric disturbance:
  - ~ Depression.
  - ~ Anorexia nervosa (in active clever ♀).

**Features:**

- Sunken eye.
- prominent Zygoma.
- Dull apathetic look.
- Luster loss eye
- Appearance of ribs.

✚ e.g. patient is alert, Co-operative, oriented with time, place and persons, é average intelligence intact memory. He appears mildly ill, lying comfortable in bed with average weight.

## 5. pulse

- Comment on:
  1. Rate
  2. Rhythm
  3. Volume
  4. Equality
  5. Special character
  6. State of arterial wall
  7. Peripheral pulse.

### 1. Rate:

- normal  $\Rightarrow$  60-100 beat/min.
- Abnormal  $\Rightarrow$  bradycardia ( $< 60$ ) or tachycardia ( $> 100$ )

Regular: count in  $\frac{1}{2}$  min.x2

Irregular: count in 2.min.%2

### 2. Rhythm:

- Regular
- Irregular:
  - Occasional (regular) as in Extrasystole or marked (irregular) as in A.F.
  - pulsus deficit: different between apical & radial pulsation.

لو قدرت تعد 4 ضربات متتالية تبقي  
حالة Extrasystole  
أما لو لم تستطع عد 4 ضربات  
متتالية متساوية في المقدار والمسافة  
تبقي حالة A.F

(  
<10 beat/min Extrasystole  
>10 beat/min A.F.  
)

حط السماعة على ال Apex  
وإيدك على ال Pulse  
وتعد الناقص بالنسبة للـ Pulse

### 3. Volume

- pulse pressure
  - average (D&S)
  - Big volume as in:
    - Systemic hypertension
    - Thyrotoxicosis
    - Anaemia
    - Beri-Beri.
    - aortic regurge
- Big arteries: carotid, femoral & brachial
- Complete heart block.
  - aortic atherosclerosis  
نقولها بس فـ Pure A.R.
  - pregnancy
  - P.D.A.
  - AV. Fistula

- Small volume as in:

- pericardial effusion
- Myocardial D
- pulmonary hypertension.
- Constrictive pericarditis
- Valvular stenosis  
نقولها بس في pure A.R.
- H.F.

#### 4. Equality on both Sides:

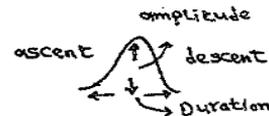
- ★ Both radial arteries should be palpated at! same time.
- ★ The difference is accentuated by raising patient's arm above! head.
- ★ Stronger pulse is found on normal side while weaker part is on abnormal side.
- ★ Causes of unequal pulse:
  - Outside! wall ⇒ Cervical rib, pancost tumor, Cervical lymphadenopathy.
  - Wall lesions:
    - Aneurysm of aortic arch.
    - Aneurysm of subclavian artery.
    - Atypical aortic coarctation.
  - Luman occlusion:
    - Thrombosis.
    - Embolism.

#### 5. State of arterial wall:

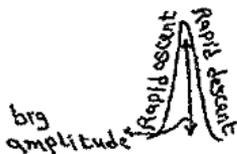
- ★ Use middle 3 fingers ⇒ the lateral two fingers will milk the artery, then! middle Finger will role! artexy against bone.
- ★ Normally ⇒ it isn't Felt, if it's Felt ⇒ Atherosclerosis.

#### 6. Special character:

- ★ Normally ⇒ no special character with ascending & descending limbs
- ★ Abnormality:



##### 1. water hammer pulse (collapsing pulse):



- Sudden ascent, sudden descent é big amplitude.
- It's due to causes of big volume.
- Best Felt é patients arm raised above! head and pulse Felt by! examiner's palmar aspect of proximal interphalangeal joints.

2. plateau pulse (pulsus Tardus) (anacrotic pulse):

- Slow ascent, slow descent & small amplitude.
- Cause: Aortic stenosis.

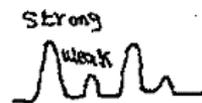


3. pulsus Bispheriens:

- pulse & 2 palpable Systolic peaks.
- Cause: Double aortic lesion & HOCM.

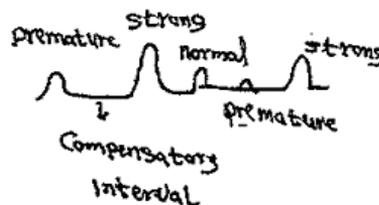
4. pulsus alternans:

- Strong beat alternating & a weak beat, but they are equidistant.
- Cause: Heart failure, myocarditis.
- Detected by sphygmomanometer.



5. pulsus Bigeminus (Trigeminus) = extrasystoles.

- A strong beat followed by one (or two) weak beat's Followed by an interval, then the beats are repeated.
- Cause: Digitalis toxicity, hypokalaemia & myocardial infarction.



6. pulsus paradoxicas:

- Normally, during inspiration! pulse volume is decreased as during inspiration! chest wall is expanded  $\Rightarrow$   $\downarrow$  V.R. To Lt. side of heart.
- So, Systolic blood pressure  $\downarrow$  by about 10 mmHg, but this phenomenon can't be detected as it's balanced to some extent by  $\uparrow$  V.R. to Rt. side of heart during inspiration.
- In case of pulsus paradoxicus  $\Rightarrow$  There's exaggeration of this phenomenon as! difference between systolic blood pressure during expiration & inspiration is  $>15$  mmHg.
- Cause: in condition in which! filling of heart is impaired & So V.R. to Rt. Side isn't  $\uparrow$  during inspiration as in: ^^^
  - a. Constrictive pericarditis & pericardial effusion.
  - b. Sever congestive heart failure.
  - c. Obstructive lung  $\text{D}$  (Br. asthma & emphysema).
- Can be detected by the Sphygmomanometer.

7. pulsus Deficit:

- Apical heart rate is more than radial pulse.

- Cause: A.F.:
  - pulse deficit >10 beats/min.
  - Multiple extrasystoles ⇒ pulse deficit <10 beats/min.

#### 7. peripheral pulsation:

1. Carotid artery: Turn! patient's head to! side to be examined ⇒ ! tips of examiner's Fingers are placed along medial border of ipsilateral Sternomastoid & passed posteriorly until! Carotid pulsations are felt.
2. Subclavian artery: From behind clavicle (middle of clavicle) or Felt From! Front (at junction of! middle and lateral 1/3).
3. Brachial artery.
4. Radial artery: By! middle 3 Fingers encircle! wrist.
5. Ulnar artery: palpated on! Flexor surface of! wrist medially.
6. Femoral artery: Midway between pubic tubercle & A.S.I.S. at! Level of inguinal ligament.
7. popliteal artery:
  - Supine position ⇒ the knee Flexed ⇒ Fingers are deep in popliteal Fossa lateral to midline.
  - If not Felt ⇒ put! patient in prone position, knee Flexed at 90°.
8. post. Tibial artery: Behind and below medial malleolus.
9. Dorsalis pedis artery:
  - 1<sup>st</sup> metatarsal space.
  - Absent in normal variant 15% & ischemia.
10. Superficial temporal artery.

#### Causes of absent peripheral pulsation:

- Aortic Coarctation.
- Thromboangitis obliterans.
- peripheral embolism.
- Extensive atherosclerosis.
- Le Riche Syndrome.

#### ✎ NB<sub>1</sub>: Alent's Test:

- ★ To demonstrate the efficiency of blood supply of! hand.
- ★ Ask patient to make Fist ⇒ use the thumbs of both your hands For Simultaneous Compression of both arteries (ulnar & radial) at! wrist against! bones. When! Fist is released! skin of! palm remains blanched but color returns quickly when one of arteries is released.

⌘ NB<sub>2</sub>:

- ★ Force: pressure needed to occlude arterial pulsation ⇒ Systolic blood pressure.
- ★ Tension: pressure needed to Feel arterial pulsation ⇒ Diastolic blood pressure.
- ★ Femoro-brachial delay: in which Femoral pulsation delayed after brachial pulsation. due to:
  - Coarctation.
  - Saddle shaped thrombus, at bifurcation of aorta.

⌘ NB<sub>3</sub>: To detect pulsus alternans by sphygmomanometer.

- ★ Raise pressure above the Systole.
- ★ Then ↓ pressure gradually until Flow started again.
- ★ Count pulse which closing manometer (e.g. ⇒ 40 b/min).
- ★ Then Continue decreasing! pressure.
- ★ IF we count! pulse again ⇒ it will be double (e.g. 80b/min).

⌘ NB<sub>4</sub>: e.g.:

- ★ pulse rate is 72 b/m, regular é average volume, equal on both sides, é no specific character, arterial wall is not Felt, é intact peripheral pulsation and é no Femoro-brachial delay.

6. Blood pressure:

- ❖ It's measured by sphygmomanometer by two methods:

1. palpatory method:

- Radial pulse is palpated then the pressure in Cuff is raised till the pulse disappears then the pressure is gradually released till! point at which! pulse just reappears ⇒ measures the systolic blood pressure.
- This method avoids auscultatory gap, but it measures systolic blood pressure only & it's less accurate.

2. Auscultatory method:

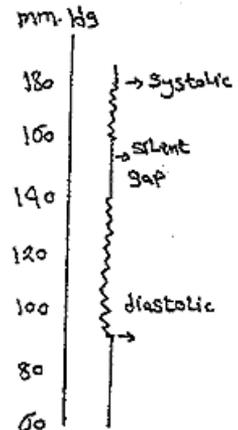
- put stethoscope below the cuff then raise! pressure in cuff above Systolic blood pressure (known by palpatory method).
- Then pressure is gradually decreased by opening! valve.
- As! cuff pressure gradually ↓ a series of sounds will be heard known as Kortachof Sounds which are:
  - ~ 1<sup>st</sup> Sound ⇒ clear soft tapping sound represents systolic blood pressure.
  - ~ 2<sup>nd</sup> Sound ⇒ Sound changes into more continuous murmur.

- ~ 3<sup>rd</sup> Sound  $\Rightarrow$  The clear sound reappears and its intensity gradually increased.
- ~ 4<sup>th</sup> Sound  $\Rightarrow$  When! cuff pressure reaches! diastolic blood pressure (in hyperdynamic circulation)! sound becomes muffled.
- ~ 5<sup>th</sup> Sound  $\Rightarrow$  Sounds disappears  $\Rightarrow$  recording diastolic blood pressure.

**NB:** We depend on phase IV(4<sup>th</sup>) in cases of aortic regurge as there's no disappearance of sound due to:

★ wide pulse pressure (تنقص من 1- 5 سم زئبق)

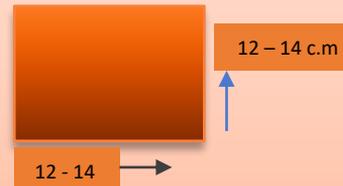
- Auscultatory (silent) gap:
  - This phenomenon occurs sometimes during measurement of blood pressure specially in hypertensive cases of unknown origin.
  - After hearing! Tapping sound that indicates Systolic pressure! sound disappears then after a drop of about 20 mmhg it reappears again. This period of silence is called (Silent auscultatory) gap.
  - IF not recognized it may lead to serious underestimation of Systolic and/or overestimation of! diastolic pressure.



- precautions during measuring blood pressure:
  1. patient should be resting 3.5 min. before measuring.
  2. Cuff Should be at! level of! heart.
  3. Arm must be Supported to avoid isometric exercise.
  4. Raise pressure till brachial pulse obliterated.
  5. Slow deflation (2 mmhg /sec.) to avoid error.
- We measure blood pressure:
  1. In Sitting & recumbant positions for postural hypotension.
  2. In Rt. & LT. arms for equality.

N.B:

1. measurement of sphygmomanometer cuff



2. in obese patient we use:  
 ... cuff of! Thigh.  
 ...put on forearm (radial).  
 ... in infant we use flushing method.

3. In lower limb (put cuff of! thigh & auscultate popliteal artery) For:

- A.I. (Hill's Sign).
- Aortic coarctation.

• Uses of Sphygmomanometer:

1. To record Blood pressure.
2. To detect pulsus alternans.
3. To detect pulsus paradoxicus.
4. To elicit pain in D.V.T (lowenberg's cuff sign).
5. To elicit  $\uparrow$  capillary Fragility in purpura (Hess Test).
6. To elicit carpopedal spasm in latent tetany (Trousseau's Sign).
7. To elicit ptosis in myasthenia gravis (Walker's Test).
8. To recure hoemostasis.
9. Closed venesection  $\Rightarrow$  8.9 are theraputic uses.

## 7. Temperature

★ Normal body temperature:

- Normal: 36.5 - 37.2 $^{\circ}$ c “orally”.
- Rectal (core temp.)  $\Rightarrow$  Subtract 0.5 $^{\circ}$ c & axillary add 0.5 $^{\circ}$ c.
- Normal diurnal variation: at! morning 36.1 $^{\circ}$ c and gradually  $\uparrow$  to reach peak 37.2 $^{\circ}$ c at 10 O'clock then drops slowly to reach minimum at 2 - 7 A.m.

أقل درجة حرارة الساعة 4 - 6 صباحاً وأعلي درجة حرارة الساعة 9 - 11 صباحاً

- Physiological variation of body temp:
  - ~  $\downarrow$  in old person due to  $\downarrow$  BMR.
  - ~  $\uparrow$  2<sup>nd</sup> half of menses by 0.5 $^{\circ}$ c due to progesterone effect.
  - ~  $\uparrow$  after meal by 1-1.5 $^{\circ}$ c.
- Fehren heit (F) = ( $^{\circ}$ c X 9/5) +32.

★ Methods of measurement:

a. oral thermometer:

- Should not be used when! patient is unconscious, restless.
- shake! Thermometer to be below 35.5 $^{\circ}$ C.
- put it under! tongue é closed lips.
- Wait 3-5 min. then read.
- Reinsert it for a minute and read again.
- IF! temp. Continues to rise wait until being stable.
- False reading:
  1. False high reading:
    - inadequate shaking.

- intake of hot drinks.
  - Sever exercise before reading.
2. False low reading:
- inadequate closure of mouth.
  - Inadequate time.
  - intake of cold drinks.
- b. Rectal temperature:
- Lubricate the head, insert for 3 - 4 cm
  - Remove after 3 min. and read.
  - Indications (contraindication of oral method):
    - Children (<1 yr.).
    - Comatosed.
    - Epileptic.
    - Vomiting.
    - Lock jaw.
    - painful mouth condition.
    - Mouth breather & dyspnea.
  - Contraindication:
    - Anal Fissure.
    - piles.
    - Repeated diarrhea.
- c. Axillary temperature:
- Less accurate.

★ Some Definitions:

1. Fever: temp. > 37.2°C due to:

Inflammation.	Infection.	Tissue damage.	Drugs (atropine)
Trauma.	Tumors	Collagen D	e.g. SLE..

2. Hyper pyrexia: Temp. > 41°C due to:

Heat Stroke.	Encephalitis.	pontine hge.	Meningitis.
Status epilepticus.	Thyrotoxic crisis.	Septicemia.	Malignant malaria.

3. Subnormal temp.: < 36.5°C.

4. Hypothermia: Temp. < 35°C due to:

- Myxedema.
- Trauma to hypothalamus.
- Drugs (chlorpromazine).
- panhypopituitarism.
- Fat loss (starvation, old age).

★ Temperature / pulse ratio:

- Every rise of body temp. by 1°C increase pulse by 10 - 15 beat/min.
- Causes of higher pulse rate for a given pyrexia (disproportionate tachycardia) ...
  - e.g.:

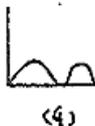
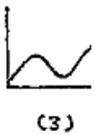
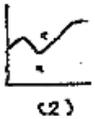
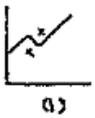
- Rheumatic fever.
- Diphtheria.
- Causes of slower pulse rate for a given pyrexia (disproportionate bradycardia) ...
  - e.g.:
    - Typhoid Fever.
    - Meningitis.
    - Viral Fevers.

★ patterns of Fever:

1. Continuous Fever:

- Temp. is always high é daily Fluctuation  $< 1^{\circ}\text{c}$ .

- e.g. Typhoid fever.



2. Remittent Fever: Temp. is always high with daily fluctuation  $> 1^{\circ}\text{c}$ , but don't reach base line.

- ... e.g.:
  - abscess.
  - empyema.
  - atypical infections:
    - ~ mycoplasma.
    - ~ legionella.
    - ~ viral.

3. Intermittent Fever (Hectic Fever)  $\Rightarrow$  Temp. Falls to normal level once or more during the day.  $\Rightarrow$  e.g. Malaria.

4. Relapsing fever  $\Rightarrow$  Short periods of fever alternating with short period of normal temp.

- e.g.:
  - Brucellosis.
  - Hodgkin (pel Ebstein fever).

5. Double quotidian Fever  $\Rightarrow$  fever é two peaks as in kala-Azar.

★ Central Fever: (due to cerebral lesions):

- Caused by:

- ~ Tumor.
- ~ Cerebral he.
- ~ Encephalitis.
- ~ Degenerative  $\text{D}$

- Characterized by  $\Rightarrow$   $\text{مرارة غير مصحوبة بغمة أو ترجيع أو استجابة لمخفضات الحرارة}$

- Lack of diurnal variation.
- Absence of Sweating.
- Resistant to antipyretic.
- Response to cooling.
- Loss of Consciousness.

- ★ Effect of Fever & hypothermia:
  1. At temp. 41.1°C in children ⇒ convulsions.
  2. At temp. 42.2°C ⇒ irreversible brain damage.
  3. At temp. 45.6°C ⇒ not compatible with life.
  4. At temp. 32.8°C ⇒ loss of consciousness.
  5. At temp 26.5°C ⇒ Slow A.F.
  6. Extreme hypothermia ⇒ Ventricular fibrillation.

8. Respiratory Movements:

a. Rate:

- Noted without the patient knowledge.
- Normally: 16-20 cycle/min.
- It's faster in children & slower in old age.
- pulse rate: Resp. rate = 4:1

b. Rhythm:

- Normally: Regular.

c. Depth:

- Normally: Neither deep nor shallow.

d. Type:

- Normally:
  - ~ in ♂ ⇒ abdomino-thoracic.
  - ~ In ♀ thoraco-abdominal.

e. Action of accessory muscles:

- Normally: no overaction of accessory resp. muscles (sternomastoid muscle).

❖ Abnormal breathing:

1. Tachypnea: ↑rate, due to:

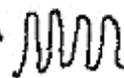
- Pneumonia.
- Acute dyspnea.
- Fever.

2. Bradypnea: ↓rate, due to:

- ↑I.C.T.
- Narcotics ⇒ inhibition of R.C.

3. Hyperpnea: ↑ in depth, often associated with increased rate in:

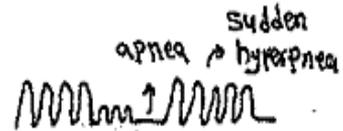
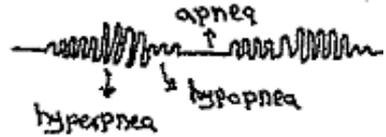
- Metabolic acidosis (Kussmaul's breath).
  - e.g. D.M., Uraemia.
- Psychogenic condition.

↑ depth  
↑ rate 

4. Hypopnea: ↓in depth (shallow breathing) in:

- pneumonia & heart Failure (rapid & Shallow).

- ↓ of R.C. by barbiturate (slow & shallow).
5. Cheyne-stokes respiration:
    - periodic breathing ... period of apnea (½ min) followed by gradual hyperpnea and then gradual hypopnea till Apnea & so on.
    - In: old people (during sleep):
      - ↓ of R.C. (atherosclerosis, narcotics & ↑ I.C.T.).
      - Lt. Side H.F.
  6. Biot's breathing:
    - period of apnea followed by Sudden hyperpnea then gradual hypopnea till apnea & so on.
    - In: Meningeal irritation (meningitis & Subarachnoid hge).
  7. Ataxic respiration:
    - Completely irregular breathing.
    - Occur in R.C. affection.
  8. Apneustic vespiration:
    - prolonged inspiration followed by respiratory pause.
    - It occurs in pons dysfunction.
  9. Abdominal respiration: Due to limitation of chest movement as in C.O.P.D.
  10. Thoracic respiration: Due to
    - abdominal distension (ascites).
    - phrenic nerve paralysis.



9. Pallor:

- Causes:
  - ~ Anaemia.
  - ~ Oedema.
  - ~ Low Co.
  - ~ peripheral Vascular D.
  - ~ Vasoconstriction.
  - ~ Panhypopituitarism.

⚡ **N.B:** Not every pale patient is anaemic, but every anaemic is pale.

- Detected in:
  - ~ Mucous membrane (conjunctiva & lips).
  - ~ Face.
  - ~ palm of hand.

## 10. Jaundice:

- ★ Def.: yellowish discoloration of skin & mucous membrane due to raised Serum bilirubin > 3mg% (manifest jaundice), & for its appearance in skin (5 - 7%).
- ★ Best detected in sclera due to high affinity of elastic fibers in sclera for bilirubin, while palate (Tongue Frenulum) is first site in which jaundice can be seen.
- ★ other causes of yellowish discoloration:
  1. Nigros.
  2. xanthochromia.
  3. Drugs: Atebrine (for TTT of Taenia Solium).
  4. Carotinaemia:
    - yellowish discoloration of skin only without involvement of sclera, mainly appears in palm, Soles & nasolabial Folds.
    - Due to:
      - a. vegetarians by eating excess carrot.
      - b. Hypothyroidism (Carotene T<sub>3</sub> & T<sub>4</sub> ⇔ vit. A).
- ★ Any case of jaundice we must ask about color of urine & stool to differentiate between different types of jaundice.

## 11. Cyanosis

- ★ Def: Bluish discoloration of skin & mucous membrane due to presence of reduced Hb. more than 5gm% in Capillaries.

	A. Central Cyanosis	B. peripheral Cyanosis
Cause:	-Defect in oxygenation: ● Congenital heart D. ● C.O.P.D. ● Interstitial Fibrosis ● Suppurative Lung Syndrome. ● pulmonary oedema. ● High altitude.	-Defect in peripheral Tissue: ● Heart Failure. ● Low C.O. ● Polycythaemia ● Exposure to cold. ● Venous thrombosis. ● Raynaud's phenomena.
Distribution:	Skin & mucous membrane (e.g.: hand & tongue).	Skin (e.g.: hand) & not tongue.
Hands:	Warm.	Cold.

	A. Central Cyanosis	B. peripheral Cyanosis
Clubbing:	May be present.	Absent.
Warming:	No effect.	Improved.
O <sub>2</sub> inhalation:	Improved.	No effect.
Erythropoiesis:	May be present.	Absent.
Arterial O <sub>2</sub> :	Low.	Normal.

★ Types:

✂ **N.B.:** We Found Cyanosed tongue with peripheral cyanosis in:

- ★ Lingual venules obstruction.
- ★ S.V.C. obstruction.

C. Chemical Cyanosis (False Cyanosis):

- Due to presence of abnormal Hb. not reduced Hb.
- Clinically similar to Central cyanosis.
- Causes:
  - ✗ Methemoglobinemia:
    - Hereditary.
    - acquired: due to nitrites.
  - ✗ Sulfhaemoglobinaemia:
    - due to sulfonamide.

D. Mixed Cyanosis:

- Due to oxygenation defect & tissue defect (circulatory).
- AE: Cor pulmonale.

E. Differential cyanosis:

- Head, neck & upper limb are pink é cyanosed L.L.
- AE:
  - Coarctation of aorta.
  - P.D.A. with reversed shunt.

F. Reversed differential Cyanosis:

- Head neck & U.L. cyanosed é pink L.L.
- AE: Transposition of great vessels with preductal coarctation.

✂ **N.B.:** Left hypoplastic heart syndrome:

- ★ Congenital small Lt. Ventricle ⇒ ↓stroke volume ⇒ most of blood ejected in 1<sup>st</sup> artery arises from arch (Rt. Brachiocephalic) ⇒ Rt. UL. pink while rest of body is cyanosed.

## 12. pigmentation

### a. Hypopigmentation in:

- ★ Withdrawal from exposure to ultraviolet light.
- ★ Vitilligo (auto-immune Ⓓ) ⇒ patchy absence of melanin.
- ★ Albinism ⇒ total absence of melanin.
- ★ Hypopituitarism ⇒ ↓ACTH.

### b. Hyperpigmentation in:

#### I. Localized:

- |                      |                          |                |
|----------------------|--------------------------|----------------|
| -Malar Flush (M.S.). | -Chronic Venous stasis.  | -Freckles      |
| -Discoid L.E.        | -Chloasma Gravidarum     | -Café au lait. |
| -Melanoma.           | -peutz Jegheur Syndrome. | -pellagra      |
| -Tenia Versicolor.   |                          |                |

#### II. Generalized:

##### 1. Endocrinal Ⓓ:

- Addison Ⓓ.
- Ectopic ACTH producing tumor.

##### 2. Metabolic Ⓓ:

- |                             |                         |              |
|-----------------------------|-------------------------|--------------|
| - Haemochromatosis.         | -Chronic Renal failure. | - porphyria. |
| -primary Biliary cirrhosis. | -Pellagra.              |              |

##### 3. Drugs:

- Busulphan in C.M. L.
- Chloropromazine.

##### 4. Miscellaneous:

- Racial, Familial.
- Chronic heavy metallic poisoning (lead & arsenic).
- Collagen Ⓓ. (S.L.E.).

### ⚡ **N.B:** other Coloration:

1. Bronzed ⇒ haemochromatosis.
2. Red ⇒ Cyanide & co poisoning.
3. Rose pink ⇒ polycythemia.

### ⚡ **N.B:** D.D. of plethoric face:

- ★ Sun exposure.
- ★ Alcohol intake.
- ★ Sever hypertension.
- ★ Cushing Syndrome.
- ★ Polycythaemia vera (P.C.V).

### 13. Head Examination

#### a. shape of head:

- ★ Hydrocephallus ⇨ enlarged head with cranio-facial disproportion.
- ★ Thallasaemia, ⇨ hypertrophy of maxillary & frontal bones.
- ★ Meningioma ⇨ localized bony swelling.
- ★ Acromegally ⇨ enlarged supra-orbital ridge.
- ★ Rickets ⇨ Square-shaped head.

#### b. Hair:

- ★ Fine silky hair in Liver Cell Failure.

#### c. Eyebrow:

- ★ Lost outer y3 in:
  - Leprosy
  - Myxoedema (risk of I.H.D.).

#### d. Eye:

##### ★ Eye lid:

- ptosis in:
  - ~ 3<sup>rd</sup> nerve palsy.
  - ~ Horner's syndrome.
  - ~ Myopathy.
  - ~ Myasthenia Gravis
  - ~ Congenital
  - ~ Local eye ⌀.
- puffness in:
  - ~ Generalized or localized oedema.
  - ~ Deposition of myxedema.
  - ~ ↑ Venous pressure:
    - Congestive H.F.
    - Chronic Cough.
    - pericardial ⌀.
- Long eye lashes:
  - ~ in T.B. (constrictive pericarditis).
- Xanthelasma:
  - ~ yellow raised plaque in hypercholesterolaemia.

##### ★ Conjunctiva:

- Subconjunctival he:
  - ~ Infective endocarditis.
  - ~ Hypertension.
  - ~ others (chronic cough, Traumatic, inflammatory, fracture bone of skull, Spontaneous).

- phlycten:
  - ~ in T.B.
- pitot spots:
  - ~ in Sjogren Syndrome.
- ★ Sclera:
  - Yellow:
    - ~ jaundice.
  - Blue:
    - ~ normal variation
    - ~ Congenital glaucoma.
    - ~ osteogenesis imperfecta.
    - ~ T.B.
- ★ Cornea:
  - Arcus Senilis.
  - Kries-Fleischer ring in Wilson's D.
- ★ Iris:
  - T.B. iridocyclitis.
- ★ Lens:
  - Medical causes of cataract:
    - ~ Anaemia (affect metabolism of lens).
    - ~ Ankylostoma.
    - ~ D.M.
    - ~ Myotonia atrophica.
    - ~ Hyperparathyroidism.
  - Subluxation of lens:
    - ~ in Marfan Syndrome.
- ★ Fundus:
  - Hypertensive retinopathy.
  - Diabetic retinopathy.
  - papilledema.
  - Roth Spots.
- e. Nose: Saddle shaped nose:
  - ★ Traumatic.
  - ★ Congenital Syphilis (Syphilitic A.R.).
- f. Mouth:
  - ★ Mouth odour.
  - ★ Tongue.
  - ★ Hutchinson teeth in Syphilis.
  - ★ Lip ⇔ pallor, cyanosis.
  - ★ High arched palate in Marfan Syndrome.
  - ★ Dancing uvula in A.R.

## 14. Neck Examination

I. Lymph nodes: Causes of enlargement:

- 2ry infection.
- Sarcoidosis.
- Miliary T.B.
- Leukaemia.
- Bronchogenic Carcinoma.

II. Skin: Carbuncle (on! back) in D.M.

III. Thyroid gland:

- ★ Inspection ⇒ for description.
- ★ palpation ⇒ For Systolic thrill.
- ★ Percussion ⇒ upper border of sternum (for retrosternal extension).
- ★ Auscultation ⇒ for Systolic bruit (↑vascularity in thyrotoxicosis).

IV. Trachea:

- ★ Central (normal).
- ★ Shifted (see chest sheet).

V. Neck pulsation:

- a. venous pulsation (neck veins)
- b. Arterial pulsation (carotid arteries).

a. Arterial pulsations.	b. Venous pulsations.
1. Medial to sternomastoid (in anterior Δ of! neck).	1. Lateral to sternomastoid. (In post. Δ of! neck).
2. More apparent in upper part of! neck.	2. More apparent in lower part of! neck.
3. Synchronus é! heart beats.	3. Asynchronus é! heart beats (a wave).
4. Better felt than seen.	4. Better Seen than felt.
5. No waves (one jerk).	5. Wavy (A&V waves).
6. Not obliterated on pressure.	6. obliterated on pressure.
7. Not affected by posture.	7. changed with posture.
8. Not affected by respiration.	8. ↓ é inspiration (except in constrictive pericarditis).
9. No hepato-jugular reflux.	9. Hepato-jugular reflux present.

✂ **NB:** Hepato-jugular reflux (pressure. test): pressure over the liver or splanchnic area leads to increased venous pulsation in the neck (↑venous congestion).

a. Carotid arteries:

- ★ prominent arterial pulsations: due to big pulse Volume.
- ★ Systolic thrill over carotid arteries:
  - ★ Either  $\Rightarrow$  propagated from base of heart (A.S., P.S., P.D.A.), accompanied by thrill over! heart base.
  - ★ Or  $\Rightarrow$  initiated in carotid itself due to:
    - Causes of big pulse pressure (A.R.).
    - Carotid aneurysm (no thrill over! base).
    - kinked carotid artery with obesity & high diaphragm.

b. Neck Veins

- ★ Method of examination:
  1. patient lies in position  $45^\circ$  (use two pillows).  
why?  $\Rightarrow$  as at  $45^\circ$  Centre of Rt. atrium is in! Same level of sternal angle.
  2. Inspect for Rt. internal jugular vein, whether it's congested or not.
  3. To detect pulsation: put your Rt. thumb on patient's vein.
  4. To measure C.V.P.: put 2 parrallel pens, one at sternal angle and! other at upper end of filling vein (then add 5 cm).
- e.g.: C.V.P. = Column of blood in cm +5 cm (pressure inside Rt. atrium).

✂ **N.B<sub>1</sub>:** We measure Venous pressure by Cm water as neck vein pressure is small & it's better to use a small pressure (1mmHg = 13.6 cm water).

✂ **N.B<sub>2</sub>:** We examine Rt. internal jugular veins as follows:

- ★ Internal jugular vein:
  - has no valves, so it's in direct continuation é Rt. side of heart.
  - presents deeply in carotid sheath, so it's not liable to be Compensated by platysma.
- ★ Rt is preferred as:
  - Lt. runs in long Course.
  - Lt. liable to be compressed by any swelling in Suprasternal notch.

✂ **NB<sub>3</sub>:** Normal level is 0-3 cm, if  $> 3\text{cm}$   $\Rightarrow$  Congested.

★ Comment:

a. wave

لا بد أن تعلق أولاً علي pulse لأنك لو وجدت A.F نستبعد معها وجود.

- Congested:
  - Not pulsating.

- pulsating.
- Not congested.
- ★ Relation to respiration:
  - Normally there's inspiratory collapse.
  - Inspiratory filling of neck vein (Kausmaull's sign) occurs in:
    - a. Constrictive pericarditis.
    - b. massive pericardial effusion.

★ Normal waves:

A wave = atrial contraction.

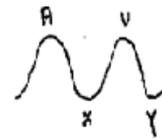
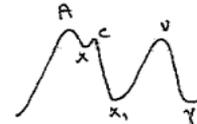
X descent = atrial relaxation.

C wave = bulge of tricuspid valve in Rt. atrium.

X<sub>1</sub> descent = return of tricuspid valve to normal position.

V wave = Venous return.

Y descent = opening of tricuspid valve.



⚡ **N.B:** Normal Systolic collapse  $\Rightarrow$  normal collapse of veins (x descent) at time of radial pulse.

★ Abnormal findings in neck veins:

A. Congested neck veins:

1. pulsating (causes of  $\uparrow$  Rt. atrial pressure):

- Rt. sided heart failure.
- T.R., T.S.
- pericardial effusion & Constrictive pericarditis.
- Incomplete S.V.C. obstruction.
- $\uparrow$  intrathoracic & intraabdominal pressure.
- Hyperdynamic circulation.
- Hypervolaemia

2. Non-pulsating:

- S.V.C obstruction:
  - Thrombosis.
  - Mediastinal Syndrome.
- In case of Sever pericardial effusion or constrictive pericarditis, neck veins may be severely congested with minimal pulsation giving False impression of non-pulsating veins. So put patient in  $90^\circ \Rightarrow \uparrow$ venous return  $\Rightarrow \downarrow$ congestion  $\Rightarrow$  apparent pulsation, or Standing patient  $\Rightarrow \downarrow$ V.R. from L.L. and  $\downarrow$ pressure in Rt. atrium  $\Rightarrow \uparrow$ V.R. From upper part.

## B. Abnormal waves:

### 1. A-wave:

- Absent A-wave  $\Rightarrow$  AF
- Giant A-wave  $\Rightarrow$  T.S., p.s., pulmonary hypertension.

### 2. X-descent:

- Systolic expansion of neck veins:
  - Tricusped incompetence.
  - AF.
  - Cannon waves:
    - ~ irregular  $\Rightarrow$  A-V dissociation (complete heart block).
    - ~ regular  $\Rightarrow$  nodal rhythm, PNT.
- Deep X-descent:
  - Constrictive pericarditis.
  - Cardiac tamponade.

### 3. Y-descent:

- Deep Y descent  $\Rightarrow$  Constrictive pericarditis.
- prolonged Y descent  $\Rightarrow$  T.S.

## 15. Upper Limb (hand) Examination

### I. Colors:

- pallor.
- Jaundice.
- Cyanosis.

### II. Temperature:

- Cold.
- warm.

### III. Sweating:

- Thyrotoxicosis.
- Anxiety.

### IV. Shape:

- Myxedema  $\Rightarrow$  broad hand, short fingers.
- Acromegaly  $\Rightarrow$  large, broad hand.
- Marfan syndrome  $\Rightarrow$  Spider Fingers.
- Turner syndrome  $\Rightarrow$  Short 4<sup>th</sup> metacarpal bone.
- pseudohypothyroidism  $\Rightarrow$  Short 4<sup>th</sup> & 5<sup>th</sup> metacarpal bones.
- Rheumatoid arthritis  $\Rightarrow$  different deformities.

### V. Neurological examination:

- wasting.
- Flappy Tremors.

c. wrist drop.

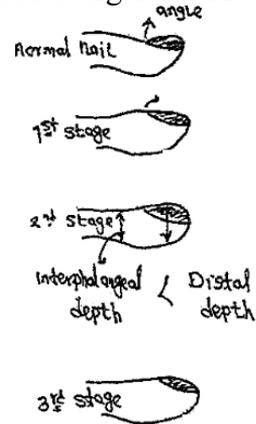
## VI. Nail examination:

### 1. clubbing of Fingers:

- a. Def.: proliferation of C.T. under nail bed due to chronic toxæmia or hypoxia.
- b. Mechanism: The exact cause is (unknown), but overgrowth of soft tissue and adjacent periosteum associated é ↑blood Flow, these changes regress with cause removal.

### c. Stages:

- ★ 1<sup>st</sup> degree angle ⇒ obliteration.  
(Filling of angle between! nail & nail bed) better seen in profile.
- ★ 2<sup>nd</sup> degree ⇒ parrot peak (distal depth > interphalangeal depth).
- ★ 3<sup>rd</sup> degree ⇒ Drum stick (swelling of! pulp in all dimensions).
- ★ 4<sup>th</sup> degree ⇒ 3<sup>rd</sup> + pulmonary osteoarthropathy (tender, thickening of ends of long bones ⇒ e.g. radius ulna)



### d. Types:

1. Anoxaemic clubbing (cyanotic clubbing) = blue clubbing.
2. Taxaemic clubbing (Acyanotic clubbing) = pale clubbing.

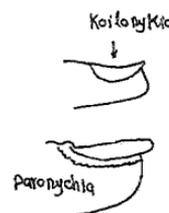
### e. Causes:

1. Cardiac:
  - ★ Congenital cyanotic heart disease (blue clubbing).
  - ★ S.B.E. (pale clubbing).
2. Chest:
  - ★ Pulmonary Fibrosis & C.O.P.D. (Hypoxaemic).
  - ★ Suppurative Lung Syndrome ⇒ (Toxaemic).
  - ★ Bronchogenic Carcinoma & pleural mesothelioma ⇒ (Toxaemic).
  - ★ Fibroid type of pulmonary TB ⇒ (Toxaemic).
3. Abdominal:
  - ★ Bilharzial polyposis.
  - ★ Liver cirrhosis (esp. biliary cirrhosis) and Amoebic Liver abscess.
  - ★ Malabsorption Syndrome (steatorrhea).
  - ★ Ulcerative colitis & Crohn's disease.
4. Miscellaneous:
  - ★ occupational (one or more fingers may be affected).

- ★ Familial (no obvious cause, affect more than one in 1 same family).
- ★ Endocrinal (Thyrotoxicosis, Thyroid acropathy).
- ★ Unilateral Clubbing (on Rt. Side) ... (Causes of unequal Pulse).
- ★ Clubbing in lower limb only... (Causes of differential Cyanosis).
- ★ Reversible clubbing ⇨ (pleural mesothelioma early clubbing).

2. Koilonychia:

- a. normal convexity is replaced by Flattening or concavity.
- b. due to:
  1. iron deficiency anaemia.
  2. Idiopathic.



3. paronychia:

- ★ Inflammation of skin around nail, it's red, tender & swollen.

4. Leuconychia:

- ★ abnormal nail (white).
- ★ white opaque opacities which may be linear, patchy or diffuse.
- ★ occurs in cases of hypoalbuminaemia (nephrotic syndrome, L.C.F.).
- ★

5. Beau's Lines:

- ★ transverse depressions in the nail associated with acute severe illness, they grow out with nail gradually over several months.



6. Splinter hge:

- ★ red or brown linear streaks in! nail bed parallel to the long axis of! Fingers.
- ★ Causes:
  - S.B.E.
  - minor.
  - Trauma idiopathic.



7. Pitting: occurs in psoriasis.

8. Bitten: anxiety.

## 16. Lower Limb Examination

a. Dorsalis pedis:

- ★ palpable = normal.
- ★ Not palpable =
  - 10% congenitally absent.

- obstructed (thrombus or embolus).
- b. D.V.T.: Homman's sign (not done  $\Rightarrow$  detachment of thrombus).

⌘ **N.B<sub>1</sub>**: Hamman's sign  $\Rightarrow$  Crushing Sound auscultated with each heart beat in cases of mediastinal emphysema.

⌘ **N.B<sub>2</sub>**: Homman's Rich sign  $\Rightarrow$  pulmonary Interstitial Fibrosis.

c. Clubbing.

d. Oedema:

- ★ non pitting = lymphoedema.
- ★ pitting.
- ★ C.O.P.D. without heart failure may produce oedema due to Salt & water retention to correct acidosis (TTT by acetazolamide).

# CARDIOLOGY

## I. HISTORY

### Personal History

 Name:

 Age:

- young ⇨ Congenital heart Đ, Rheumatic fever, (5-15 years).
- old ⇨ Ischemic Heart Đ.

 Sex:

- male ⇨ Atherosclerosis.
- Female ⇨ Iry pulmonary hypertension.

 Occupation:

 Marital State:

- repeated still births in Syphilis.
- Valvular heart Đ ⇨ deteriorate with pregnancy.
- post partum Cardiomyopathy.

 Residence:

- Farmers ⇨ B cor-pulmonale.
- Urban areas ⇨ Ischemic heart Đ.

 Special Habits:

- Alcoholic Cardiomyopathy.
- Smoking ⇨ Ischemic heart Đ
- Goza Smoking ⇨ T.B., Constrictive pericarditis.

### Complaint

➤ In patient's own words + Duration.

- e.g.:
  - Dyspnea = shortness of breath.
  - palpitation = awareness of heart beats.
  - Syncope = Fainting or attacks of loss of consciousness.

## Present History

### A. Questions to detect which valve is affected?

#### 1. Dyspnea:

- M.S. لو وحدها من مدة طويلة
- M.S., M.R., A.R. لو كان معها أعراض أخرى

#### 2. palpitation:

- Regular ⇨ M.R., A.R. or V.S.D.
- Irregular ⇨ A.F. or Extra Systole.

#### 3. Chest pain: ⇨ Ischemic chest pain ⇨ Aortic valvular Lesion.

### B. Questions to know if the case is complicated or not.

#### 1. Symptoms of Low C.O. (Syncope) = Aortic valvular Lesion mostly A.S.

#### 2. Recurrent attacks of fever.

#### 3. Embolization = M.S. complicated with AF.

#### 4. pressure Symptoms.

#### 5. Arrhythmias.

### C. Systemic Venous Congestion:

- To detect if case is Compensated (no H.F.) or not (presence of H.F.).

### D.

#### 1. Cyanosis.

#### 2. peripheral Vascular D.

#### 3. Hypertension.

### ✂ N.B.:

ترتيب الكلام في ال sheet كالتالي:

1. +ve related data.
2. -ve related data.
3. other systems.

يختم ال present history بهذه الجملة.

with no symptoms of other System affection.

## 1. Dyspnea

- Def.: uncomfortable awareness of breathing.
- Ask about:
  - onset.
  - precipitating Factor.
  - Course.
  - Relieving Factor.
  - Duration.
  - Association “chest pain or palpitation”,
  - Treatment.
- Mechanism of dyspnea in a cardiac patient:
  1. pulmonary congestion:
    - ↓alveolar compliance due to interstitial oedema.
    - Intra-alveolar oedema.
    - Oedema of bronchial mucosa.
  2. Low cardiac output ⇒ weakness of respiratory muscles.
  3. Hypoxia, hypercapnea & acidosis ẇ stimulate respiration causing Tachypnea.
  4. Hydrothorax & pericardial effusion ẇ cause mechanical Compression.
  5. Rt. sided H.F. ⇒ ascites & enlarged tender Liver ⇒ ↓diaphragmatic mobility.
- Types of cardiac dyspnea:
  - a) Exertional dyspnea:
    - Grade I ⇒Dyspnea on sever exertion (on more than ordinary effort).
      - e.g.: 3<sup>rd</sup> Floor or 300 m.
    - Grade II: Dyspnea on moderate exertion (on ordinary efforts).
      - e.g.: 2<sup>nd</sup> Floor or 200 m.
    - Grade III: Dyspnea on mild exertion (on less than ordinary effort)
      - e.g.: 1<sup>st</sup> Floor or 100 m.
    - Grade IV: Dyspnea at rest.
  - b) orthopnea: أنت بتنام على كام مخدة ؟
    - It's dyspnea on Lying Flat which is relieved or improved by sitting.
    - Mechanism
      - ~ ↑ Venous return ⇒ pulmonary congestion.
      - ~ elevation of diaphragm.
      - ~ interference é motility of respiratory muscles.

c) paroxysmal Nocturnal Dyspnea “P.N.D.”:

- Attacks of dyspnea awake! patient from sleep 1-2 hrs. é cough and blood-tinged sputum.
- It's pathognomonic to Lt. Sided H. F.
- Mechanism:
  - ~ ↑ venous return during sleep ⇒ aggravation of pulmonary congestion.
  - ~ Absorption of oedema Fluid into circulation ⇒ Further ↑in Venous return.
  - ~ ↓Sympathetic activity during sleep ⇒ reduction of cardiac Contractility.
  - ~ Nightmares ⇒ tachycardia & elevation of B.p.
  - ~ Slipping down from high pillows.
- PND occurs more commonly in Lt. Ventricular Failure as it is an acute process, while in mitral stenosis it occurs less commonly. because it's a gradual process allowing time for protective mechanisms to take place:
  - reflex vasospasm (vasoconstriction) of pulmonary arteries.
  - anastomosis between pulmonary & bronchial vein.
  - development of interstitial pulmonary barrier.
  - thickening of walls of pulmonary Venules.

	Cardiac asthma.	Bronchial asthma.
Age:	Variable.	usually young age & adolescent
past History	Cardiac symptoms.	Chest symptoms
Time of attack:	1-2 hrs. after sleep.	At early morning
Duration:	Short	Long
Dyspnea:	inspiratory	Expiratory
Sputum:	Frothy & may be blood tinged.	Thick pellets at end of attack
Chest exam.:	bilateral basal crepitation.	Generalized rhonchi.
Heart exam.:	murmur & gallop.	Normal.

	Cardiac asthma.	Bronchial asthma.
ECG:	abnormal (Lt. sided enlargement).	Normal.
Drugs:		
Adrenaline	contra indicated.	improve! condition
Morphia	Improve! condition	contra indicated.
Aminophylline	improve! condition.	improve! condition.

✂ **N.B.:** Acute pulmonary oedema.

- Def: rapid accumulation of Fluid in interstitial & intra alvedar spaces of! lung.

- AE:

I. ↑ pulmonary Capillary hydrostatic pressure (Cardiogenic pulmonary oedema):

1. Acute Lt. sided H.F.:

- Acute myocardial infarction.
- Sever hypertension.
- Myocarditis.
- Acute mitral or aortic regurge.

2. Acute exacerbation of chronic Lt. Sided H.F.:

- M.S. é precipitating Factor as A.F.

II. ↑ pulmonary Capillary permeability (non cardiogenic pulmonary oedema):

- Shock.                      - Septicemia.                      - DIC.
- Trauma.                      - Burn                                      - Sever pneumonia.
- Pancreatitis.                      - Inhalation of gases (Chlorine).

III. Other Causes:

- Sudden expansion of collapsed Lung.
- Cerebro-Vascular Stroke (CVS).
- Sever hypoalbuminaemia.
- High altitude.

Causes of Dyspnea:

I. Cardiac Causes:

1. pulmonary Congestion (M.S. & Lt. Ventricular Failure).
2. Massive pulmonary embolism & pulmonary infarction.
3. Massive pericardial effusion.

## II. Chest Causes:

### 1. Chest wall:

- extreme obesity
- Fracture ribs.
- Kyphoscoliosis.

### 2. Pleura:

- pleurisy.
- effusion
- pneumothorax
- empyema.
- Fibrosis.

### 3. Lung:

- Consolidation.
- Collapse.
- Fibrosis.
- Cavitation
- tumor.

### 4. Respiratory passage:

- foreign body & mucus plug (in Lumen).
- C.O.P.D. & bronchial asthma (in wall).
- Enlarged L.N. or tumor (outside wall).

## III. Abdominal Causes:

### 1. Ascites.

### 2. Pregnancy.

## IV. Neurological Causes:

### 1. Vocal Cord paralysis.

### 2. Diaphragmatic paralysis.

### 3. peripheral neuropathy. Myasthenia gravis & Myopathy.

### 4. poliomyelitis affecting respiratory muscles.

## V. General Diseases:

### 1. Anaemia, thyrotoxicosis.

### 2. Haemorrhage, Shock.

### 3. Diabetic ketoacidosis.

## VI. Psychogenic (hysterical) Dyspnea:

### **N.B<sub>1</sub>:** Causes of acute dyspnea:

1. Acute Lt. Sided H.F. (Myocardial Infarction).
2. Pulmonary embolism & Lung Infarction.
3. Ball & Valve thrombus in M.S.
4. Inhaled FB., Laryngeal spasm or oedema.
5. Bronchial asthma.
6. Massive Lung collapse.

7. pleurisy & pneumothorax.
8. Fracture rib & postoperative Tight bandage.
9. Diabetic ketoacidosis.
10. Hysterical.

⌘ **N.B<sub>2</sub>**: Causes of Paroxysmal dyspnea:

1. Asthma ⇒ bronchial, Cardiac, uraemic.
2. Allergic alveolitis.
3. Mediastinal Syndrome.
4. Laryngismus stridulus.
5. Myathenia gravis.
6. Hysterical (especially in ♀).

⌘ **N.B<sub>3</sub>**: Causes of exertional dyspnea:

- A. ↓ventillation:
  - C.O.P.D.
  - pulmonary effusion.
- B. ↓Diffusion:
  - Fibrosis.
  - Congestion (Lt. Sided H.f.).

Other pulmonary Congestive Symptoms

★ Cough:

- Ask about:
  - Onset
  - Course
  - Duration.
  - Productivity.
  - Diurnal variation.
  - Postural variation.
- Criteria of Cardiac Cough:
  - Nocturnal.
  - Exertional.
  - Dry if productive ⇒ Small white sputum.
- Causes of cough in cardiac patient:
  1. pulmonary congestion (whitish, Frothy not Foeted, blood tinged).
  2. pulmonary infection (excessive, colored sputum).
  3. pulmonary infarction.
  4. Compression of Lt. bronchus by enlarged Lt. atrium.

- ★ Haemoptysis:
  - Coughing of blood.
  - Ask about:
    - onset.
    - Course.
    - Duration.
    - Number of attacks.
    - Amount.
    - If there are food particles or not.
    - Color.
    - If there is melena or not.
    - precipitating factors.
  - Causes in Cardiac patient:
    1. pulmonary Congestion.
    2. pulmonary Infection.
    3. pulmonary Infarction ⇒ (may Lead to Frank haemoptysis).
    4. Rupture of aneurysm into a bronchus.
    5. Rupture of one of bronchial veins.

✂ **N.B:** Blood-Tinged Sputum = P.N.D.

✂ **N.B:** Frothy blood-tinged sputum = pulmonary oedema.

## 2. palpitation.

- ★ Def: awareness of heart beats.
- ★ Ask about:
  - onset تبدأ فجأة في ولا بالتدريج؟
  - Course.
  - Duration.
  - Offset تنتهي فجأة ولا بالتدريج؟
  - Precipitating factors.
  - Relieving Factors.
  - Resting or exertional.
  - Regular or not.
  - Rapid or slow.
- ★ Causes:
  1. Abnormalities in heart rate ⇒ Tachycardia or bradycardia.
  2. Abnormalities in heart rhythm ⇒ A.f or extrasystole.
  3. Forcible cardiac contraction in volume overload ⇒ T.R., P.R., M.R., AR.

4. Cardiac neurosis.
5. Thyrotoxicosis.
6. Abdominal distension  $\Rightarrow$  irritation of Vagus  $\Rightarrow$   $\downarrow$ rate &  $\uparrow$ diastolic-time  $\Rightarrow$  forcible contraction.

### 3. Chest pain

★ Ask about:

- onset.
- Course.
- Duration.
- Site.
- Radiation.
- Intensity.
- Character.
- precipitating factors.
- Relieving factors.
- Relation to meal.
- Relation to respiration.
- Relation to posture.
- Associated symptoms.

★ Causes of chest pain:

I. Cardiac Causes:

1. Ischemic Heart  $\text{\textcircled{D}}$ :
  - Angina pectoris.
  - Myocardial Infarction.
2. Pericardial  $\text{\textcircled{D}}$ :
  - Dry pericarditis.
  - Massive pericardial effusion.
3. Massive pulmonary embolism & pulmonary infarction.
4. Aortic dissection & aneurysm.
5. Cardiac neurosis.
6. Huge Cardiomegaly (rarely causes retrosternal heaviness).

II. Respiratory:

1. Central retrosternal soreness  $\Rightarrow$  Common Cold & Tracheitis.
2. Pleurisy, pleural effusion, pneumothorax & pleural Tumor.
3. Acute massive Lung collapse.
4. Lung  $\text{\textcircled{D}}$  extending to pleura  $\Rightarrow$  Lung abscess.
5. Central bronchial carcinoma.

### III. Mediastinal D:

1. Oesophageal Causes ⇒ Spasm, gord, Cancer, Rupture, Inflammation.
2. Lymphadenopathy.
3. Tumor.
4. Mediastinal emphysema.
5. Mediastinitis.

### IV. Chest wall D:

1. Skin ⇒ wound, Infection, Tumor.
2. Breast ⇒ Mastitis. Abscess, Tumor.
3. Rib ⇒ Fracture, Inflammation, Tumor.
4. Intercostal muscles ⇒ Muscular strain (é sever cough) & Myositis.
5. Intercostal nerves ⇒ H.Z.

### V. Abdominal D:

1. Gastritis, peptic ulcer & Hiatus hernia.
2. Gall bladder D.
3. Amoebic Liver abscess & subphrenic abscess.
4. peritonitis.

### ✂ NB: Causes of Acute chest pain:

1. Angina pectoris.
2. Myocardial Infarction.
3. Acute pleurisy & pericarditis.
4. Aortic dissection.
5. Massive pulmonary embolism & pulmonary infarction.
6. Pneumothorax.
7. Acute massive Lung Collapse.
8. Oesophageal spasm, Inflammation Rupture.
9. Mediastinal emphysema.
10. Herpes Zoster “H.Z”.

### 4. Symptoms of Low Cardiac output:

- To skin ⇒ pallor, coldness of extremities & peripheral cyanosis.
- To muscle ⇒ easy Fatigability.
- To brain ⇒ exertional blurring of vision, drowsiness & Syncope.
- To kidney ⇒ oliguria.
- To heart ⇒ angina.

★ Syncope:

- Def.: Sudden transient Loss of consciousness due to acute cerebral ischemia.  
If cerebral ischemia is prolonged, convulsion may occur, further prolongation Causes Coma, brain damage & death.
- Ask about:
  - Onset (Sudden but sometimes may be gradual).
  - Course.
  - Duration (Short).
  - Offset (Sudden).
  - Precipitating Factor (exertional).
  - Prodroma (drowsiness & blurring of vision).
  - Relieving Factor (spontaneous or with medication).
  - With Convulsion or not (not followed by convulsion).
- Causes of Syncope:
  - I. Cardiac Causes:
    1. Acute heart failure.
    2. Acute ↓in venous return.
    3. Arrhythmia (Sever Tachycardia, bradycardia & Adams stokes attacks).
    4. obstructed blood flow:
      - A.S, M.S, P.S.
      - Massive pulmonary embolism.
      - Ball & Valve embolus.
    5. Cardiac Tamponade.
  - II. Non-Cardiac Causes:
    1. Vasomotor Syncope (Vasovagal attacks):  
Predisposed by sever emotion, pain or seeing blood.
    2. Carotid Sinus Syndrome.
    3. Orthostatic Syncope (postural syncope):  
In autonomic neuropathy ⇒ especially in Diabetics.
    4. Cerebral syncope.
    5. Hypoxic Syncope.

5. Recurrent Attacks of Fever:

- ★ Ask about:
- Onset.
  - Course.
  - Duration.
  - Pattern.
  - History of admission to fever sanatorium.
  - Treatment.

★ Causes of fever in Cardiac patient:

I. Heart:

- pericarditis.
- Myocarditis.
- Myocardial Infarction.
- Infective endocarditis.
- Rheumatic Fever.

II. Vessels:

- D.V.T.
- Thrombophlebitis.

III. Lung:

- Infection.
- Infarction.

IV. Kidney: Acute nephritis causes hypertension.

V. Associative.

6. Embolization:

★ Origin:

- may originate From Rt. Side ⇒ pulmonary emboli.
- may originate From Lt. side ⇒ Systemic emboli.

⚡ **NB:** paradoxical emboli: embolus From Lt. side passes to Rt. side through V.S.D or A.S.D. Leading to pulmonary emboli.

★ it originates from! heart:

- Atrium: Lt. atrium in M.S.
- Valve: Infective endocarditis.
- Ventricle: Infarction.
- Venules: Atherosclerotic plaque.

✖ Effect: A.F يسأل عنها بالتفصيل في حالات الـ

- Middle cerebral artery: Embolic hemiplegia في تقل أو ضعف في إيدك أو رجلك؟
- Central retinal artery: Sudden blindness. نظرك قل أو راح فجأة؟
- Coronary artery: Myocardial infarction. في وجع في صدرك؟
- Superior mesentric artery: Acute abdomen.
- Renal artery: painless haematuria. لون البول أتغير؟
- peripheral artery in L.L.: claudication. في وجع في الرجل؟

## 7. pressure Symptoms:

- ★ on Trachea ⇒ Brassy cough.
- ★ On Bronchi ⇒ Dyspnea.
- ★ on oesophagus ⇒ Dysphagia.
- ★ on Lt. Recurrent Laryngeal nerve ⇒ Hoarseness of voice.
- ★ on S.V.C. ⇒ oedema, cyanosis of face & L.L.
- ★ on Spines ⇒ Bachache.
- ★ on Ribs ⇒ Chest pain.

## ✂ N.B: Ortner Syndrome.

- ★ Hoarsness of voice due to pressure on Lt. recurrent Laryngeal nerve by any mediastinal mass. or Lt. atrial enlargement.

## 8. Systemic Venous Congestion:

### A. oedema of L.L. (Swelling of L.L.):

- Def: accumulation of excessive Fluid in interstitial spaces.
- Ask about:
  - Onset.
  - Course.
  - Duration.
  - Site of appearance.
  - Uni or bilateral.
  - Pitting or non-pitting. الشراب أو الشبشب بيعلم في رجلك؟
  - Painful or not.
  - Relation to ascites.
- Criteria of Cardiac oedema:
  1. Dependent:
    - ankle in ambulant patient.
    - Sacral in bed ridden patient.
  2. Bilateral and equal.
    - it may be unilateral in:
      - ~ D.V.T.
      - ~ Lymphatic obstruction.
      - ~ Sleeping on one side.
  3. pitting ⇒ transudation of plasma without proteins.
  4. painless ⇒ non inflammatory in origin.
  5. oedema precedes ascites ⇒ except in ascites precox: in w ascites develops before L.L. oedema, it occurs in:
    - ~ Constrictive pericarditis.
    - ~ Pericardial effusion.
    - ~ Restrictive Cardiomyopathy.
    - ~ T.R.

~ T.S.

- Mechanism of oedema in Cardiac patient:
  1. ↑Capillary pressure due to venous stasis.
  2. ↑Capillary permeability due to hypoxia ⇒ V.D.
  3. ↓ Osmotic pressure due to:
    - ~ ↓intake (dyspepsia).
    - ~ absorption (GIT congestion).
    - ~ Synthesis (Liver congestion).
  4. ↑ volume of blood due to hyperaldosteronism & ↑ ADH.
  5. ↓Lymphatic drainage due to Venous Congestion.
- Causes of oedema:
  - a. Generalized:
    1. Cardiac:
      - Rt. Side H.F.
      - pericardial effusion & Constrictive pericarditis.
    2. Hepatic: Liver cell Failure.
    3. Renal:
      - Nephrotic Syndrome.
      - Nephritic Syndrome.
    4. Nutritional:
      - Malnutrition.
      - Malabsorption.
    5. Severe allergy
  - b. Localized:
    1. Venous obstruction.
    2. Inflammatory oedema.
    3. Lymphatic obstruction.
    4. Angioneurotic (affect Lower lid, upper Lip, painless with no L.N. enlargement).
- B. Ascites:
  - onset.
  - Course.
  - Duration.
  - Relation to L.L. oedema.
  - Tapping is done or not.
- C. Hepatic Congestion:
  - pain in Rt. hypochondrium.
- D. GIT Congestion:
  - Dyspepsia.
  - Nausea.
  - Vomiting.
  - Anorexia.

E. Jaundice:

- ★ Causes of jaundice in Cardiac patient:
  1. Haemolytic: in pulmonary infarction.
  2. Hepato cellular: in marked hepatic congestion due to:
    - Sever Rt. Sided H.F.
    - pericardial effusion & Constrictive pericarditis.
    - T.S. & T.R.
  3. obstructive: marked hepatic congestion ⇒ Compression of bile Canaliculi inspissation of bile intra-Lumen.
  4. Associated viral hepatitis: the commonest.

9. Cyanosis:

- ★ used as index For Congenital cyanotic heart D.
- Ask about:
  - onset.
  - Course.
  - Duration.
  - Squatting
  - Syndactyly or polydactyly.
  - stunted growth.
  - Spills.
- Age of onset:
  - Since birth = F<sub>4</sub>.
  - In teenager = Eisenminger's.
  - In forty = Cor-pulmonale.

10. peripheral Vascular D:

- ★ Claudication: Cramp Like pain affecting Calf muscles stopping! patient and relieved by rest.
- ★ Le Riche Syndrome: bilateral ileo-Femoral obstruction:
  - bilateral claudication.
  - bilateral Loss of peripheral pulsations.
  - impotence.

11. Elevation of Blood pressure:

- ★ usually, asymptomatic.
- ★ If symptomatic:
  - Headache.
  - Blurring of vision.
  - Tinnitus.
  - Epistaxis.

} Suggestive not diagnostic

## Past History:

### Diseases:

- Rheumatic Fever ⇒ Valvular heart Đ
  - Ask in details about:
    - ~ Since what.
    - ~ Manifestations.
    - ~ Complications.
    - ~ Recurrence.
    - ~ Treatment.
- T.B. ⇒ pericardial effusion, Constrictive pericarditis.
- D.M:
  - Ischemic heart Đ.
  - painless myocardial infarction.
  - Diabetic Cardiomyopathy.
  - postural hypotension.
  - peripheral vascular Đ
- Hypertension:
  - Ischemic heart Đ
  - Acute pulmonary oedema.
  - Arrhythmias.
- Operations.
- Drugs: for iatrogenic hypertension:
  - Steroid.
  - Contraceptive pills.
  - Thyroxin.
  - Licorice.
  - Amphetamine.

## Family History

 Similar condition.

 Common Đ ⇒ e.g.: Hypertension. - D.M.

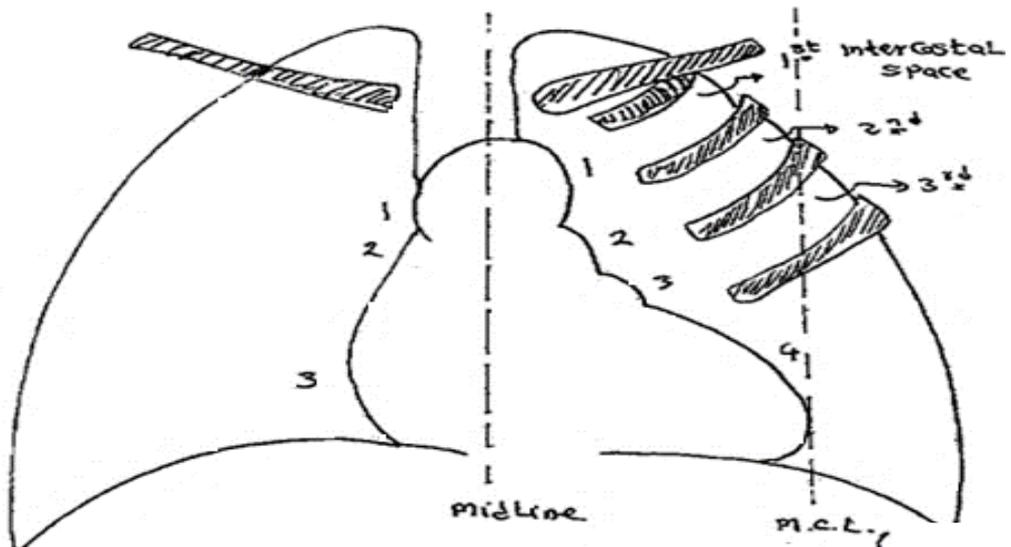
 + Ve blood consanguinity.

## II. EXAMINATION

### I. General Examination

- ★ As in general Sheet+
- ★ Decubitus:
  1. Orthopnea ⇨ Lt. Sided heart failure.
  2. Squatting ⇨ Fallot Tetralogy.
  3. prayer's posture ⇨ Huge pericardial effusion.
  4. Restless posture ⇨ in Acute myocardial infarction.
- ★ Body Built:
  1. Over built ⇨ Pickwichian Syndrome.
  2. Under built ⇨ Cardiac Cachexia.
- ★ pallor:
  1. S.B.E ⇨ Toxic Facies.
  2. Patient with artificial valve or Calcified valve ⇨ Haemolytic anaemia.
- ★ Head examination:
  1. Malar Flush ⇨ M.S.
  2. De Musset's sign ⇨ A.I.
  3. Facial oedema ⇨ T.I. (Constrictive pericarditis).
- ★ Abdominal examination:
  - a. Hepatomegally:
    - not tender:
      - Cardiac cirrhosis.
      - B Cor-pulmonale.
    - tender: -
      - Pulsating:
        - ~ with systole = T.R.
        - ~ presystolic (with diastole) = T.S.
      - non pulsating:
        - ~ Rt. Sided H.F.
        - ~ pericardial D.
  - b. Splenomegaly:
    - Cardiac Cirrhosis ⇨ portal hypertension.
    - B Cor-pulmonale.
    - S.B.E. ⇨ In Farction.

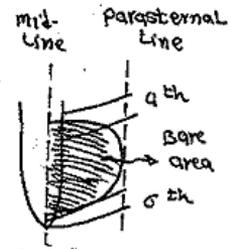
## II. Local Examination



### Surface Anatomy

- ★ 4 points will form boundaries of heart:
  1. 5<sup>th</sup> intercostal space in M.C.L.
  2. 6<sup>th</sup> Rt. rib, ½ inch from midline.
  3. 3<sup>rd</sup> rib, 1 inch from midline.
  4. 2<sup>nd</sup> Lt. rib, 1½ inch from middle Line.
- ★ Rt. border of the heart formed of:
  1. Superior Vena Cava. } Above 3<sup>rd</sup> costal cartilage.
  2. ascending aorta. }
  3. Rt. atrium ⇒ below 3<sup>rd</sup> Costal cartilage.
- ★ Lt. border of the heart formed of:
  1. Aortic knuckle ⇒ 1<sup>st</sup> space.
  2. pulmonary conus ⇒ 2<sup>nd</sup> space.
  3. Left atrial appendage ⇒ 3<sup>rd</sup> rib.
  4. Left Ventricle ⇒ 3,4,5<sup>th</sup> Spaces.
- ★ Bare area of the heart:
  - It's a small portion of the heart (anterior Surface), which isn't covered with Lung Tissue.
  - It's bounded by:

- Middle Line to the right.
- To the Left  $\Rightarrow$  arched line Convex to Lt. and running from the midline opposite 4<sup>th</sup> rib to the 6<sup>th</sup> rib passing by parasternal line (midway between Lateral edge of sternum & M.C.L.).



★ Surface anatomy of heart Valves:

- pulmonary Valve  $\Rightarrow$  3<sup>rd</sup> Intercostal space Lt. parasternal.
- Aortic valve  $\Rightarrow$  3<sup>rd</sup> I.C.S. over sternum along middle line.
- Mitral valve  $\Rightarrow$  4<sup>th</sup> I.C.S. Lt. parasternal.

Inspection & palpation:

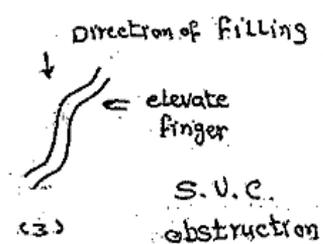
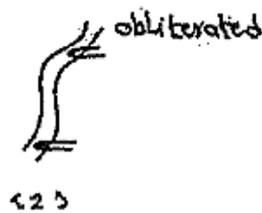
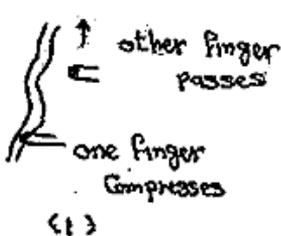
1. precordial bulge:

- ★ precordium is the area of chest overlying the heart. (From 2<sup>nd</sup> to 6<sup>th</sup> Spaces & From Left parasternal to Lt. M.C.L.)
- ★ Causes:

- Rt. Ventricular enlargement.
- pericardial effusion. ] — dating since birth.

2. Dilated veins:

- ★ on anterior chest wall  $\Rightarrow$  S.V.C. obstruction.
- ★ I.V.C. obst.
- ★ on Lateral chest wall  $\Rightarrow$  Axillary Vein obst.
- ★ If present detect direction of Filling.



3. Scars of previous operation:

★ Comment on:

- Site.
- Length.
- Type of healing:
  - Iry intension (thin-no pigment).
  - 2<sup>nd</sup> intension (thick- pigmented).

- Complication  $\Rightarrow$  hernia, Sinus, keloid.
- Type of operation.
  - Median sternotomy = open heart surgery (valve replacement).
  - InFramammary lateral thoracotomy = Mitral valvotomy (closed technique).
- e.g.: There's midline scar about 10 cm in length healed by 1ry intension with no complication, it's median sternotomy for mitral valve replacement.

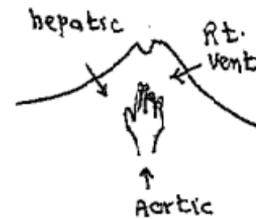
4. pulsations (Inspection confirmed by palpation).

a. Epigastric pulsation:

- Method: أنظر بمحاذاة جانب المريض وقوله إكتم نفسك.
- ضع إيدك بحيث يكون Tip of fingers facing costal margin

• Causes:

- Rt. Ventricular enlargement  $\Rightarrow$  From above & (below Lt. Costal margins).
- Aortic pulsation (in case of big pulse volume and thin individuals).
- Hepatic pulsation (From Rt. Hypochondrium) in:
  - ~ T.R., T.S.
  - ~ Constrictive pericarditis.
  - ~ Haemangioma.



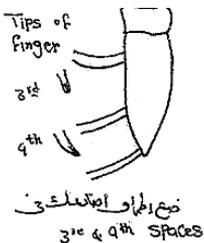
confirmed by bimanual examination.

ضع إيدك الشمال خلف المريض وإيدك اليمين فوق الـ liver

b. Lt. parasternal pulsation .... (Lt. 3<sup>rd</sup> & 4<sup>th</sup> Spaces)

• Causes:

- Rt. Ventricular enlargement:
  - ~ Heavy pulsation = tension overload (pulmonary H+ & p.s.).
  - ~ Hyperkinetic = Volume, overload (ASD & T.R.).
- Huge Lt. atrium  $\Rightarrow$  Forward displacement of Rt. ventricle.



c. Rt. parasternal pulsation ... (3rd, 4th & 5th Spaces).

• Causes:

- Rt atrial enlargement.
- Huge Lt. atrial enlargement.

- Aneurysm of ascending aorta.
- Internal mammary artery in thin Lactating♀.
- d. pulmonary pulsation ... (Lt. 2<sup>nd</sup> Space).
  - In pulmonary artery dilatation.
- e. 1<sup>st</sup> Aortic area ... (Rt. 2<sup>nd</sup> Space).
  - In Aortic dilatation “aneurysm”.
- f. Suprasternal pulsations:
  - Causes:
    - Hyperdynamic circulation (e.g.: A.R.).
    - Aneurysm of aortic arch.
    - Coarctation of aorta.
    - Kink of carotid artery in old female.

5. Apex:

★ Comment on:

a. Site:

- Normally ⇒ at 5<sup>th</sup> Lt. Space in M.C.L.
- Abnormally:
  - ★ Absent in:
    - ~ obese.
    - ~ behind rib.
    - ~ emphysema.
    - ~ Dextrocardia.
    - ~ pericardial effusion
    - ~ pleural effusion.

So put! patient in Lt. Lateral position & hold breath in expiration ⇒ apex displaced 1.2 out & 1-2 down.

★ Shifting Upward in:

- ~ Children (at 4th space):
- ~ Ascites.
- ~ Abdominal tumor.
- ~ Pregnancy.
- ~ Lt. copula paralysis.
- ~ Lt. upper Lobe fibrosis.

★ Shifting downward in:

- ~ Thin individual with thin chest Visceroptosis.

★ Inward displacement (to! Rt.) in:

- ~ Congenital dextrocardia.
- ~ Rt. side Fibrosis & collapse.
- ~ Lt. Side pleural effusion.

- ~ Pneumothorax.
  - ★ Outward displacement (to! Lt) in:
    - ~ Rt. Ventricular enlargement.
    - ~ Lt. side Fibrosis or collapse.
    - ~ Rt. side effusion or pneumothorax.
  - ★ Out ward & downward displacement in ⇒ Lt. Ventricular enlargement.
- b. Extent:
- Localized (occupying one space) = Lt. Ventricular enlargement.
  - Diffuse (occupying more than one space) = Rt. Ventricular enlargement.
- c. Character:
- Slappy apex (strong tap)
    - ★ in M.S. (= palpable accentuated 1<sup>st</sup> heart sound).
  - Heaving apex (forcible Sustained).
    - ★ in Lt. Ventricular hypertrophy due to pressure overload as in A.S.
  - Hyperdynamic apex (forcible, not sustained).
    - ★ in Lt. Ventricular hypertrophy due to Volume overload as in A.I., MI., VSD.
  - Rocking
    - ★ Lt. Ventricular rocking (in Lt. ventricular enlargement).
      - ~ apical Systolic bulge with Lt. parasternal retraction.
    - ★ Rt. Ventricular rocking (in Rt. Ventricular enlargement)
      - ~ apical systolic retraction with Lt. parasternal bulge.
    - ★ Biventricular rocking (in Biventricular enlargement).
      - ~ parasternal & apical bulge with retraction in between.

✂ **NB:** Double pulsation (paradoxical pulsation) occur in ventricular aneurysm in which pulsation present above & medial to apex.

- d. Associated thrill:
- 80% diastolic.
  - 20% Systolic.
  - Comment only in Lt. Lateral position with doing exercise.
- e. Rhythm:
- Regular.
  - Irregular (in Af & extrasystole)

f. Rate (apical).

 e.g.: Localized apex at 5<sup>th</sup> intercostal space, in M.C.L., Slappy in character not associated with thrill, irregular with rate of 70 beat/min.

## Percussion

1. upper border of Liver (by heavy percussion):
  - ★ In M.C.L. begin from 2<sup>nd</sup> Space till change of note.
2. Right border of heart (by heavy percussion):
  - ★ After detection of upper border of Liver, move up one or two spaces then percuss medially towards Rt. heart border with! finger parallel to it.
  - ★ Normally, no dullness on Rt. side of sternum.
  - ★ If dull:
    - Rt. atrial enlargement.
    - Huge Lt. atrial enlargement.
    - Pericardial effusion.
    - Ascending aortic aneurysm.
    - Any mediastinal or Lung Cause.
3. Base of the heart:
  - ★ Direction of movement from M.C.L. inward.
    - a. pulmonary area (Lt 2<sup>nd</sup> space):
      - Normally resonant.
      - Abnormally dull in:
        - ★ pulmonary artery dilatation (pulsation).
        - ★ post stenotic dilatation (p.s.) (no pulsation).
    - b. 1<sup>st</sup> Aortic area (Rt. 2<sup>nd</sup> Space):
      - Normally resonant.
      - Abnormally dull in:
        - ★ Aortic dilatation (pulsation).
        - ★ post stenotic dilatation (A.S.) (no pulsation).
4. Left border of heart:
  - ★ percuss from axilla toward inward firstly in 5<sup>th</sup> Space then 4<sup>th</sup> & 3<sup>rd</sup> Space.
  - ★ Normally, no dullness outside apex.
  - ★ Abnormally, dullness outside apex in:
    - pericardial effusion.
    - Ventricular aneurysm.
    - other chest causes.

5. Sternum:

- ★ Normally no dullness, if there is dullness of Lower part of sternum = Rt. Ventricular enlargement.

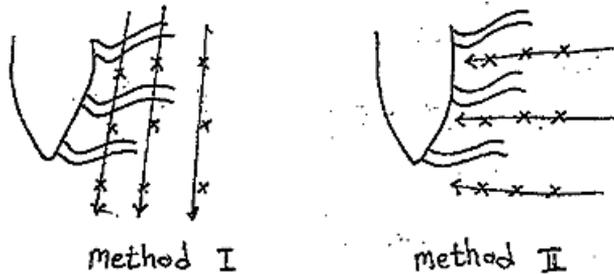
∅ **N.B<sub>1</sub>**: No percussion of inferior border of heart because it's continuous with hepatic dullness.

∅ **N.B<sub>2</sub>**: Shifting dullness in:

- ★ pericardial effusion there is dullness on pulmonary area while patient is lying Flat which disappear on sitting up.

∅ **N.B<sub>3</sub>**: Bare area of the heart (light percussion):

- ★ In 4<sup>th</sup> & 5<sup>th</sup> Spaces between midline & Lt. parasternal.



- Normally ⇒ Impaired note.
- Abnormally:
  - ↑ Dullness:
    - ~ Rt. Ventricular enlargement.
    - ~ Pericardial effusion.
  - Dullness (resonant): emphysema.

∅ **N.B<sub>4</sub>**: Main aim of inspection, palpation & percussion of heart is to detect chamber enlargement So, clinical signs of:

a. Rt. Ventricular enlargement:

1. precordial bulge.
2. Epigastric pulsation.
3. Lt. parasternal pulsation.
4. Apex ⇒ shifted outward, diffuse.
5. ↑dullness on bare area of! heart with dullness on Lower third of sternum.

b. Lt. Ventricular enlargement:

1. Apex ⇒ Shifted down & out, Localized, may be heaving or hyperdynamic.

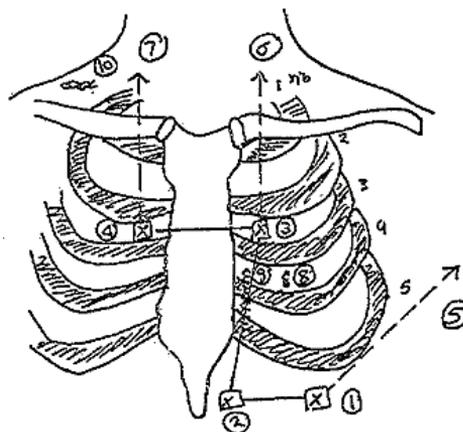
- c. Rt. atrial enlargement:
1. Rt. parasternal pulsation.
  2. Dullness on Rt. side of sternum.
- d. Lt. atrial enlargement:
1. ↑dullness on Lt. 3<sup>rd</sup> Space.

## Auscultation

★ Auscultatory areas:

- a. Stethoscope moves in Z-shape manner:

1. Mitral area (Lt. 5<sup>th</sup> Space in M.C.L.)
2. Tricuspid area (Lower Lt. sternal border).
3. Lt. 2<sup>nd</sup> intercostal space (pulmonary area).
4. Rt. 2<sup>nd</sup> intercostal space (Aortic area).



- b. others:

5. Upward toward axilla from mitral area (M.R.)
6. Upward toward root of neck from pulmonary area (p.s., pDA).
7. Upward toward root of neck from Aortic area (A.S)
8. LT. 3<sup>rd</sup> Space (A.R.).
9. Lt. parasternal (3<sup>rd</sup> & 4<sup>th</sup>) VSD & Sounds of Rt. Ventricle.

- c. Also:

10. Rt. Supraclavicular (Venous hum).
11. Bare of Lung (fine bilateral basal crepitation).
12. Interscapular (Aortic Coarctation).

★ We use cone only in low pitched sounds as:

- Murmurs of M.S. & T.S.
- S<sub>3</sub> & S<sub>4</sub>.
- Venous hum.
- Otherwise, we use diaphragm.

★ We Comment on:

- Heart Sounds ⇒ S<sub>1</sub> & S<sub>2</sub>.
- Additional Sounds ⇒ S<sub>3</sub>, S<sub>4</sub>, gallop, opening snap & ejection click.
- Murmur.
- pericardial rub.

## A. Heart Sounds:

### 1. First heart Sound (S<sub>1</sub>):

#### ★ Causes:

1. Valvular = closure of mitral & tricuspid valves.
2. Muscular = vibration of papillary muscles & chorda tendinae.

#### ★ Comment:

- only on apex (mitral area).
- It's! heart sound with pulsation of carotid.

#### ★ Abnormality:

##### a. Accentuated S<sub>1</sub>:

1. M.S. & T.5. ⇒ as Valves close from distant area due to underfilling of Ventricles.
2. Tachycardia.
3. Hyperdynamic Circulation.
4. Systemic hypertension.
5. Short p-R interval.
6. Thin chest and children.
7. Atrial myxoma.
8. Mitral valve prolapse.

##### b. Muffled (weak) S<sub>1</sub>:

1. Calcified M.S.
2. M.R. & T.R. ⇒ closure from Semiclosed position & overlapping by murmur.
3. Bradycardia.
4. Hypodynamic Circulation.
5. Hypotension.
6. Long p-R interval.
7. Mechanical ⇒ obesity, emphysema, pericardial effusion, pleural effusion & dextrocardia.
8. Impaired myocardial contractility ⇒ H.F., infarction, myocarditis.

##### c. Variable intensity of S<sub>1</sub>:

###### 1. A-V dissociation:

- Complete heart block (atrium 70-110 & ventricles 35-45).
- paroxysmal ventricular tachycardia (atrium 70 - 110. Ventricle 150 - 250) This Leads to variation in. p-R. interval ⇒ variation in degree of Filling.

###### 2. 2<sup>nd</sup> degree heart block:

- Gradual prolongation of P.R. Followed by absent beat ⇒ Variable p-R interval ⇒ variation in degree of Filling.

### 3. Atrial Fibrillation (A.F.)

#### 2. Second heart Sound (S<sub>2</sub>):

- ★ Cause ⇒ Due to closure of semilunar valves (aortic & pulmonary).
- ★ Comment:

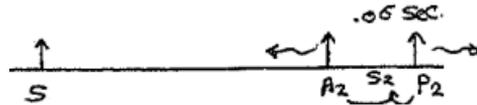
- Only on base:
  - over aortic area S<sub>2</sub> is single (A<sub>2</sub> is only heard), (P<sub>2</sub> is weak).
  - over pulmonary area S<sub>2</sub> is split (A<sub>2</sub> Followed by P<sub>2</sub>).
- It's! Sound which isn't correspond to Carotid pulse.
- only é deep inspiration.

#### ★ Splitting:

- Aortic component normally precede! pulmonary Component due to high pressure closing! aortic valve Leading to splitting of S<sub>2</sub>, normally splitting is closed.



- During inspiration:
  - Venous return increases to! right side & pulmonary valve takes more time to close ... in! same time! Lung expand & take more blood, so blood going to left side is decreased. So! aortic valve takes less time to close ⇒ So splitting increases with inspiration (0.06 sec).
  - During expiration: reverse occurs, so splitting becomes narrow or fused (0.02 sec).



#### ★ Abnormality:

##### a. abnormal splitting:

- wide splitting of S<sub>2</sub> (delayed p<sub>2</sub>):
  - P.S.
  - Rt bundle branch block.
  - ASD.

#### ✂ N.B: In ASD splitting is:

- a. wide: due to shunting of blood From Lt. to Rt. leads to Volume overload & delayed closure of pulmonary Valve.
- b. Fixed: (not changed with inspiration or expiration).  
as during inspiration ⇒ ↑V.R. to Rt. atrium, so ↑ pressure inside it ⇒ ↓shunt From Lt. To Rt.

- ★ Reversed (paradoxical) splitting of S<sub>2</sub> (delayed A<sub>2</sub>):
  - It's delay of A<sub>2</sub> to come after P<sub>2</sub> ... Reversal of relation to respiration (splitting increases during expiration & closes during inspiration).
  - Due to:
    - A.S.
    - Lt. bundle branch block.
    - PDA (Fixed).
- ★ Single S<sub>2</sub>:
  - Absent (faint) P<sub>2</sub> (A<sub>2</sub> only is heard):
    - Sever P.S.
    - f.4.
    - pulm. atresia.
  - Absent (Faint) A<sub>2</sub> (P<sub>2</sub> only is heard): Sever A.S.
  - Synchronus A<sub>2</sub> & P<sub>2</sub> (heart acts as one Ventricle): Sever VSD.
    - b. abnormal intensity ...

1. Accentuated S <sub>2</sub>	2. Muffled S <sub>2</sub>
I. Accentuated A <sub>2</sub> (on aortic area):	I. Muffled A <sub>2</sub> (on aortic area):
- Systemic Hypertension.	- Systemic Hypotension.
- Hyperdynamic Circulation.	- Hypodynamic Circulation.
- Children & Thin chest.	- Obese pleural & pericardial effusion
II. Accent. P <sub>2</sub> (on pulmonary area):	- A.S.
- Pulmonary Hypertension.	II. Muffled P <sub>2</sub> (on pulmon. area):
- Hyperdynamic Circulation.	- Pulmonary Hypotension.
- Children & Thin chest.	- Hypodynamic Circulation.
- Causes of accentuated A <sub>2</sub> .	- Obese, pleural & pericardial effusion
	- P.S.
	- Causes of weak A <sub>2</sub> .

## B. Additional Heart Sounds:

### 1. Third heart sound (S<sub>3</sub>):

#### ★ Mechanism:

- due to rapid gush of blood from atrium to Ventricle lead to vibration of ventricular wall.

- ★ Comment:
  - Time: Early diastolic, during maximum Filling phase.
  - Site:
    - All Sounds of Rt. ventricle heard on Lt. parasternal.
    - All sounds of Lt. Ventricle heard on apex.
- ★ Causes:
  - a. physiologically:
    - Children & young adults (↑velocity of blood).
    - Hyperdynamic Circulation.
  - b. pathologically:
    - Volume overload:
      - T.R.
      - P.R.
      - A.S.D. ⇔ on Rt. Side
      - M.R.
      - A.R.
      - V.S.D. ⇔ on Lt. Side.
    - ↓Destinsability of the heart:
      - Cardiomyopathy
      - Myocardial infarction.
      - Myocarditis
      - Heart Failure (↓elasticity So blood Flow is more vibrating).
      - Hyperdynamic Circulation (↑rate).

⚡ **N.B:** pericardial knock:

- ★ In cases of constrictive calcified pericarditis, it occurs at! same time of S<sub>3</sub> but by different mechanism as it is due to Sudden halting of! relaxing ventricle by! rigid pericardium.

## 2. Fourth heart Sound (S<sub>4</sub>):

- ★ Mechanism:
 

It's forcible atrial contraction against:

  - Tension overload.
  - Volume overload.
  - Non-Compliant Ventricle.

In absence of A.V. obstruction.
- ★ Comment:
  - Time: Late diastolic, during phase of atrial contraction.
  - Site: The same as S<sub>3</sub>.
- ★ Causes:

- a. Volume overload:
  - Hyperdynamic state.
  - Acute M.R. (no time for adaptive dilatation).
- b. Non-Compliant Ventricle:
  - Myocardial infarction.
  - Dilated Cardiomyopathy.
  - Ventricular aneurysm.
  - Myocarditis.
- c. Tension overload:
  - A.S.
  - Systemic hypertension.
  - Coarctation
    - ⇒ Lt. Ventricle.
  - p.s.
    - pulmonary hypertension.
    - pulmon. embolism.
    - ⇒ Rt. ventricle.
  - Hypertrophic Cardiomyopathy:
    - hypertrophy occurs on! expense of! Cavity So in!
    - rapid Filling phase (80% of! blood) ⇒ lead to complete Filling then! atrial contraction (20%) will lead to imbacktion of blood ⇒ distension of thick wall of! wall.

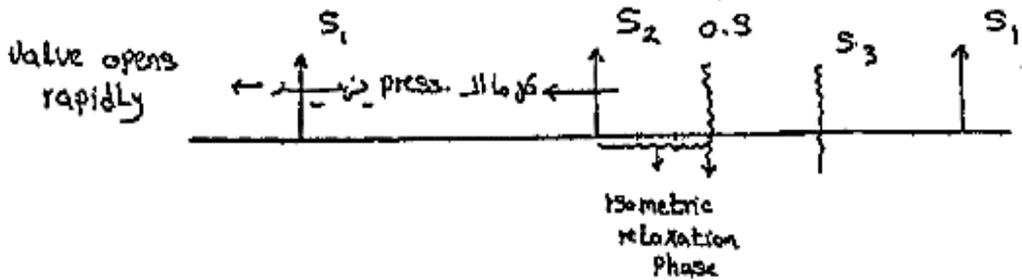
⌘ **N.B:**

1. S<sub>4</sub> never occurs in atrial fibrillation (AF) as there is no atrial contraction.
2. S<sub>4</sub> may be! only sign of angina even in! absence of ECG changes.
3. Gallop
  - It's presence of extra sound rather than S<sub>1</sub> & S<sub>2</sub> in presence of tachycardia.
  - S<sub>1</sub> + S<sub>2</sub> + Tachycardia:
    - + S<sub>3</sub> ⇒ Ventricular (protodiastolic) gallop.
    - +S<sub>4</sub> ⇒ atrial (presystolic) gallop.
    - +S<sub>3</sub> & S<sub>4</sub> ⇒ Summation gallop, (separate).
    - +S<sub>3</sub> & S<sub>4</sub> ⇒ quadrible gallop. (Fused).
3. Opening Snap (o.S):
  - ★ Cause: occurs due to opening of rigid stenosed valve (commonly M.S.).
  - ★ Comment:

- Time  $\Rightarrow$  Diastolic, heard closely after  $S_2$  (just before M.S. murmur).
- Site  $\Rightarrow$  Heard over! apex towards Lt. sternal border & preferred when! patient lies in Lt. lateral position.

★ Value:

1. Sure, Sign of M.S. (T.S.) without regurge
2. Denotes non calcific cusps which are pliable.
3. Severity of M.S. is inversely proportional to ( $S_2$  - O.S.) interval (i.e. short interval  $\Rightarrow$  Sever stenosis & vice versa).



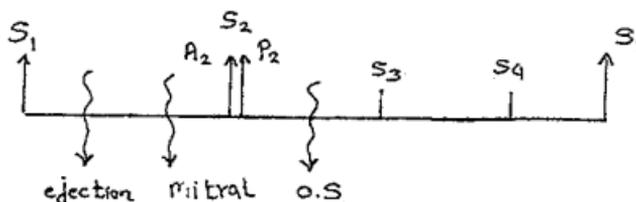
4. Ejection click:

a. Ejection (early systolic) click:

- Its sharp high-pitched sound occurs early in systole.
- At! beginning of maximum ejection phase.
- Best heard at! base (pulmonary & aortic area)
- Causes:
  - P.S. & A.S.
  - Pulmonary & Systemic hypertension.
  - Aortic aneurysm & pulmonary dilatation.

b. Mitral (mid systolic) click:

- Occurs in mitral valve prolapse (click murmur Syndrome) (Barlow's D)



### C. Murmurs

- ★ Definition: It's audible abnormal heart sound.
- ★ Mechanism: Turbulance of blood flow due to:
  - Passage in stenosed valve (or vessel).

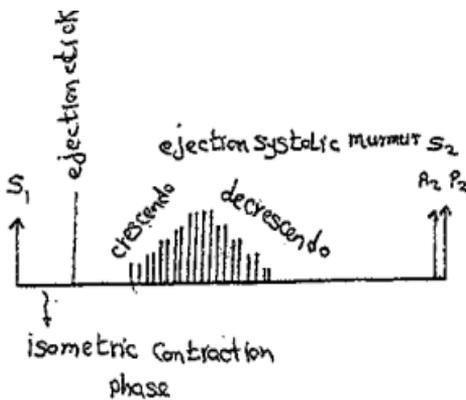
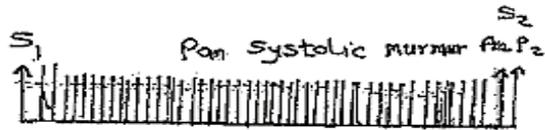
- Regurgitation of blood flow across incompetent valve.
- Flow across septal defect or shunt.
- Flow into dilated chamber (pulmonary or aortic dilatation).
- ↑ Amount or ↑ Rate of blood flow (Functional murmurs).

★ Comment:

1. Timing.

A. Systolic.

- pansystolic:
  - occurs in T.R., M.R. & V.S.D.
  - No gap between  $S_1$  & murmur (during whole cycle pressure in ventricles exceeds pressure in atrial), it extends up to aortic component.
- Ejection Systolic (mid systolic):
  - occurs in:
    - × organic:
      - ~ A.S.
      - ~ P.S.



~ Characterized by crescendo-decrescendo manner, there's gap corresponding to isometric contraction phase.

~ Hypertrophic Cardiomyopathy.

~ Coarctation of aorta.

~ pulmonary branch stenosis.

× Functional:

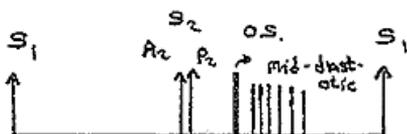
~ Sever A.R. ⇒ relative A.S. due to Volume overload.

~ A.S.D. ⇒ Functional murmur on pulmonary area.

~ Hyperdynamic circulation ⇒ excess Flow along valve orifice.

B. Diastolic

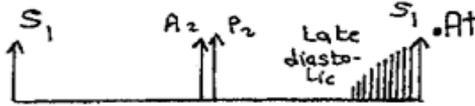
- Early diastolic:
  - occurs in P.R., A.R.
  - No gap between  $S_2$  & murmur. Murmur dies at end of diastole.
- Mid diastolic:
  - occurs in:



~ organic M.S. & T.S. characterized by presence of gap between  $S_2$  & murmur Corresponding to isometric relaxation phase preceded by O.S.

- ~ Carey's Comb's murmur.
- ~ Austin Flint murmur.
- ~ Sever M.R. (Functional) ... due to ↑ Flow along! valve.

- Late diastolic:
  - occurs in M.S. & TS.



- Atrial contraction pushing of blood under pressure in late diastole "Systolic accentuation".

- It doesn't occur in A-F. due to absence of atrial contraction.

### C. Continuous

- PDA:
  - machinery murmur (train in tunnel murmur).
  - heard in Lt. 1<sup>st</sup> space and propagated to root of neck.
- A.V. Fistula ... From high to lower pressure (Systemic pulmonary and coronary).
- High VSD.
- Rupture of aortic aneurysm into pulmonary artery.
- Venous hum:
  - Heard by cone in Rt.. Supraclavicular Space with patient sitting.
  - present in:
    - ~ normal individual
    - ~ hyperdynamic state.
  - D.D. From propagated pDA by disappearance of venous hum by:
    - ~ blocking of vein.
    - ~ kinking of neck
    - ~ lying Flat.
  - Venous hum can be heard at epigastrium in cases of portal hypertension.

### 2. Site of maximum intensity:

- Mitral valve ⇒ on! Apex
- Tricusped v. ⇒ on Lt. Sternal border.
- Aortic valve ⇒ on 1<sup>st</sup> & 2<sup>nd</sup> aortic area.
- pulmonary v. ⇒ on pulmonary area.

### 3. Propagation:

- Localized in M.S.
- propagated:

- M.R.  $\Rightarrow$  to axilla.
  - T.R. & T.S.  $\Rightarrow$  to apex & Lt, Sternal border.
  - P.R. & P.S.  $\Rightarrow$  to Lt. Sternal border & Lt. Side of the root of! neck.
  - A.R.  $\Rightarrow$  1<sup>st</sup> aortic area, 2<sup>nd</sup> aortic area Lt. sternal border & apex.
  - A.S.  $\Rightarrow$  as A.R. propagated to Rt. Side of root of neck.
4. Character of murmur:
- Rumbling  $\Rightarrow$  organic M.S.
  - Soft  $\Rightarrow$  all incompetent & Flow murmurs.
  - Harsh  $\Rightarrow$  VSD, aortic coarctation & all stenotic murmurs (except M.S.).
  - Machinery  $\Rightarrow$  PDA.
  - Musical  $\Rightarrow$  M.R. due to rupture of papillary muscle.
5. Effect of posture:
- Heart descent 1 - 2 cm on standing.
  - When lying in Lt. I ateral position  $\Rightarrow$  the apex becomes nearer to chest wall.
  - when leaning forward  $\Rightarrow$  the base becomes nearer to chest wall.
  - All murmur on apex increases in Lt. lateral position.
  - All murmur on base increases in sitting with leaning Forward.
6. Effect of respiration:
- In inspiration  $\Rightarrow$   $\uparrow$ V.R.  $\Rightarrow$   $\uparrow$ blood Flow to Rt. Side  $\Rightarrow$   $\uparrow$ turbulence  $\Rightarrow$   $\uparrow$ murmur. So, all murmurs on Rt. Side  $\uparrow$  with inspiration.
  - In expiration  $\Rightarrow$   $\uparrow$ blood Flow to Lung  $\Rightarrow$   $\uparrow$ turbulence  $\Rightarrow$  murmur on Lt. Side. So, all murmurs on Lt. Side  $\uparrow$  with expiration.
7. Effect of exercise:
- exercise  $\Rightarrow$   $\uparrow$ blood flow  $\Rightarrow$   $\uparrow$ turbulence.
  - All murmurs  $\uparrow$  with exercise except in A.S.
8. with thrill or not
9. Grading of murmur:
- Grade:
    - $\frac{1}{4}$  I. Very faint, just audible in quiet room é good stethoscope and holding breath.
    - $\frac{2}{6}$  II. faint murmur in all position.

$\frac{3}{6}$  III. Moderate Loudness without thrill.

$\frac{4}{6}$  IV Loud accompanied by a thrill.

$\frac{5}{6}$  V. Very loud.

$\frac{6}{6}$  VI. So loud to be heard without stethoscope.

#### 10. Type of murmur

- organic: loud, long duration, propagated, harsh & with thrill.
- Functional: Faint, Short duration, not propagated, soft & no thrill.
- Innocent murmur:
  - Can be heard over pulmonary area in children because pulmonary trunk near chest wall.
  - This murmur is characterized by:
    - ~ Very Soft.
    - ~ Variable with respiration.
    - ~ Variable with posture.

#### ⌘ N.B: Intensity of murmur:

- ★ as! intensity of murmur depends on! velocity of Flow, so loud murmur may be found with mild lesion & weak murmur with Sever lesion.
- ★ So, Severity of! lesion depends on! duration of murmur.

#### D. Pericardial Rub

- ★ Cause: Dry pericarditis.
- ★ Character: Superficial leathery continuous Sound.
- ★ Auscultation: Best heard at Lt. Sternal edge with! patient sitting up or leaning Forward.
- ★ D.D.:
  - ↑by pressing! stethoscope against chest wall.
  - doesn't disappear on holding up respiration.

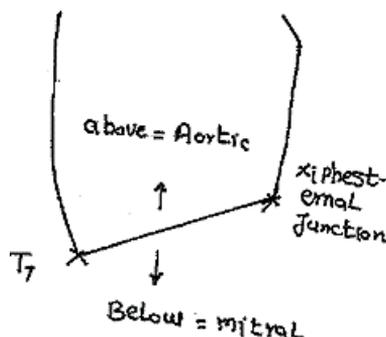
📌 e.g.: S<sub>1</sub> is accentuated.

- Diastolic murmur heard maximally on 2<sup>nd</sup> aortic area propagated to 1<sup>st</sup> one, increases with expiration, leaning forward & exercise.

Not associated with thrill, of grade IV, of organic A.R.

## Important Clinical Notes

- ★ Value of mouth examination in aortic patient:
  - High arched palate  $\Rightarrow$  Marfan syndrome.
  - Dancing uvula (seen by torch).
  - Hutchinson teeth  $\Rightarrow$  S A.R.
- ★ How to detect artificial valve in X-ray:
  - A-p view shows abnormal shadow of valve.
  - Lateral view
- ★ Causes of acute M.R.:
  1. Mitral valve prolapse.
  2. Acute infective endocarditis.
  3. Acute attack of Rheumatic Fever.
  4. post operative in commissurotomy.
  5. Dysfunction of mitral valve.
  6. Myocardial infarction (Echo must be done to differentiate it from VSD)
- ★ Double mitral lesion:



Dominant M.S.	Dominant M.R.
- Slapping apex	- Hyperdynamic apex.
- Long duration of rumbling murmur.	- Short duration of rumbling murmur.
- Rt. Ventricle ++	- Lt. ventricle ++
- A.F.	

- ★ Aortic stenosis:

AS. due to valvular lesion.	A.S. due to Subvalvular lesion.
- S <sub>2</sub> is muffled.	- S <sub>2</sub> is normal.
- Ejection click.	- No ejection click.
- X-ray $\Rightarrow$ Calcified valve.	- X-ray $\Rightarrow$ Finding as Valvular lesion

- ★ Double aortic lesion:

Predominat A.S.	predominat A.R.
- Sustained apex.	- Hyperdynamic apex.
- Small pulse pressure.	- wide pulse pressure.
- ch.ch. of organic A.S. (thrill é murmur).	- Functional: characterized. murmur $\Rightarrow$ no thrill.
	- Peripheral signs of A.R.

✂ **N.B:** IF both are equal pulsus bisferens is dominant.

- ★ Effect of A.F. on M.S.:
  1. Variable intensity of  $S_1$ .
  2. Loss of presystolic accentuation of middiastolic rumbling murmur.
  3. Short duration of diastolic murmur.
  4. ↑incidence of embolization.
  5. ↑incidence of H.F.

- ★ How to judge severity of M.S.: By:
  1. presence of pulmonary  $H^+$  or systemic Venous congestion.
  2. Duration of mid diastolic rumbling murmur.
  3. Relation-ship between O.S. &  $S_2$ .
  4. Investigation: X-ray  $\Rightarrow$  calcified valve & chamber enlargement.  
Echo and Catheterization.

- ★ Staging of M.S.:
  - I.  $\Rightarrow$  Asymptomatic + Signs.
  - II.  $\Rightarrow$  Symptoms + Signs.
  - III.  $\Rightarrow$  pulmonary  $H^+$  + above.
  - IV.  $\Rightarrow$  Above + Rt. Ventricular dilatation.

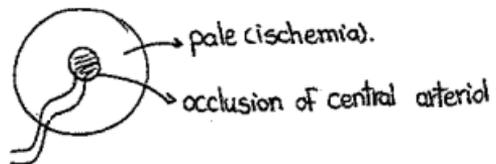
- ★ Marfan Syndrome:
  - Long patient with long Fingers.
  - Dislocation of patella.
  - Subluxation of lens.
  - High arched palate.
  - AR.

- ★ Cardiac Complication of Rheumatic arthritis (Causes of death in Rh. Arthritis):
  - Dry pericarditis.
  - pericardial effusion.
  - A.R.
  - Angina.
  - Cardiomyopathy.
  - A-V block.
  - Infarction.
  - H.F.

★ Roth's Spot:

★ Kith Wagner classification of  $H^+$ :

- I. peripheral arteriolar Vasospasm.
- II.  $\Rightarrow$  I+ attenuation of vein at site of crossing with barking of blood distally.



III.  $\Rightarrow$  II+ cotton wool spot.

IV.  $\Rightarrow$  III + papilloedema.

- ★ Murmur in F<sub>4</sub>: Coming from infundibular stenosis (pulmonary area), not from V.S.D. (as pressure is equal in both ventricle).
- ★ If there's A.R. & M.S. we treat A.R. at first as it carries danger of ischemic heart diseases.

🚦 e.g.: For diagnosis of cardiac case:

- Aortic valvular lesion.
- A.R.
- Not Complicated except syncopal attack.
- Rheumatic in AE.
- Compensated.

# CHEST

## I. HISTORY

### Personal History

 Name

 Age:

- ★ young ⇒ Extrinsic Bronchial asthma.
- ★ Old ⇒ Malignancy.

 Sex:

- ★ male ⇒ Bronchogenic carcinoma.
- ★ Female ⇒ Bronchial adenoma.

 Occupation: pneumoconiosis.

 Marrital state.

 Residence:

- ★ urban ⇒ air pollution ⇒ Bronchogenic Carcinoma.
- ★ rural ⇒ parasitic infestation.

 Special habits:

a) Goza Smoker:

- ★ CopD > Carcinoma due to:
  - Long duration of puff in Goza.
  - Bad type of tobacco ⇒ more irritant.

b) Cigarette smoker:

- ★ Bronchogenic Carcinoma > CopD due to:
  - Early Consumption.
  - Easy availability.
  - More thermal effect.
- ★ Causes of chronic bronchitis in cigarette smoking:
  - Irritant reflex spasm ⇒ retained secretion.
  - Abnormally ciliary movement.
  - Deficiency in, antitrypsin secretion.
- ★ Types:
  - Active smoker or passive smoker.
  - Current smoker = Stop Smoking 1 month ago.  
**Or** X-Smoker “Stop Smoking 3 months ago”.  
**Or** non-Smoker “Stop smoking > 6 months”.
  - According to duration:
    - mild (1 - 9 years).
    - moderate (10 -19 years).
    - heavy (> 20 years).

- According to pack per year:
  - mild  $\Rightarrow$  1 - 19 pack/year.
  - moderate  $\Rightarrow$  20 - 40 pack/year.
  - Severe  $\Rightarrow$  > 40 pack/year.

⌘ **N.B:**

★ pack/year = 
$$\frac{\text{number of cigarette /days. X number of years.}}{20}$$

★ Smoking index = number of cigarette X number of years.

- ★ Hazards of alcohol in chest patient....
  1. Aspiration pneumonia.
  2.  $\downarrow$ immunity  $\Rightarrow$  predispose to infection.
  3. pulmonary oedema.
  4. Septic pulmonary emboli.

## Complaint

★ In patient's own words é no medical terms.

## Present History

- A. Questions to know what's! Lesion...
  1. Cough.
  2. Expectoration.
  3. Dyspnea
  4. Wheezes.
  5. Chest pain.
- B. Questions to know if case is complicated or not...
  1. Hemoptysis.
  2. Systemic venous congestion.
  3. Toxic manifestation.
  4. pressure Symptoms.
- C. Questions to know if case is Compensated or not...
  - ★ manifestation suggesting respiratory Failure.

### A. Questions to know What's the Lesion...

#### 1) Cough:

- ★ Definition: explosive expiratory manoeuvre to get rid of foreign material or excess mucous up to! mouth.

- ★ Mechanism:
  - Receptors ⇒ in pharynx, Larynx, Trachea, Large bronchi, visceral pleura.
  - Afferent ⇒ Vagus.
  - Centre ⇒ cough Centre in medulla.
  - Efferent ⇒ recurrent Laryngeal nerve, Spinal nerves to diaphragm. & expiratory muscles.
  
- ❖ Cough mechanism passes through 3 phases:
  - Inspiratory phase ⇒ opening of glottis with deep inspiration.
  - Compression phase ⇒ glottis is closed, diaphragm is elevated, expiratory ms. contract against closed glottis ⇒ ↑ intrathoracic pressure up to 300-400 mmhg.
  - Expiratory phase ⇒ opening of glottis which release pressure built up between bronchi & atmosphere ⇒ rush of air.
  
- ★ Ask about:
  - onset.
  - Course.
  - Duration.
  
- ❖ Acute ⇒ Sudden onset, severe, short course. e.g.: FB.
- ❖ Chronic ⇒ Long duration (>8 weeks). e.g.: Chronic bronchitis.
- ❖ Paroxysmal ⇒ periodic, prolonged e.g.: Bronchial asthma, whooping cough, Cavitory Syndrome.
  
- ↳ Character:
  - ★ Barking: dry, barking. e.g. epiglottitis & hysteria.
  - ★ Brassy: dry, harsh, metallic. e.g. tracheal Compression.
  - ★ Bovine: non explosive. e.g. Vocal cord paralysis.
  - ★ Hawking: Frequent, brief, harsh for throat clearance. e.g. Smoking, nervous habit, viral infection.
  - ★ Whooping: repeated cough Followed by whoop. e.g. pertussis.
- ↳ Productivity:
  - ★ Dry: inhalation of irritant gas, F.B.
  - ★ productive: Chronic bronchitis.
  - ★ Dry then becomes productive: Lung abscesses.

- ↳ Diurnal Variation:
    - ★ Morning: chronic bronchitis (air pollution, Smoking).
    - ★ Afternoon: exposure to dust.
    - ★ Nocturnal: Bronchial asthma, Cardiac asthma.
  - ↳ Seasonal Variation:
    - ★ Bronchial asthma.
    - ★ Allergic rhinitis.
    - ★ Bronchiectasis: Long duration é winter exacerbation.
  - ↳ postural Variation:
    - ★ postural cough: is cough related to certain position as in:
      - × Lt. sided heart Failure.
      - × Suppurative Lung Syndrome.
      - × Gastro-oesophageal reflux é aspiration.
  - ↳ precipitating Factors:
    - ★ Dust or Fumes.
  - ↳ Relieving Factors:
    - ★ medication.
  - ↳ Associated Symptoms:
    - ★ Hoarsness: Laryngitis.
    - ★ Wheeze: B.A.
    - ★ Vomiting: pharyngitis.
- ★ Hazards of cough:
- I. Thoracic:
    1. Rupture of pulmanary bleb Leading to pneumothorax.
    2. Stress Fracture of ribs.
    3. precipitates rupture of aneurysm.
    4. May play a role in pathogenesis of emphysema.
  - II. Extra thoracic
    1. Increased intra-abdominal pressure:
      - ★ Hernia.
      - ★ prolapse of rectum or uterus.
      - ★ Stress incontinence.
    2. Increased intra-ocular pressure:
      - ★ Retinal & Subconjunctival hge.
      - ★ Retinal detachment.
    3. Increased intra-cranial pressure:
      - ★ ppt. rupture of aneurysm ⇔ Subarachnoid or cerebral hge.

- ★ Cough Syncope ( $\downarrow$ V.A. to heart due to  $\uparrow$  intrathoracic pressure  $\Rightarrow$   $\downarrow$  cerebral blood flow.
- 4. Insomnia & exhaustion.
- 5. Dissemination of infection.
- ★ Main Causes of chronic cough:
  1. Chronic bronchitis.
  2. Bronchial Carcinoma.
  3. Suppurative Lung syndrome.
  4. pulmonary T.B., pneumoconiosis, Sarcoidosis.
  5. post nasal discharge as in chronic sinusitis.
  6. Lt. Sided heart failure.

2) Expectoration:

- ★ Definition: any abnormal Secretion expectorated from broncho-pulmonary System (not Saliva nor nasopharyngeal Secretion).
- ★ Composition:
  - Tracheo-pulmonary tree normally Secretes up to 100ml. of sputum per day, which is usually swallowed and unnoticed.
  - this secretion Contains  $\Rightarrow$  Water + exfoliated cells + glycoprotein + Lysozymes + immunoglobulin + Serum protein (albumin) +  $\alpha$  antitrypsin + cHo & Lipid.

	Sputum.	Saliva.
- Microscopically:	- Alveolar pneumocytes (macrophages).	- St. squamous cells from mouth & pharynx.
- on oily surface:	- no air bubbles.	- air bubbles.

- ★ Ask about:
  - onset.
  - Course.
  - Duration.
  - Amount.... Large amount (150 cc/day) in S.L.D.
  - Odour:
    - Foul Sputum in Infection by  $\Rightarrow$  Anaerobes, Spirochaetes & Fusiform bacilli.
    - due to: degradation of tryptophan into indole & skatole.
  - Consistency:
    - Frothy: in acute pulmonary oedema.
    - watery:
      - ~ in alveolar cell carcinoma & hydatid  $\text{\textcircled{D}}$ .
      - ~ if put in test tube  $\Rightarrow$  it's sliding.

- Thick:
  - ~ in bronchitis, suppurative Lung Syndrome
  - ~ if put in test tube  $\Rightarrow$  stickes to tubes wall.
- Colour:
  - White: Chronic bronchitis.
  - Black: Smoking, coal miners, Fungal infection.
  - yellowish: S.L. D.
  - Greenish: pseudomonas, sputum of bronchial asthma on standing.
    - (excess oesinophils  $\Rightarrow$  break down  $\Rightarrow$  Verdo peroxidase enzyme  $\Rightarrow$  greenish sputum.
  - Red: haemoptysis.
- Character:
  - Mucoid: chronic bronchitis.
  - purulent: S.L.D.
  - Mucopurulent: T.B., Bronchogenic carcinoma.
  - Red currant jelly: Bronchogenic carcinoma.
  - Rusty: pneumonia
  - Chocolate: Amoebic Lung abscess.
  - Coin (Nammular): T.B.
- Diurnal Variation:
  - Nocturnal: pulmonary congestion due to heart  $\text{D}$ .
  - Early morning: Bronchiectasis & Br. asthma (due to stasis).
  - Chronic morning expectoration all over years: chronic bronchitis.
- postural Variation:
  - Lung abscess:  $\uparrow$ by Lying on healthy side.
  - Bronchiectasis:  $\uparrow$  by stooping Forward.
- Associated Symptoms:
  - Wheeze.
  - Toxaemia.
- ★ Value of clinical examination of Sputum:
  1. Macroscopic ex.: Color, consistency chch., odour, ... in details.
  2. Microscopic ex.:
    - a. Gram stain.
    - b. Z.N. stain: T.B.
    - c. Culture sensitivity test.
    - d. Non Cellular elements:
      - Elastic Fibers  $\Rightarrow$  in destructive Lung  $\text{D}$ .

- Charcot Lyden crystals  $\Rightarrow$  granules, cytoplasm component of eosinophils, basophils & mast cells. They appear elongated, rhomboid, 2-5  $\mu$ m. It occurs in Br. Asthma.
- Curshman spirals  $\Rightarrow$  Sputum of any bronchial  $\Rightarrow$  inspissation of Secretion  $\Rightarrow$  spirally twisted mucinous material around central threads.
- e. Cytoplasmic ex. For bronchogenic carcinoma.
- f. Immunological: Ag/Ab complex.

### N.B:

- ❖ Expectoration of Large amount of whitish sputum (may be changed in color) with long duration of cigarette smoking  $\Rightarrow$  Chronic bronchitis.
- ❖ Dry repetitive cough ending with expectoration of small viscid sputum + history of exposure to allergens + in attacks  $\Rightarrow$  Br. Asthma. ... associated  $\hat{=}$  dyspnea, wheezes & relieved by bronchodilator  $\Rightarrow$  (O<sub>2</sub>, aminophylline).
- ❖ Huge amount + thick + yellowish + purulent + Foetid + postural  $\Rightarrow$  Suppurative Lung Syndrome. (S.L.S).
- ❖ Greish, greenish or yellowish sputum + history of either:
  - ... Toxic manifestation.
  - ... or intake of anti T.B. drugs.
  - ... or admission to chest sanatorium = T.B.

- e.g.: !Condition started 15 years ago  $\hat{=}$  gradual onset of cough which was at First in attack, firstly it was dry, each attack was precipitated by Fumes, dust and certain food, each attack is associated with dyspnea & wheeze. Later on cough become productive with sputum of  $\frac{1}{2}$  a cup/day, which was white, thick, mucoid, odourless with no effect of posture, but increased in winter and morning.

### 3) Dyspnea:

- ★ See cardiac sheet for more details.
- ★ Onset:
  - Acute.
  - paroxysmal  $\Rightarrow$  Bronchial asthma.  
(associated with wheezes and relieved by bronchodilator)

- Chronic  $\Rightarrow$  C.o.p.D or any advanced chest  $\text{\textcircled{D}}$ .  
C.o.p.D. is associated with wheezes.  
but any advanced chest  $\text{\textcircled{D}}$  not necessary to be associated with wheezes.

4) Wheezes: = C.o.p.D.

- ★ IF paroxysmal  $\Rightarrow$  Bronchial asthma.
- ★ If paroxysmal then becomes chronic  $\Rightarrow$  Chronic asthmatic bronchitis.
- ★ If not paroxysmal with dyspnea, cough & expectoration  $\Rightarrow$  Emphysema.
- ★ Ask about:
  - onset.                      - Course.                      - Relieving factor.                      - Duration.
  - precipitating factor.                      - TTT
  - Inspiratory or expiratory.                      - Associated Factor.
  - Localized or diffuse.
- ★ D.D. of wheeze:
  1. Stridor: continuous harsh sound due to upper airway obstruction  $\Rightarrow$  From! Larynx.
  2. Snoring: inspiratory noise of irregular quality  $\Rightarrow$  From Soft palate.
  3. Rattling: coarse, irregular, inspiratory sound in presence of tracheal Secretion  $\Rightarrow$  From Trachea.

5) Chest pain:

- ★ Chest Causes of chest pain;
  1. central retrosternal soreness: in Common Cold, Tracheitis.
  2. Central chest discomfort: in mediastinal tumor.
  3. Constant progressive pain: malignant invasion of chest.
  4. pleuritic pain: in pleurisy, pulmonary infarction, pneumonia & tension pneumothorax.
  5. Dull aching pain: in pleural effusion.
  6. Chest wall pain: in Fracture ribs or osteomyelitis.
  7. Neurogenic: in H.Z.
  8. Referred: From! abdomen.

**NB:** Most common cause of chronic chest pain  $\Rightarrow$  Chronic Cough in chronic bronchitis.

- ★ Ask about:
  - onset.                      - Course.                      - Duration.                      - Site.
  - Referred or not.                      - chch.                      - What  $\downarrow$ .                      - what  $\uparrow$ .
  - Association.

## B. Questions to know if! Case is Complicated or not?...

### 1. Haemoptysis:

- ★ Main complaint or complication.
- ★ Definition: Coughing of blood, bloody sputum From Lungs or Tracheo-bronchial tree.
- ★ Ask about:
  - onset.
  - Course.
  - Duration.
  - Amount of Lost blood (blood transfusion means that large amount is Lost).
  - Frequency (no. of attacks).
  - Type.
  - Associated symptoms.
- ★ Causes of haemoptysis:
  - I.Chest causes:
    1. Traumatic:
      - chest injuries.
      - F.B.
      - Bronchoscopy (Iatrogenic).
    2. Inflammatory:
      - Bronchiectasis (50%).
      - Fungal bronchitis.
      - Lung abscess.
      - pneumonia.
      - T.B.
    3. Neoplastic:
      - Bronchogenic adenoma.
      - Bronchogenic carcinoma.
      - Malignant Tumor of trachea.
      - Metastasis.
  - II.Cardiac Causes:
    1. LT. Ventricular failure.
    2. pulmonary infarction.
    3. Mitral Stenosis.
    4. pulmonary oedema.
    5. pulmonary A-V malformation.
    6. Rupture of aortic aneurysm into bronchi.
  - III.Others:
    1. S.L.E. Vasculitis.

2. Blood diseases.
3. Tracheal endometriosis.
4. Anti-coagulant intake.

☞ **NB1:** Causes of Frank haemoptysis:

1. M.S.
2. T.B.
3. pulmonary infarction.
4. Bronchiectasis haemorrhagica Sicca ⇒ dry cough + haemoptysis + apical Lesion.
5. Bronchogenic adenoma ⇒ ↑vascularity - Local malignant tumor - no capsule - erosion of blood vessels.
6. Bronchogenic carcinoma.
7. Iatrogenic.
8. Anti-coagulant intake.
9. Blood ⓓ.
10. Ruptured aneurysm.

☞ **NB2:** Common Causes of haemoptysis.

- e.g.: There was history of haemoptysis, 3 times, each of small amount, blood streaked-mucous é no food particles or melena.

2. Systemic Venous Congestion:

★ chest causes of LL. Oedema:

1. C.o.p.D. ⇒ Core pulmonale ⇒ Rt. Sided heart Failure.
2. Suppurative Lung ⓓ ⇒ amyloidosis ⇒ nephrotic syndrome.
3. Obstructive Lung ⓓ ⇒ hypoxia ⇒ ↑capillary permeability ⇒ oedema.
4. Hypo-albuminaemia (excess expectoration & Frequent aspiration) ⇒ in empyema.

☞ **NB:** C.o.p.D. produce LL. oedema through:

1. Cor-pulmonale.
2. Hypoxia.
3. Acid-base disturbance:
  - ↑Pco<sub>2</sub> ⇒ ↑NaHco<sub>3</sub> absorption from kidney.
  - Na & water retention.

★ Chest causes of jaundice:

- a. Hepatocellular: Cor-pulmonale ⇒ Liver congestion.

- b. Haemolytic: pulmonary infarction (pulmonary embolism).
- c. Obstructive: bronchial Carcinoma (Liver metastasis).

★ Ask about:

- oedema.
- ascites.
- jaundice.
- dyspepsia.
- pain in At. hypochondrium.

3. Toxic manifestation:

- ★ Anorexia.
- ★ Loss of weight.
- ★ Night sweating.
- ★ Night Fever.
- ★ Admission to chest sanatorium.

• Causes:

- Suppurative Lung Đ.
- T.B.
- Malignancy.

4. pressure Symptoms:

- ★ As in cardiac sheet.
  - Dysphagia.
  - Hoarsness of Voice.
  - Brassy Cough.

C. Questions To know if case is compensated or not?...

★ Manifestation which suggest respiratory Failure:

1. Dyspnea at rest.
2. Inverted sleep rhythm.
3. Cyanosis.
4. Tremor.

★ It's Suggestive and not diagnostic as respiratory failure is diagnosed

Laboratory by:

- Pa O<sub>2</sub> < 50.
- Pa Co<sub>2</sub> > 50.

## Past History

1. T.B.
  - a. admission to chest hospital.
  - b. Long period of TTT.

- c. ischio-rectal abscess.
  - d. cervical Lymph adenopathy.
  - e. anorexia & wt. Loss.
2. Diabetes mellitus
- A. D.M. potential T.B. through ... (T.B. Follows D.M. as its shadow).
    - 1. Compromising host defense mechanism.
    - 2. produce Local Tissue acidosis & electrolyte imbalance  $\Rightarrow$   $\downarrow$  repair.
    - 3. Favouing growth & viability of bacilli by:  $\uparrow$ suger, glycerol and nitrogenous substance in blood.
    - 4. Enhancing atherosclerosis disturbing pulmonary perfusion.
    - 5. Associating stress  $\Rightarrow$   $\uparrow$  ACTH  $\Rightarrow$   $\uparrow$ steroids  $\Rightarrow$   $\uparrow$ T.B.
    - 6. Lack of insulin receptors on macrophages & monocytes  $\Rightarrow$  Supress immunity.
  - B. T.B. predispose to hyperglycaemia through...
    - a.  $\uparrow$ hepatic glycogenolysis.
    - b.  $\downarrow$ hepatic glycogenesis.
    - c. Tissue destruction.
    - d. Lack of insulin due to impairment of pancreatic islets.
    - e. T.B. bacilli  $\Rightarrow$  Sensitivity of tissue to insulin.
    - f. diabetogenic effect of INH.
3. Aspiration of pleural effusion:
- ★ It's amount: bottle = 500 ml.
  - ★ Color.
  - ★ Aspect: turbid or clear.
  - ★ Recurrence or not.
  - ★ There are complications or not. e.g.: Fever, pus.
4. Bilharziasis
- ★ B core.pulmonale.
  - ★ Verminous pneumonia.
  - ★ Toxic bronchial asthma.

### Family History

- ★ Bronchial asthma.
- ★ T.B.
- ★ Ataxia telangiectasia.
- ★ Similar condition.
- ★ +ve consanguinity.

## II. EXAMINATION

### I. General Examination

★ As in general sheet:

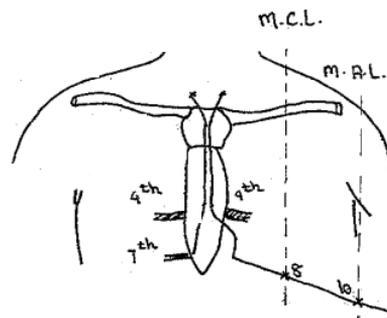
- Causes of pallor in chest patient:
  1. Normocytic normochromic anaemia due to bone marrow depression in bronchogenic Carcinoma.
  2. Microcytic anaemia due to repeated haemoptysis.
  3. Macrocytic anaemia (normochromic) due to folate deficiency.
- Causes of hepatomegaly in chest patient:
  1. B Cor -pulmonale.
  2. Hypoxic cor -pulmonale.
  3. ptosed Liver in emphysema.
  4. Amoebic Liver abscess.
  5. Secondaries From br. Carcinoma.
  6. Fatty change due to chronic toxoemia.
  7. Associated.
- Causes of Splenomegaly in chest patient:
  1. B Cor-pulmonale.
  2. Hypoxic Cor-pulmonale  $\Rightarrow$  Cardiac cirrhosis.
  3. Miliary T. B.
  4. Sarcoidosis.
  5. Amyloidosis.
  6. Associated.
- Causes of Ascites in chest patient:
  1. B Cor- pulmonale.
  2. Hypoxic Cor-pulmonale.

### II. Local Examination

★ Surface Anatomy:

1. Pleura:

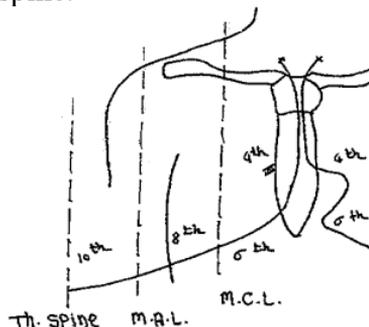
- apex is 1.5" above sternoclavicular joint.
- anterior border: Started from apex downward & medially to! center of manubrium where it met! opposite one, then both of them descend vertically till! Level of 4<sup>th</sup> Costal cartilage where:



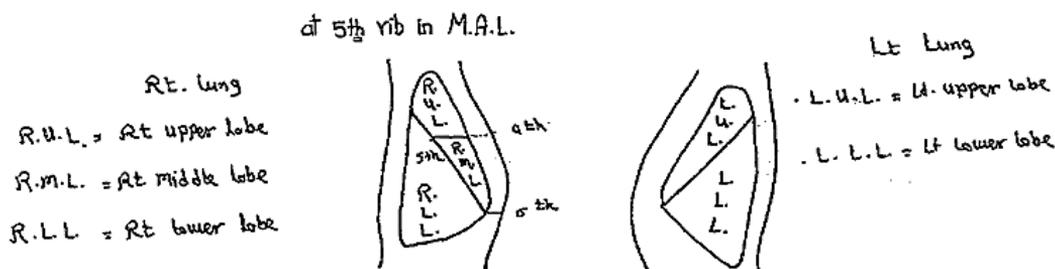
- Rt. one descended to Rt. 7<sup>th</sup> sternocostal junction.
- Lt. one deviated to Lt. border of sternum then curved downward to Lt 7<sup>th</sup> sternocostal junction.
- inferior border: began from! Last point backward to 8<sup>th</sup> rib in M.C.L.  
⇒ 10<sup>th</sup> rib in M.A.L. ⇒ 12<sup>th</sup> thoracic spine.

## 2. Lung:

- the same as! pleura in! anterior border, but! Lt. Lung deviated to parasternal Line (½" From Lt. Sternal border), From 4<sup>th</sup> costal cartilage to 6<sup>th</sup> one for! cardiac notch.
- inferior border of Lung: is higher than that of pleura by two spaces.



- ❖ Oblique Fissure: From 6<sup>th</sup> Costal cartilage (ant.) to ⇒ 5<sup>th</sup> rib in M.A.L. (Laterally) to ⇒ Spinous process of T<sub>3</sub> (post).
- ❖ Transverse Fissure: From 4<sup>th</sup> rib (ant.) ⇒ ends by meeting! Oblique fissure at



5<sup>th</sup> rib in M.A.L.

- ❖ Bifurcation of trachea: at disc between 4<sup>th</sup> & 6<sup>th</sup> thoracic spines slightly to! Rt. of midline.

## 3. Bones:

### a. sternum:

- ★ Suprasternal notch ⇒ opposite to 2<sup>nd</sup> thoracic vertebrae.
- ★ Angle of Lewis ⇒ opposite to 4<sup>th</sup> thoracic vertebrae.
- ★ Xiphoid process ⇒ opposite to 10<sup>th</sup> thoracic vertebrae.

### b. Scapula:

- ★ Superior angle ⇒ opposite to 2<sup>nd</sup> thoracic spine.
- ★ Spine ⇒ opposite to 3<sup>rd</sup> thoracic spine.
- ★ Inferior angle ⇒ opposite to 7<sup>th</sup> thoracic spine.

#### 4. Respiratory muscles:

##### a. Inspiratory muscles:

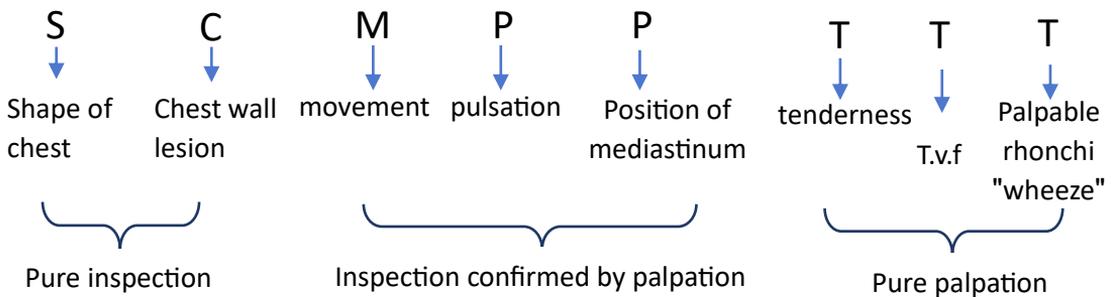
- ★ Diaphragm is responsible for 75%.
- ★ External intercostal muscles.
- ★ Accessory muscles ⇒ Sternomastoid, ant. & post. Serratus & scalenus muscle.

##### b. Expiratory muscles:

- ★ Abdominal muscles.
- ★ Internal intercostal. muscle.
- ★ Serratus post. muscle.
- ★ These muscles act only during deep expiration.

#### A. Inspection.

#### B. palpation.



#### 1. Shape of chest:

- ★ Symmetry:
  - Symmetrical. ..Comment on! form.
  - Asymmetrical
    - Bulge
    - Retraction: (Fibrosis, collapse, Kyphoscoliosis)
- ★ Form:
  - Elliptical (normal).
  - Barrel shaped.
- ★ Components: Vertebral column & examination of! back is important in pott's D.

#### • Normal chest shape:

- Elliptical.
- Symmetrical.
- oblique ribs.

- Subcostal angle is  $90^\circ$  or less.
- Antero-posterior diameter: Transverse diameter = 5:7.
- Abnormal chest shape:
  - a. In Form:
    1. Barrel chest (emphysematous)  $\Rightarrow$  C.o.p.D
      - ★ Barrel shaped.
      - ★ Symmetrical.
      - ★  $\uparrow$  A-p diameter  $>$  Transverse diameter.
      - ★ Horizontal ribs  $\acute{e}$  wide intercostal spaces.
      - ★ obtuse subcostal angle  $>$   $90^\circ$  with raised shoulder & kyphosis.
    2. Flat (Alar) chest  $\Rightarrow$  Congenital or Fibrosis (T.B.).
      - ★  $\downarrow$  A-p diameter.
      - ★ winged scapulae.
    3. Funnel chest (pectus Excavatum)  $\Rightarrow$  Congenital or occupational "shoe maker".
      - ★ Inward depression of Lower end or whole sternum.
      - ★ May compress heart gives picture similar to Constrictive pericarditis.
    4. pigeon chest (pectus Carinatum) Rickets, Chronic Respiratory  $\text{\textcircled{D}}$  since childhood.
      - ★ prominent sternum with Forward protrusion ( $\uparrow$  A-p diameter).
      - ★ In Rachitic chest we found:
        - pigeon chest+:
        - Harrison's sulcus (permenant) at line of insertion of diaphragm to ribs.
        - Rachitic Rosary (transient) hypertrophy of costo-chondral junction.
  - b. In Symmetry... (ask! pt. to stop breathing).
    - ★ Causes of unilateral bulging:
      - chest wall causes:
        - Chondroma.
        - osteoma.
        - S.c. emphysema.
        - Emphysema.necessitans.
      - pleura:
        - effusion.
        - pneumothorax.
        - neoplasm.
      - Lung:
        - bronchial Carcinoma.
        - unilateral obstructive emphysema.

- Heart: pericardial bulge.
- Mediastinum:
  - Aortic aneurysm.
  - Tumors.
- ★ Causes of unilateral retraction (Flattening):
  - Fibrosis.
  - collapse.
  - Kyphoscoliosis.

✂ **NB:** IF Shape of chest is asymmetrical it has no specific forms.

c. In Components:

1. Sternum: Congenital deformity.
2. Ribs:
  - normally  $\Rightarrow$  oblique.
  - Fibrosis  $\Rightarrow$  more oblique.
  - emphysema  $\Rightarrow$  horizontal.
3. Intercostal spaces:
  - widened in emphysema.
  - narrowed in Fibrosis & collapse.
4. Spines:
  - Normally  $\Rightarrow$  Convexity.
  - kyphosis  $\Rightarrow$  exaggeration of kyphosis.
  - Scoliosis  $\Rightarrow$  abnormal deviation to one side.
  - Gibbus  $\Rightarrow$  angulation.
  - Straight Back  $\Rightarrow$  ankylosing spondylitis.

📄 e.g.1: Symmetrical chest with barrel shaped, (wide subcostal angle,  $\uparrow$ A-p diameter). with normal components  $\Rightarrow$  C.o.p.D.

📄 e.g.2: Asymmetrical chest with indrawing of sternum with other components & back is normal  $\Rightarrow$  T.B.

2. Chest wall Lesion:

- ★ Scars.
- ★ pigmentation:
  - Miliary T.B.  $\Rightarrow$  erythema nodosum.
  - Addison  $\text{\textcircled{D}}$  (TB.).
  - S.L.E.

- Neuro Fibromatosis.
- Bronchogenic Carcinoma.
- ★ Dilated Veins:
  - I.V.C. obst.
  - S.V.C. obst.
  - Axillary vein obst.
- ★ Swellings:
  - Cystic Swelling:
    - Cold abscess.
    - Retromammary abscess.
    - Chronic empyema necessitans.
    - Surgical emphysema.
    - Herniation of Lung abscess.
  - Solid swelling:
    - Chronic nonspecific costo-chondritis.
    - Malignant rib Tumor.
    - Metastasis to rib.
    - T.B. costo chondritis.
- ★ Sinuses:
  - Chronic empyema sinus.
  - Actinomycosis.
  - T.B. Sinus.
  - osteomyelitis of ribs.
- ★ S.C. emphysema:
  - results From Leakage of air into S.C. tissue due to:
    - Trauma:
      - ~ accidental.
      - ~ Surgical.
    - Tension pneumothorax (Following needle introduction).
  - Local or diffuse Swelling é charachterestic egg Crackling sensation.

### 3. Respiratory Movements:

- ★ Rate: 2 امسك إيد العيان واحسب في ½ دقيقة واضرب في 2
- ★ Rhythm: regular حالة الامتحان دائماً
- ★ Depth: with average breath حالة الإمتحان دائماً
- ★ Type:
  - ♂ = abdomino thoracic.
  - ♀ = Thoraco abdominal.
- ★ Accessory respiratory movement:

- Accessory expiratory:
  - bursing Lips.
  - contraction of abdominal muscles.
 due to ↓elastic recoil of Lung ⇒ incomplete expulsion of air  
 Leading to powerful contraction of abd. muscles & Latissimus dorsi.
- Accessory inspiratory:
  - indrawing of intercostal space.
  - excavation of Supraclavicular space.
 due to airway obstruction ⇒ inadequate pulmonary ventilation  
 Leading to contraction of neck muscles ⇒ Lift! whole thoracic cage é exaggerated indrawing of intercostal spaces.
- ★ Limitation of movement:
  - Bilateral Limitation = bilateral chest Đ = C.o.p.D.
  - Unilateral Limitation = unilateral chest Đ.

✂ NB<sub>1</sub>: Movement is confirmed by palpation

a. movement of Lower chest:

★ Fold of skin is taken between your thumb Fingers & notice! degree of expansion on both sides.

b. movement of upper chest: هذا الجزء الاحساس فيه اكثر من الرؤية



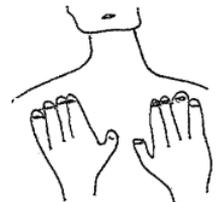
✂ NB<sub>2</sub>: Littin's sign:

★ marked inspiratory retraction of Lower intercostal spaces on! chest sides due to diaphragmatic descent.

★ it occurs in respiratory tract obstruction & emphysema.

★ its absent in: obesity, pleural effusion & diaphragmatic paralysis.

★ its presence exclude pleural effusion & diaphragmatic paralysis.



✂ N.B.3:

✂ e.g.: Respiratory rate is 12 cycle/min, regular, with average depth, accessory expiratory & inspiratory muscle movement é Limited movement on Rt. side.

4. Pulsations:

★ As cardiac sheet.

★ with importance of epigastric, Lt. parasternal pulsation. (Rt ventricular ++ in Cor-pulmonale).

5. position of mediastinum:

★ By examination of:

- a. cardiac apex ⇒ see cardiac sheet.
- b. Trachea.

★ We examine trachea for:

- position.
- Length.
- movement.
- ★ position of trachea...
  - Normally trachea is central.
  - Deviation of trachea to one side may be due to:
    - ~ Collapse or Fibrosis at same side (pulled).
    - ~ effusion or pneumothorax at opposite side (pushed).
  - Central trachea may be:
    - ~ normal.
    - ~ bilateral chest D (C.o.p.D)..
  - How to examine:
    - ~ Inspection ⇒ Trail's sign.
      - ✗ Sternomastoid Tendon appears prominent at side of deviation.
    - ~ Palpation ⇒ خلى العيان يقعد أولاً
      - ✗ put your hand on patient's head for Fixation.
      - ✗ put your Finger in suprasternal notch in midline.
      - ✗ push your finger between trachea & sternomastoid on each side then compare resistance on both sides.

★ Length of trachea:

- Normal distance from cricoid cartilage to suprasternal notch = 3 - 4 Fingers.
- IF less than 2 Fingers:
  - ~ C.o.p.D.
  - ~ kyphosis.

- How to examine.

من خلف العيان وهو جالس ضع اصابعك على الـ trachea لتقيس المسافة بين

Suprasternal notch & cricoid Cartilage

★ Movement of trachea:

- Tracheal Tug:
  - ~ Sudden jerky descend of trachea with:
    - ✗ each systole in Aortic aneurysm.
    - ✗ with inspiration in C.o.p.D.
  - ~ Examined by putting tip of Index finger on thyroid cartilage.

## 6. Tenderness:

- a. over ribs  $\Rightarrow$  Fracture, osteomyelitis or tumors.
- b. over intercostal space  $\Rightarrow$  myalgia, neuralgia, pleurisy or empyema.
- c. over sternum  $\Rightarrow$  Leukaemia (leibman's sign).
- d. over Rt. lung base  $\Rightarrow$  Amoebic chest condition.

## ☞ N.B: Treitz Sign:

- ★ Tenderness over costochondral junction.
- ★ due to unknown cause.
- ★ IF due to H.Z. there is painful swelling at! junction.

## 7. Tactile Vocal Fremitus (T.V.F.):

- ★ Def: vibration of vocal cords transmitted through chest wall to be palpated by palm of hands.
- ★ Detection:
  - Examined by palm of hand.
  - Compare symmetrical parts (Rt, Lt).
  - areas:
    - M.C.L  $\Rightarrow$  upper, middle & Lower.
    - M.A.L  $\Rightarrow$  middle & Lower.
    - Back  $\Rightarrow$  upper, middle & Lower.
  - Start with healthy side.
- ★ Factors affecting:
  - nature of conductive media  $\Rightarrow$  Solid > Fluid > air.
  - number of conductive media.
  - distance between resonating sound & palpating hand.
- ★ Evaluation:
  - normally equal on both sides.
  - Causes of  $\uparrow$  T.V.F.:
    - Consolidation.
    - collapse ( $\downarrow$ distance).
    - Cavitation (big, Superficial & surrounded by Consolidation).
    - upper border of pleural effusion.
  - Causes of  $\downarrow$  T.V.F.:
    - $\uparrow$ number of media.
    - $\uparrow$  distance (emphysema & pneumothorax).
    - occlusion of bronchus by F.B.
    - normally in obese, Female, old age & children.

☞ **N.B:** Normally T.V.F. ↑ in Rt 2<sup>nd</sup> space (Rt. upper lobe) due to:

- ★ Trachea is contact with Rt. Lung apex.
- ★ RT. eparterial bronchus is more superior.

## 8. palpable adventitious Sounds

- a. palpable Rhonchi: (Rhoncus Fremitus).
  - ★ Localized ⇨ Local partial obstruction.
  - ★ Generalized ⇨ C.o.p.D.
- b. palpable pleural rub: (Friction fremitus).
  - ★ Dry pleurisy.

## C. Percussion

★ General rules of percussion:

- percussed Finger (pleximeter) is placed Firmly against skin.
- percussion is done from wrist (not from elbow).
- percussion is done on phalanges (not an interphalangeal joint).
- percussion is done from resonance to dullness (except kronig's isthmus).
- percussion is done parallel to border of dullness.

★ Types of percussion:

- Heavy: heart, hepatic dullness & back.
- Light: Lung, Liver (lower border) & bare area of heart.

★ Grades of percussion notes:

- Resonance:
  - normal resonance ⇨ normal Lung & Free abdomen.
  - hyperresonance ⇨ emphysema.
  - tympanitic resonance ⇨ pneumothorax, Lung cyst or empty stomach.
- Dullness:
  - impaired note ⇨ Scapulae, minor consolidation, Collapse, fibrosis.
  - dullness ⇨ heart, Liver, massive consolidation, collapse & fibrosis.
  - Stony dullness ⇨ pleural effusion.

★ Chest percussion:

1. percuss upper border of Liver.
2. Then percuss Rt. border of heart.
3. Then detect bare area of heart.
4. percussion of chest wall:
  - a. Anterior chest wall:

Right	Left
percuss clavicle (directly) & infraclavicular	Percuss clavicle (directly) & infraclavicular space.
percuss 1 <sup>st</sup> & 2 <sup>nd</sup> spaces in M.C.L.	Percuss 1 <sup>st</sup> , 2 <sup>nd</sup> spaces in M.C.L.
Percuss 3 <sup>rd</sup> 4 <sup>th</sup> , 5 <sup>th</sup> & 6 <sup>th</sup> Spaces in M.C.L.	percuss 3 <sup>rd</sup> , 4 <sup>th</sup> , 5 <sup>th</sup> & 6 <sup>th</sup> Spaces in A.A.L. (to avoid heart).

b. Lateral chest wall:

- Begins at 4<sup>th</sup> space and percuss in M.A.L. till 8<sup>th</sup> space.

c. posterior chest wall .... (heavy percussion).

- Suprascapular ⇒ anterior wall percussion اتجاه الاصابع مثل
- Inter Scapular ⇒
- الأصباع vertical والعيان واضع يديه خلف رأسه.
- Infrascapular ⇒ begins in 7<sup>th</sup> space till 10<sup>th</sup> space.

5. percussion of special areas:

a. kronig's isthmus:

- ★ Def.: A bond of resonance overlying Lung apex.

★ Boundaries:

- medially ⇒ a line connecting spine of C<sub>7</sub> to sternoclavicular joint.
- Laterally ⇒ a line connecting midpoint of scapular spine to junction of medial 2/3 with Lateral 1/3 of clavicle.
- anteriorly ⇒ medial 2/3 of clavicle.
- posteriorly ⇒ medial 1/3 of scapular spine.

- ★ percussion: From dullness to resonance.

★ Causes of dullness in kronig's isthmus: (apical Lesion):

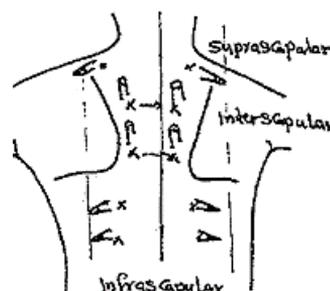
1. T.B.
2. pancost tumor.
3. Freidlander's pneumonia.
4. Fibrosis.
5. Collapse.
6. pleural thickening.

b. Traub 's area:

- ★ Def.: Area of tympanitic resonance overlying air bubbles in Fundus of Stomach.

★ Borders:

- upper border = Lower border of Lung.

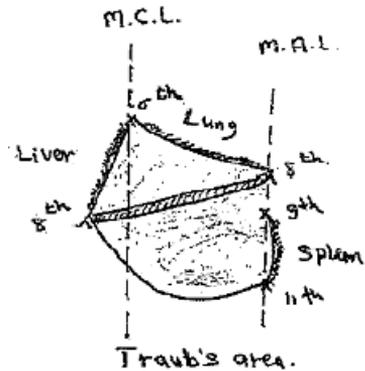


⇒ Lt 6<sup>th</sup> rib at M.c.L. till ⇒ 8<sup>th</sup> rib at M.A.L.

- Lt. border = anterior border of spleen.  
⇒ Lt. 9<sup>th</sup> R.M.A.L. ⇒ Lt. 11<sup>th</sup> R.M.A.L.
- Lower border = Left costal margin.  
⇒ Lt 8<sup>th</sup> Costal cartilage ⇒ Lt. 11<sup>th</sup> R.M.A.L.
- At. border = Lt. border of Liver.  
⇒ Lt. 6<sup>th</sup> R.M.C.L. ⇒ Lt. 8<sup>th</sup> Costal cartilage.

★ Causes of ↑size of traub's area:

1. Dilated stomach.
2. Splenectomy.
3. Lt. basal collapse or pneumonectomy.
4. Shrunken Liver.
5. pneumoperitoneum.



★ Causes of Dullness over traub's area:

- From above ⇒
  - pericardial effusion.
  - Lt. basal pleural ⌀ (effusion & thickening).
- From! Lt ⇒ Splenomegally.
- from! Rt. ⇒ Hepatomegally (enlarged Lt. Lobe).
- From below ⇒ Abdominal ⌀ (ascites, tumor & pregnancy).
- Full stomach or gastric tumor.

6. Special percussion tests:

a. Tidal percussion (T.p.):

- ★ percussion till dullness of upper border of Liver, then patient takes deep inspiration.
- ★ Normally diaphragm will descend & dull intercostal space becomes resonant.
- ★ IF dullness persist ⇒ Supra diaphragmatic Lesion (-ve T.p.).
- ★ IF dullness becomes resonant ⇒ Infra diaphragmatic Lesion (+Ve T.p.).
- ★ Value:
  - D.D. Supra From infra diaphragmatic dullness.
  - Used to diagnose diaphragmatic paralysis. How?
    - paralysed diaphragm has paradoxical movement, that's to say moves up with inspiration, so é inspiration resonant ⇒ dull.

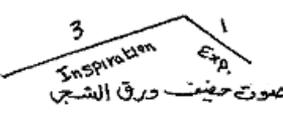
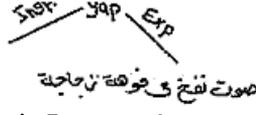
b. Shifting dullness:

- ★ Value: differentiate between pleural effusion & hydro pneumothorax.
- ★ Technique: we percuse in 3 plains while changing patient's position.
  - M.C.L.  $\Rightarrow$  Dullness  $\Rightarrow$  Space  $\Rightarrow$  أجعل المريض يقعد ثم بمدد  $\Rightarrow$  resonant will become dull.
  - M.A.L.  $\Rightarrow$  dull  $\Rightarrow$  تميل العيان وتنتظر دقيقة  $\Rightarrow$  resonant.
  - Posteriorly (In midscapular line)  $\Rightarrow$  patient Leaning forward, then dullness becomes resonant.
- ★ IF Level of dullness persists  $\Rightarrow$  pleural effusion.
- ★ If Level of dullness changed  $\Rightarrow$  hydropneumothorax.

D. Auscultation

- ★ We Comment on:
  1. Breath sounds.
  2. Vocal resonance.
  3. Adventitious sound.
  4. Special test.

1) Breath Sounds:

a. Vesicular breath Sound.	b. Bronchial breath sound.
<p>★ Character:</p> <ul style="list-style-type: none"> <li>- Rustling</li> <li>- Inspiration: </li> <li>Expiration = 3:1</li> <li>- No gap between inspiration &amp; expiration.</li> </ul>	<p>★ Character:</p> <ul style="list-style-type: none"> <li>- Hollow blowing </li> <li>- Expiration is Longer &amp; Louder than inspiration</li> <li>- There is gap.</li> </ul>
<p>★ Mechanism:</p> <ul style="list-style-type: none"> <li>- Flow of air in &amp; out the normal Lung.</li> </ul>	<ul style="list-style-type: none"> <li>• by passage of air in trachea &amp; bronchial tree</li> </ul>
<p>★ Site:</p> <ul style="list-style-type: none"> <li>- All over the chest wall specially:                             <ul style="list-style-type: none"> <li>- axilla.</li> </ul> </li> <li>★ - in Frascapular region.</li> </ul>	<ul style="list-style-type: none"> <li>• Normally heard over trachea and upper part of sternum.</li> <li>1. If heard away from its normal way as in:</li> </ul>

a. Vesicular breath Sound.	b. Bronchial breath sound.
	<ul style="list-style-type: none"> <li>- Consolidation.</li> <li>- Cavitation Surrounded by Consolidation.</li> <li>• - Upper border of pleural effusion.</li> </ul>
<p>★ Abnormality:</p> <ol style="list-style-type: none"> <li>1. Diminished Vesicular breathing... <ul style="list-style-type: none"> <li>- Old age. - Female. - obese.</li> <li>- Respiratory passage obstruction (Trauma &amp; Branchial asthma).</li> <li>- pleural effusion.</li> <li>- Hydropneumothorax.</li> <li>- Fibrosis. - Collapse.</li> <li>- Emphysema. - pneumothorax.</li> </ul> </li> <li>2. Loud vesicular breathing: <ul style="list-style-type: none"> <li>- Children. - Thin individual.</li> </ul> </li> <li>3. Harsh Vesicular breathing. <ul style="list-style-type: none"> <li>- Vesicular breathing with prolonged expiration due to narrowing &amp; Loss of elasticity in: <ul style="list-style-type: none"> <li>- C.o.p.D. - Br. asthma.</li> </ul> </li> </ul> </li> </ol> <div data-bbox="201 1142 712 1447" data-label="Diagram"> </div>	<p>★ Types:</p> <ol style="list-style-type: none"> <li>1. Tubular: <ul style="list-style-type: none"> <li>• high pitched bronchial breathing.</li> <li>• obst. alveoli + patent bronchus.</li> <li>• e.g.: pneumonia.</li> </ul> </li> <li>2. Cavernous: <ul style="list-style-type: none"> <li>• Low pitched bronch breathing.</li> <li>• Large cavity with Lax wall connected to patent bronchus.</li> <li>• E.g. Lung abscess, T.B. Cavity.</li> </ul> </li> <li>3. Amphoric: <ul style="list-style-type: none"> <li>• Low pitched bronch. breathing.</li> <li>é superadded metallic tone.</li> <li>• Cavity with tense wall connected to a patent bronchus.</li> <li>• e.g.: broncho pleural Fistula: Tension pneumothorax.</li> </ul> </li> </ol>

⚡ NB<sub>1</sub>: D'Espine Sign:

- ★ It's bronchial breathing below Level of 4<sup>th</sup> thoracic Vertebra in Children & below T<sub>2</sub> in adult.
- ★ It indicates enlarged mediastinal (interbronchial) L.N.

- ★ T.B. L.N. in children.
- ★ Bronchogenic carcinoma in adult.

⌘ **NB<sub>2</sub>**: Vesiculo-branchial breathing:

- ★ It's combination of Vesicular & bronchial breathing. (e.g.: vesicular inspiration & bronchial expiration).
- ★ Normally heard on Rt. Lung apex & abnormally on patchy consolidation.

2) **Vocal Resonance... (VR).**

- ★ Def: Vibration of vocal cords transmitted through chest wall to be auscultated by stethoscope.
  - Bronchophony: المريض يقول ٤-٤ بصوت عالٍ.  
It's heard Loud & clear on auscultation.
  - whispering pectoriloquy: المريض يقول ٤-٤ في سره  
it's heard also Loud & clear.
- ❖ In both of them there's change in intensity (Sound is heard Louder).
- ❖ It occurs in:
  - normally ⇨ inter scapular region & Rt. Lung apex.
  - Abnormally:
    - Consolidation (Pneumonia).
    - Cavitation of Large, Superficial, Surrounded by Consolidation.
    - pneumothorax.
  - c. Aegophony:
    - Normally spoken words are heard Louder é nasal tone.
    - It's change in quality not in intensity.
    - It's occurs over upper level of pleural effusion.

3) **Adventitious Sounds:**

a. Crepitation (Rales).

- ★ Def.: interrupted, moist, not musical crackles.
- ★ Mechanism:
  - Flow of air into fluid.
  - Due to ↓compliance ⇨ inspiratory reopening of previous occluded inelastic bronchial alveoli in expiration.
- ★ Classification:
  - According to timing ⇨ Detect type of pathology.
    - early inspiratory ⇨ diffuse airway obstruction.
    - Late (pan) inspiratory ⇨ pulmonary oedema.
  - According to intensity ⇨ Detect Severity of pathology.

1. Fine: صوت زي صوت الشعر في السماعه
    - Lt. Ventricular failure (Bilateral & basal)
    - early T.B. (apical) & pneumonia.
  2. Medium size: صوت زي صوت الملح في حلة على النار
    - Lung abscess.
    - bronchiectasis.
  3. Coarse: صوت زي صوت الشيشة
    - acute pulmonary oedema (acute Lt. Ventricular failure).
    - Late T.B. (advanced) & pneumonia (resolving).
  4. Bubbling:
    - due to passage of air through secretions in trachea & bronchi.
    - occurs in:
      - dying person.
      - under anaesthesia.
- According to type:
    1. Consonating:
      - crepitation with metallic tone.
      - Denotes consolidation (pneumonias).
    2. Non Consonating:
      - no metallic tone.
      - denotes healthy surrounding alveoli (e.g.: Bronchitis).
- b. Rhonchi wheezing.
- ★ Def.: continous musical, dry sound due to passage of air through partially obstructed bronchi.
  - ★ Causes:
    - outside: ⇒ L.N. Tumor & aneurysm
    - Wall Lesion:
      - Bronchial stricture (Carcinoma).
        - ~ Localized, Fixed, doesn't vary in site or time after Coughing.
      - Bronchial asthma.
        - ~ high pitched, expiratory (or continuous) not affected by cough.
      - Bronchitis
        - ~ Low or medium pitched rhonchi, ↓by Coughing. (due to congested m.membrane & Viscid secretion).
    - Lumen occlusion by ⇒ F.B. Secretion.
  - ★ Classification:
    - According To Time:

1. inspiratory: due to Secretion into Lumen (↓é cough).
2. expiratory: due to spasm or congested mucosa (not affected by cough).

✂ **NB:** Bhonchi is mainly expiratory

★ According to site:

1. Localized ⇒ tumor, F.B.
2. generalized ⇒ C.o.p.D., bronchitis, bronchial asthma.

✂ **NB:** Localized rhonchi not affected by cough = Fixed Lesion (F.B. – tumor).

★ According to pitch

Sibilant Rhonchi.	Sonorous Rhonchi.
High pitched مثل صوت الصفار	Low pitched مثل صوت الشعر
Best heard over sides	Best heard over midline.
Due to narrowing of small bronchioles	Due to narrowing of big branchi
e.g.: Bronchial asthma	e.g: chronic bronchitis.

c. pleural rub:

- ★ To and fro Sound due to Friction of visceral & parietal pleura.
- ★ Due to acute dry pleurisy.
- ★ Best heard on axilla & under nipple.
- ★ D.D. From pericardial rub by:
  - a. ↑by Firm pressure by stethoscope & by deep breathing.
  - b. occurs during both insp. & expiration while disappears on holding breath.
  - c. not changed by cough.

d. Special Test

1. Succussion Splash:

- ★ auscultated during vigorous shaking of patient.
- ★ Sound of turbulent Fluid is heard at the upper Level of Fluid.
- ★ occurs in hydropneumothorax.

2. Coin Test

- ★ auscultated from Front while percussing by 2 Coins From back ⇒ a metallic bell sound is heard.
- ★ occur in:
  - Tension pneumothorax.
  - Large emphysematous bulloe.

- ✚ e.g.: Comment on auscultation (in C.o.p.D.).
  - Diminished vesicular breathing.
  - ↓V.R.
  - Sonorous rhonchi, generalized, mainly expiratory.

### III. CHEST INVESTIGATION

#### A. Non-Invasive: Valuable, not harmful.

##### 1. Laboratory Inv.

###### a. Stool:

- ★ B ova ⇒ B Cor-pulmonale.
  - E. histolytica ⇒ amoebic Lung abscess.
  - parasites ⇒ interstitial pneumonia & Fibrosis.

###### b. Urine:

- ★ Sugar ⇒ D.M.
- ★ B ova.

###### c. Blood:

- ★ RBCs ⇒ polycythaemia in C.o.p.D.
- ★ WBCs ⇒ marked Lymphocytosis ⇒ Lymphoma (mediastinal synd).
- ★ Marked eosinophilia ⇒ br. asthma.
- ★ Manocytosis ⇒ T.B.
- ★ IgE, ⇒ br. asthma.
- ★  $\alpha_1$  antitrypsin in congenital non obst. emphysema.
- ★ ↑ESR ⇒ collagen D affecting Lung.
- ★ Blood gases (O<sub>2</sub>, Co<sub>2</sub>, PH)
- ★ Blood culture in pneumococcal pneumonia.

###### d. Sputum ⇒ See value of sputum examination.

###### e. Sweat ⇒ ↑ NaCl ⇒ Infected cystic Lung disease.

###### f. Skin:

- ★ Tuberculin test ⇒ result after: 72 hrs.
- ★ kveium test ⇒ Sarcoidosis ⇒ result after 1 month.
- ★ Casoni test.
- ★ Skin hypersensitivity reaction ⇒ allergy.

###### g. Respiratory Function tests.

##### 2. Graphic Inv.

- a. plain x-ray ⇒ antero-posterior & Lateral view.
- b. E.C.G. ⇒ in Cor-pulmonale.

c. C.T.:

- ★ detect size, site of pulmonary nodules.
- ★ pre-operative assessment in bronchogenic carcinoma.
- ★ bronchiectasis & interstitial Fibrosis.

B. Invasive Inv:

1. Ventillation / perfusion test: (Tcn I.V., radioactive air ventilation).

- ★ Diagnosis of Ventillation defects.
- ★ Diagnosis of perfusion defects (e.g.: pulmonary emboli).
- ★ Assess Functional respiratory defects.

2. Pulmonary angiography:

- ★ Detect pulmonary vessel condition.
- ★ Better results with digital subtraction angiography.

3. Endoscopy:

★ Types:

- Laryngoscope.
- Bronchoscope.
- Mediastinoscopy.

★ Indication:

- Therapeutic:
  - Removal of F.B.
  - Drainage of pus.
  - Instillation of antibiotics & cytotoxic drugs.
- Diagnostic
  - Detect site of Lesion.
  - Detect size of Lesion.
  - To take biopsy (Lung, pleura).
  - To detect structural changes.

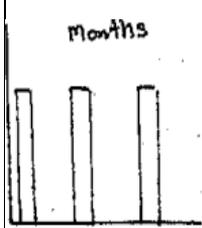
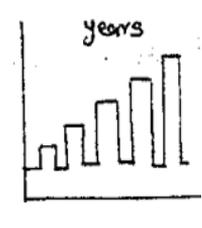
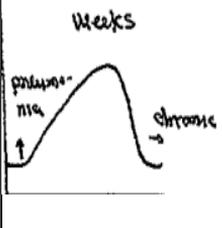
4. Biopsy:

- ★ F.N.B.
- ★ Excisional biopsy (Thorascopy, Thoracotomy).

5. pleural aspiration:

- ★ Site: Midscapular line, one space below maximum dullness.
- ★ Sugar:
  - < 30 mg% ⇒ Collagen D.
  - > 30 mg% - 60 mg% ⇒ T.B.
- ★ Amylase enzyme: ↑in pancreatic D.
- ★ Keratin: ↑in Epidermoid carcinoma.
- ★ ↑ Fats: > 400 mg % ⇒ Chylothorax.

Chylothorax.	Pseudo-chylous (acc. of phosphate & ca)
Fat: 40 mg%	Milky white.
Stains red with Sudan III	Doesn't stain.
Clears by adding alkali.	Doesn't clear by adding alkali.

	1. Infected Lung Đ.	2. Empyema with broncho-pleural Fistula.	3. Bronchiectasis.	4. Lung abscess
❖ X-Ray:	★ Soap bubble appearance	★ homogenous opacity obliterating costo-phrenic angle	★ Honey comb's app.	★ Fluid-Level
❖ Clinicaly:	★ Dating Since birth. ★ Bilateral, affecting all Lung.	★ + ve chest pain. ★ Unilateral ★ Marked toxaemia. ★ History of pleural eff.	★ Long period. ★ Dyspnea é Long standing case. ★ Postural.	★ more at! morning. ★ ↑by Lying on healthy Side. ★ Localized on one side.
❖ Amount:	- As bronchiectasis.			
Duration: curve:				

⚡ N.B:

1. In Bronchiectasis:
  - ★ exacerbation in winter, history of operation is very important.
  - ★ most important complication is haemoptysis.
2.
  - ★ only disease with bilateral consolidation ⇒ Bronchiectasis.
  - ★ only apical Bronchiectasis ⇒ Bronchiectasis Sicca Haemorrhagica.

# NEUROLOGY

## I. HISTORY

### Personal History:

 Name:

 Age:

- ★ 1<sup>st</sup> – 2<sup>nd</sup> decades ⇒ myopathy, hereditary ataxia
- ★ 3<sup>rd</sup> – 4<sup>th</sup> decades ⇒ D.S
- ★ 5<sup>th</sup> – 6<sup>th</sup> ⇒ Cerebrovascular Strokes.

 Sex:

- ★ Male ⇒ motor nevrone disease
- ★ Female ⇒ Rheumatic chorea.

 Occupation:

- ★ Drivers ⇒ Disc Prolapse
- ★ Labourers ⇒ Spondylosis.
- ★ Printers ⇒ Lead neuropathy.

 Marital State:

- ★ Sterility – Impotence.

 Residence:

- ★ Urban areas ⇒ migraine
- ★ Rural areas ⇒ Parasitic infestation – Neutritional D

 Special Habits:

- ★ Alcohol ⇒ Peripheral neuropathy – Tremor
- ★ Smoking ⇒ Bronchogenic Carcinoma ⇒ Paramalignant manifestataions.
- ★ Contraceptive pills ⇒ Thrombosis – Headache.

 Handedness:

- ★ Rt handed people ⇒ > 90% of! Population ⇒ é Left sided dominant hemisphere.
- ★ Lt handed people ⇒ 70% Lt Hemisphere dominant.

### Complaint

- ★ as short as possible ... no medical term ... one complaint + duration.
  - Paraplegia = weakness of both Lower Limbs.
  - Hemiplegia = weakness of one side of! body.
  - Diabetic neuropathy = numbness and tingling.

- Ataxia = unsteadiness during walk.
- Myopathy = inability to stand up from ground “inability to climb stairs”.
- Wasting = decrease in! muscle size.
- Hyposthenia = diminished Sensation.

## Present History

t	n	m		s	s	s	s
↑I.c.T	cranial nerves	motor sgs.	+	Sensory sgs.	speech	Sphincter	Symptoms of other systems.

### 1. Symptoms of ↑ Intracranial Tension:

- ★ Headache: لو موجود أحلله زي أي pain جالك صداع قبل كدة؟  
Bursting ... at early morning ... not relieved by sleep & may be relieved partially by vomiting.
- ★ Vomiting: رجعت قبل كدة؟ هل الترجيع يغرق الملابس؟  
Projectile .... At peak of headache ... not related to meal ... not preceded by nausea
- ★ Blurring of vision: جالك زغللة قبل كدة؟
- ★ Coma: دخلت في غيبوبة قبل كدة؟
- ★ Convulsion: جالك تشنجات قبل كدة؟

### 2. Symptoms of cranial nerve affection:

#### I. Olfactory nerve:

- ★ Destructive = Anosmia. حاسة الشم قلت؟
- ★ Irritative = Parosmia. بتشم رائح غريبة؟ بتشم حاجات وحشة – بتسطعم الأكل؟

#### II. Optic nerve:

- ★ Destructive:
  - ↓ acuity of vision: نظرك قل أو راح
  - field defect: في جزء في مجال الرؤية ماعدتش بتشوفه؟
  - colour blindness: بتشوف الألوان كويس ولا لأ؟
- ★ Irritative = visual hallucination: بتشوف أضواء أو أشياء مش موجودة

#### III. IV, VI Ocular nerves (Oculomotor ... Trochlear ... Abducent):

- ★ Ptosis: جفناك سقط؟
- ★ Diplopia: بتشوف الصورة؟
- ★ Squint: عينك إحولت؟ e.g.: III ⇔ divergent sq.  
IV ⇔ convergent sq.

## VI. Trigeminal nerve: -

### (a) Motor part:

- ★ Difficult mastication: في صعوبة في المضغ؟
- ★ Jaw deviation: فكك اتعوج؟

### (b) Sensory Part:

- ★ Destructive = Hypoesthesia: في خزلان في الوجه؟
- ★ Irritative:
  - Pain: في وجع في الفك؟
  - Paresthesia: في تتميل أو شكشكة؟

## VII. Facial nerve:

- ★ Inability to elevate! eye brow. بترفع حواجبك كويس؟
- ★ Inability to close! eye perfectly. الصابون بيدخل عينيك؟
- ★ Epiphora. بتمدع؟
- ★ Deviation of! mouth angle to! normal side. بقك اتعوج؟
- ★ Accumulation of food on! affected side. الأكل بيتجمع في ناحية؟
- ★ Taste affection in tongue & Lips. بتعرف تدوق الأكل بطرف لسانك؟
- ★ Hyperacusis. بتسمع الأصوات أعلى من اللازم؟

## VIII. Vestibule cochlear nerve:

### a- Cochlear division:

- Destructive = Deafness. السمع عندك كويس؟
- Irritative = Tinnitus في وش في ودانك؟

### b- Vestibular division ⇨ vertigo في دوخان؟

## IX. X, XI, XII. Bulbar cranial nerves ... (Glossopharyngeal, Vagus, Accessory, Hypoglossal):

- ★ Bulbar symptoms (Palato – Pharyngeal – Laryngo Paralysis).

### ❖ They are:

- × nasal regurgitation الأكل بيرجع من مناخيرك؟
- × Dysphagia في صعوبة في البلع؟
- × Dysphonia صوتك أتغير؟
- × Dysarthria في صعوبة في الكلام؟

## ✂ NB:

### 1. Spinal part of accessory nerve

- ★ Sternomastoid: بتعرف تحرك راسك ولا لا؟
- ★ Trapezius: بتعرف ترفع كتافك؟

### 2. Hypoglossal nerve:

- ★ Deviation of tongue لسانك أتعوج؟

### 3. Symptoms of motor system affection:

- Muscle power
- Muscle tone

- c. Muscle state
- d. Involuntary movements
- e. Inco-ordination

a. **Muscle Power:** عندك ثقل أو ضعف في إيدك أو في رجلك؟  
 في ال Complaint تكتب (heaviness or weakness)

- ★ Upper limb or lower Limb?
- ★ Bilateral or unilateral?
- ★ Symmetrical or Asymmetrical?
- ★ Distal or proximal?

M.L.

- عصير الليمون – الكتابة – تنقية الرز؟ distal
- إرتداء القميص – تسريح الشعر؟ proximal

L.L.

- الشبشب بيتزحلق من رجلك؟ distal
- بتعرف تطلع السلم؟ proximal

- ★ Flexors or Extensors?

M.L.

- فتح الدرج – الباب؟ Flexor
- قفل الدرج – الباب؟ Extensor

L.L.

- ثني الرجل – بداية لبس البنطلون؟ Flexor
- فرد الرجل – فرد الرجل داخل البنطلون؟ Extensor

- ★ Adductor or Abductor?

M.L.

- وضع الجرائد تحت الإبط Adductor
- لبس الجاكت – يشاور علي التاكسي Abductor

L.L.

- يضع رجل علي رجل Adductor
- تبعد فخادك عن بعضهم Abductor

✂ **N.B.1:** الضعف دائماً يكون عكس إجابة المريض ... يعني مثلاً يقول (اطلع السلم أسهل يبقى distal muscle الضعف موجود في

✂ **N.B.2:**

e.g.: weakness in both U.L. & L.L. – more in U.L. – Strictly unilateral (Rt. Side is more affected while! Lt side is free) – distal group are more affected than proximal group – adductor than abductor – In ML.: weakness is more in extensors ⇒ flexors, while in L.L.! reverse is more manifested.

- b. **Muscle Tone:** إيدك (أو إيدك) خشبت أو (رخرخت)  
★ Stiffness if hypertonia or floppiness if hypotonia. Complaint في الـ تكتب  
• M.L. or L.L.  
• Unilateral or bilateral ... if bilateral ⇒ symmetrical or asymmetrical.

- c. **Muscle State:** عضلاتك خست ولا زي ماهي؟  
★ Decrease in! muscle size if wasting or, complaint في الـ تكتب  
Increase in! muscle size if hypertrophy.  
★ Bilateral or Unilateral.  
★ Symmetrical or Asymmetrical.

- d. **Involuntary movements:**  
★ Fasciculations عندك رفة؟  
twitches :Complaint في الـ تكتب  
★ Tremor عندك رعشة؟  
Involuntary movements :Complaint في الـ تكتب  
• Site ... distal or proximal.  
• Regular or irregular.  
• Pattern ... (specific form).  
• What ↑ & What ↓.  
• With rigidity or hypotonia.  
معها تخشيب؟ ولا الإيد (أو الرجل) سايبه عليك؟

- e. **Inco-ordination:**  
★ Cerebellar ataxia:  
• Unsteadiness during walking. بتطوح وانت ماشي.  
• Difficult buttoning & unbuttoning. بتعرف تفك زراير القميص؟  
• Inability to reach his mouth during eating. بتعرف تاكل ولا بتوقع على نفسك؟  
★ Sensory ataxia:  
• Unsteadiness during eye closure. بتقع لما بتغمض عينيك أو تغسل إيدك؟

4. Symptoms of sensory system affection:

- a. Destructive: (=hypoesthesia) الإحساس قل ولا لأ؟  
Diminished sensation :Complaint في الـ تكتب  
★ Distribution:  
• M.L. or L.L.  
• Unilateral or bilateral.  
• Symmetrical or Asymmetrical.

- Distal or Proximal.
- Level of Present.
- b. Irritative: (paresthesia or pain)
  - Pain.
  - Paresthesia. في تتميل أو شكشة؟  
Numbness & tingling :Complaint نكتب في الـ
  - Distribution ... as above.

✂ **N.B:** Radicular (Root) Pain:

- ★ Follow distribution of its dermatome.
- ★ increased by Coughing, Sneezing, Straining.
- ★ decreased by rest.
- ★ caused by:
  - Paraplegia (girdle pain at level).
  - Spondylosis (Cervical or Lumber)
    - Cauda equina
    - Tabes dorsalis.

5. Speech:

- A. Aphasia ... (inability to formulate speech).  
مفيش حالات في الأمتحان فيها Aphasia
- B. Dysarthria ... (inability to articulate speech).  
(to examine انت لسانك تقل أو في صعوبة في الكلام ؟ ) خليه يقرأ الفاتحة
- ★ Types:
    - M.M.N. Lesion ⇒ Slurred speech.
    - Cerebellar Lesion ⇒ Stac to speech.
    - Parkinsonism ⇒ monotonous speech.
    - Pyramidal + cerebellar ⇒ Scanning (Slurred + staccato).
    - L.M.N Lesions:
      - Labial ⇒ M.B.P are difficult to be pronounced in facial (VII) Lesion.
      - Dental ⇒ T, D, N are difficult to be pronounced in XII Lesion.
      - Gutteral ⇒ G, K, A are difficult to be pronounced in IX & X Lesion.

## Dysphonia

- ★ Def.: It's a disorder of phonation.
- ★ AE: After exclusion of Local & ENT Causes  
Dysphonia may be due to:
  - Extra  $\Delta$  Lesion.
  - Cerebellar Lesion.
  - Vagus n. Lesion.
- ★ Types:
  - Hypophonia or aphonia ( $\downarrow$  volume):
    - Organic.
    - Hysterical: patient phonate in coughing & not in speech.
  - Hyperphonia ( $\uparrow$  volume)  $\Rightarrow$  lesion is usually cerebellar.

### 6. Symptoms of sphincteric disorder:

#### (a) Urine:

- ★ urine retention البول اتحاش فيك قبل كدة؟
- ★ precipitancy البول ببسبك ولا لأ؟
- ★ Hesitancy بتتعايل علي البول ولا لأ؟
- ★ Incontinence بتعرف تتحكم في البول ولا لأ؟

#### (b) Stool:

- ★ Incontinence بتتحكم في البراز ولا لأ؟
- ★ Constipation

#### (c) Impotence: الإنتصاب كويس ولا لأ؟

🔗 **N.B:** Important in case of Diabetic neuropathy.

## Impotence

- ★ Def.: Inability to obtain an erection of penis to complete sexual act to satisfy both partners.
- ★ AE:
  - Psychic
  - Organic:
    - Iatrogenic = (Antihypertensive, Cimetidine)
    - Vascular
    - Neurogenic =
      - ~ Conus medullaris.
      - ~ Tabes dorsalis.
      - ~ Cauda equina Lesion.
      - ~ Peripheral neuropathy.
- ★ D.D. of! cause
  1. Is it organic or psychogenic?
    - ★ Ask about morning erection:
      - ✖ If present ⇒ psychogenic.
      - ✖ If absent ⇒ organic.
  2. If it's organic to Know if it's Iatrogenic ⇒ Ask about any medication.
  3. If it isn't Iatrogenic, so it may be vascular or neurogenic
    - ★ Not by history, but by examination ... How?
      - ✖ Compress gently on! testis if testicular pain ⇒ Vascular cause.
      - ✖ if no testicular pain ⇒ neurological Causes:  
as testis has! same nerve supply of! bladder.

🔗 **N.B:** D.M. produce Impotence through:

- ★ Neurogenic cause.
- ★ Vascular cause (Ischemia).
- ★ Iatrogenic ... (Patient is usually hypertensive).
- ★ Psychogenic ... (Impotence بسمع من الناس ان السكر يجيب)

## Past History

1. Trauma:
  - ★ Paraplegia.
  - ★ Cauda equina Lesion.
2. T.B.:
  - ★ Pott's D ⇒ paraplegia.
  - ★ Cerebellar tuberculoma ⇒ Ataxia.
  - ★ Meningitis
  - ★ Anti T.B drugs (e.g. INH) ⇒ Peripheral neuropathy.
3. Syphilis:
  - ★ GPI.
  - ★ Sensory ataxia.
  - ★ Tabes dorsalis.
  - ★ paraplegia :
    - S pachymeningitis hypertrophica.
    - Erb's S paraplegia due to End arteritis - obliterans in anterior spinal artery.
4. B : B paraplegia:
  - ★ Bilharzioma ⇒ cord compression.
  - ★ Toxins ⇒ Transverse myelitis.
5. D.M.:
  - ★ Peripheral neuropathy.
  - ★ post. Column affection.
  - ★ Impotence.
  - ★ Δ tract affection.
  - ★ cranial nerve affection.

★ لازم تتكلم عن D.M. بالتفصيل في حالات neuropathy.

★ بمعنى تتكلم عن:

- وقت الإصابة بالسكر؟
- نوع العلاج
- إذا كان حصل مضاعفات؟
- إذا كان دخل في غيبوبة سكر؟
- مدة الإصابة بالمرض؟

6. Fever: Causes of Fever in neurological case:

- a. C.N.S Causes:

- ★ Meningitis.
- ★ Encephalitis.
- ★ Brain abscess.
- ★ Pontine he.
- ★ Poliomyelitis.

- ★ Guillan-Barre Syndrome.
- b. C.V.S causes:
  - ★ SBE = embolism.
  - ★ Rh Fever = Chorea or embolism.
- 7. Drugs:
  - ★ INH ⇨ P.N.
  - ★ Phenobarbitone & Hydantoin ⇨ Ataxia.
  - ★ Reserpine ⇨ parkinsonism.
  - ★ Steroids & vincristine ⇨ Myopathy.
  - ★ Streptomycin ⇨ cranial n. VIII affection.
  - ★ Ethambutol ⇨ cranial n. II affection.

### Family History

- ★ Hereditary ataxia
- ★ Myopathies

## II. Examination

### I. General Examination:

- ★ General overview:
  1. Mental state.
  2. Speech.
  3. Built.
  4. Position.
- ★ Vital signs:
  1. Pulse.
  2. Temp.
  3. Blood Pressure.
  4. Respiration.
- ★ Regional examination:
  1. Head
  2. Neck
  3. M.L.
  4. L.L.

### II. Review of other systems:

### III. Neurological examination:

1. Mentality
2. Speech
3. Cranial nerves
4. Motor sys.
5. Sensory sys.
6. Co-ordination.
7. Exam. Of! Back & spine.
8. Exam of! Cranium.
9. Gait.

### I. Neurological Examination.

#### (1) Assessment of mentality:

1. State of consciousness:
2. Orientation For time and place: اسأل الوقت ده ايه ؟ انت فين؟
3. Memory:
  - ★ It's! ability to retain and recall information and experiences.
  - ★ It's mainly the Function of Limbic system of temporal Lobe.
  - ★ Evaluation of memory:
    - Immediate mem. يكرر بعض الارقام بعد الطبيب
    - Recent mem. ما اسم الممرضة – الأشخاص الذين رأيهم؟
    - Remote mem. ما اسم أولادك - متى تزوجت؟

- Visual Span. يرى بعض الصور ثم يذكرها بعد ذلك؟
  - ★ Disorders of memory = Amnesia. فقدان الذاكرة
    - Loss of! past memory with inability to form a new memory.
    - it includes:
      - Antegrade amnesia = Loss of memory for recent events.
      - Retrograde amnesia = Loss of memory for old events.
      - Total (global) amnesia = Loss of memory for recent and remate events.
      - Circumscribed amnesia = Amnesia for certain period only caused by head trauma, hysteria...
    - Causes of Amnesia:
      - a. Cerebral atherosclerosis.
      - b. Temporal Lobe Lesion.
      - c. Korsakow's syndrome: due to chronic alcoholism. (Antegrade amnesia – Confabulation - Peripheral neuritis)
      - d. Dementia:
        - × Alzheimer .
        - × Huntington chorea.
      - e. Past Concussion.
      - f. Hysterical.
4. Mood (emotional state) & Affect
- ★ Mood...It's! patient's inner feelings, while affect ... is! outward expression of mood.
  - ★ Abnormalities include:
    1. Depression: loss of interest & poor communication e.g.: parkinsonism.
    2. Emotional Lability: e.g.: pseudobulbar palsy
    3. Apathy (indifference): e.g.: Myxoedema
    4. Anxious mood: fear without any obvious reason, associated with breathlessness, palpitation & sweating
    5. Hypomanic patient: Feels that he is full of energy.
    6. Euphoria: e.g.: D.S.
5. Intelligence
- ★ Tested by Intelligence ... quotient (I.Q.).  $I. Q = \frac{\text{Mental age}}{\text{Chronological}} \times 100$
  - ★ Abnormalities include:
    1. Idiot = I.Q < 20, Mental age < 2 yrs. لا يمكن الإعتناء بنفسه.
    2. Imbecile = I.Q 20 – 50, Mental age 2-7 yrs. لا يستطيع القراءة ... يتكلم قليلاً
    3. Moron = I.Q 50 – 70, Mental age 7-10 yrs. يستطيع تعلم حرفة
  - ★ Simple patient considered to be of average intelligence when he &! doctor can understand each other.
6. Behavior

- ★ It's! overall manner in which! patient sits, dresses, talks & co-operates with doctor.

✎ N.B<sub>1</sub>: Mentality can be reported as follows:

The patient is fully conscious, well oriented for time, place & persone, with normal memory and mood, he is co-operative and of average intelligence.

✎ N.B<sub>2</sub>:

- ★ Hallucination: It's a sensation without external stimulus, maybe visual, auditory....
- ★ Illusion: It's misinterpretation of an external stimulus.
- ★ Delusion: It's false fixed belief, not connected by reasoning, not shared by others.
- ★ Delerium: It's transient state of acute confusion (disorientation) in which there is restlessness, hyperexcitability, illusion, hallucination .... It occurs in acute infective Fevers, alcoholism (delirium tremor), & Certain drug intoxication (Belladonna, Amphetamine).
- ★ Dementia: Deterioration of mental Functions.

(2) Speech: to examine (يقرأ الفاتحة مثلاً)

(3) Examination of Cranial Nerves:

I. Olfactory Nerve:

- ★ Method: little finger وال thumb ال المريض بينما ال  
على العينين لتغلقهما  
ال index يقفل احدى ال Nostril

Examine! Other nostril

use familiar nonirritant substance e.g.: ground office

II. Optic Nerve ... examine for:

1. Acuity of vision:

- ★ by Snellen's Chart. OR
- ★ Counting fingers at a distance 6 m... How?

إذا كان لابسين نظارة خليه لابساها

Each eye is examined Separately.

❖ Possibilities:

- ★ if he can see counting fingers at 6 m ⇒ Acuity is intact.
- ★ if he can't, so repeat it from short distance but gradually.

- ★ if he can't till 30 cm, so do hand movement test.
- ★ if he can't see hand movement, so do perception of Light.

2. field of vision:

- ★ By Bjerrum's screen for central vision.
- ★ By perimeter for peripheral Field.
- ★ If not available we should do Confrontation Test... How?
  - اذا كان لايس نظارة خليه يخلعها.
  - Sit in front of! patient at a distance 60-100 cm.
  - keep your eyes at! Level of! patient's eyes.
  - Let! Patient close one eye & you close your opposite one.
  - You should insist! patient to look into your eye & no elsewhere.
  - Examine! pt's open eye by ⇨ bringing your finger slowly from periphery to inward.
  - Test For! whole field by bringing your finger from above, below, Left, right.

3. Color of Vision: by Ishihara's chart.

4. Ophthalmoscopic Examination: for optic atrophy or papilledema

★ Causes of papilledema:

1. ↑ I.C.T.

2. Medical disorders:

- Anaemia
- Polycythaemia.
- Hypertension.
- Lead poisoning.
- Hyper capnea.

3. Drugs:

- Ibuprofen
- Excess vit A
- Tetracyclin

III. IV, V Ocular Nerves: examine for:

1- Ptosis:

★ Degrees:

- Covering 1 - 2 mm of! Cornea ⇨ normal.
- Covering 2 - 4 mm of! Cornea ⇨ mild.
- Covering 4 - 8 mm of! Cornea ⇨ moderate.

D.D.	Oculomotor	Sympathetic
Affected ms:	Levator palpebrae superioris	Muller's ms
Degree:	Complete ptosis	Partial ptosis
Associated signs:	Mydriasis Divergent squint	Miosis Enophthalmos Anhydrosis
Special Test:	<p style="text-align: center;">           ★ ثبت رأس المريض            ★ Press your thumb over sup-orbital margin            ★ اسأل المريض ان يفتح عينه              يستطيع فتح عينه   لا يستطيع فتح عينه         </p>	

- Covering > 8 mm of! Cornea ⇒ sever.

★ Causes:

1. Oculomotor palsy ⇒ Complete ptosis.
2. Sympathetic palsy ⇒ (Horner syndrome) ⇒ Partial.
3. Myasthenia Gravis:
  - Commonest cause.
  - Bilateral.
  - At! End of! Day with normal pupil. with other myasthenic manifestations
4. Ocular Myopathy: bilateral & unequal.
5. Congenital

## 2- Pupil

★ Size:

normal 2.5 – 5 mm                      miosis 1-2.5 mm

Pin point < 1 mm    mydriasis > 5 mm

★ Site: Central or eccentric.

★ Shape: regular or irregular

★ Equality: equal or unequal

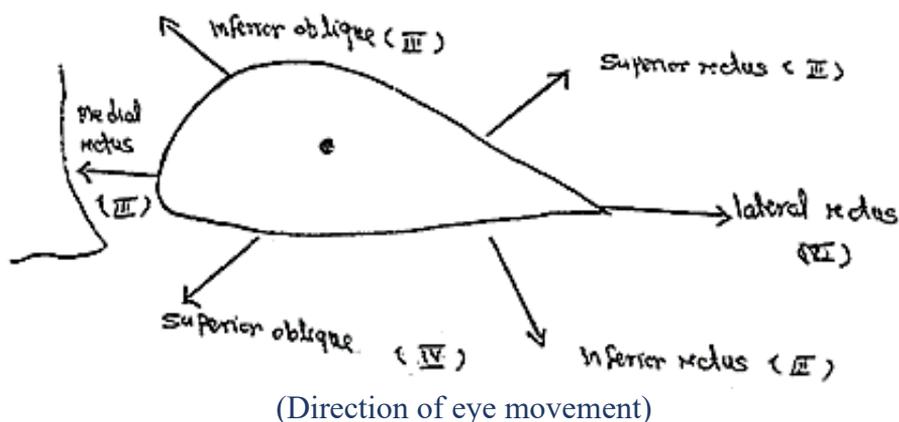
★ Reflexes:

- a. Light reflex ⇒ ! Patient looks at distant object.
  - ↳ Put your hand in between his two eyes.
  - ↳ Expose one eye to light, but direct it laterally
  - ↳ Detect direct and consensual light reflex

- b. Accommodation reflex  $\Rightarrow$  Patient looks at far object.
- $\hookrightarrow$  Doctor's finger is held 15 cm
  - $\hookrightarrow$  in front of! Patient's nose while! Pt  $\Rightarrow$  looks at it
  - $\hookrightarrow$  ! following tired usually occurs
    - Convergence.
    - Miosis.
    - Accommodation.
- c. Cilio-spinal reflex:
- Pinching: ! skin of ! pt in one side of his neck
  - Response:
    - Ipsilateral Pupil dilation.
    - Absent in cervical sympathetic lesion (Horner Syndrome)

3- Ocular movement:

- ★ Individual eye movement  $\Rightarrow$  examine each eye separately.
- ★ Con-jugate eye movement  $\Rightarrow$  examine both eyes together.



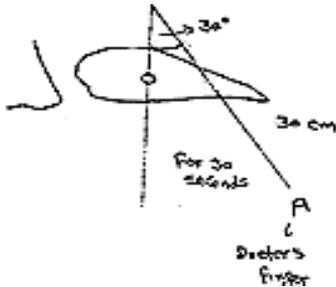
- ⌘ **N.B.1:** Centers of conjugated eye movements & effect of lesion on it:
- 1- Cortical Conjugate centre (area 8) = Loss of conjugate movement to! hemiplegic side.
  - 2- Pontine Conjugate centre = Loss of conjugate movement to opposite side of hemiplegia.
  - 3- Medial Longitudinal bundle = Internuclear ophthalmoplegia (in D.S.)

- ⌘ **N.B.2:** In case of Destrudive Brain Lesion  $\Rightarrow$  !pt Looks at! Side of Cortical Lesion.  
 But in case of Brain stem Lesion  $\Rightarrow$  ! pt Looks at! opposite side of Lesion.

4- Nystagmus: odaxia مهم جداً في حالات

★ Method:

- put your finger at a distance 30 cm from! Patient's eyes with angle 30°, for 30 seconds.
- Ask! pt to Look at your Finger.
- Repeat! test with every direction:  
(Laterally - upward – downward)



If Nystagmus Comment on:

- Spontaneous or on fixation
- Horizontal, vertical, or Rotatory
- uniocular or biocular.

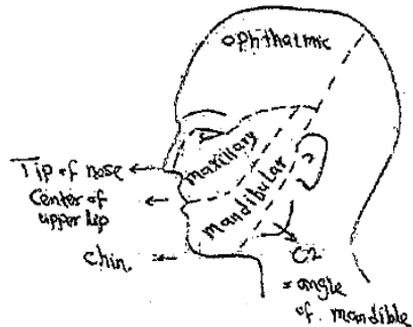
IV. Trigeminal Nerve

a. Motor part:

1. Inspection:

- ★ Wasting ⇒ Flattening above & below Zygoma.
- ★ Fasciculations of Temporalis or Masseter.
- ★ Jaw deviation towards! paralysed side.

2. Palpation ... muscles of mastication.



- ❖ Temporalis ms: While! patient clenches his mouth ⇒ palpate! temples.
- ❖ Masseter ms: While! patient clenches his mouth ⇒ put your four Fingers at! post border & your thumb at! anterior border of! ms.
- ❖ Pterygoid ms: Ask! patient to open his mouth while you fix his head by your hand:
  - unilateral paralysis ⇒ deviation of jaw to diseased side.
  - Bilateral paralysis ⇒ No deviation but inability to open mouth against resistance.

b. Sensory Part --- face sensation

- ★ Test for pain, temp & touch.
- ★ Compare between both sides of face
- ★ Compare between 3 Components of! nerve “Ophthalmic - maxillary - mandibular”
- ★ Compare between inner & outer parts of face.

⌘ **N.B:** Loss of sensation in central part of face {tip of nose - centre of upper Lip & chin }  
occurs in Tabes Dorsalis. (Tabetic mask).  
while Loss of Sensation in peripheral part of face ⇨ in Syringobulbia.

c. Reflexes

1. Conjunctival & Corneal reflex:

- ★ It's a superficial reflex ... afferent = V .... efferent = VII
- ★ method:
  - ask! patient to Look upward & inward.
  - Touch Corneo - conjunctival junction from behind with piece of cotton.
  - other method: blowing a puff of air into each cornea.
- ★ Response: blinking of! Same eye ⇨ Direct & otherone ⇨ Consensual.
- ★ Abnormality:
  - Absent blinking on one side = facial paralysis of that side.
  - Absent blinking on both sides = Bilateral Facial paralysis. **OR**  
= Sensory & trigeminal affection of! Stimulate side. **OR**  
= Organic type of Coma.
- ★ Importance:
  - Differentiate between V & VII Lesion.
  - Differentiate between hysterical & organic Lesion.
  - Diagnose stage of anesthesia.

2. Jaw reflex

- ★ it's a deep reflex ... afferent = V ... efferent = V
- ★ method:
  - while mouth is slightly opened.
  - put your index Finger in Lower jaw.
  - Tap your Finger From above downward with a hammer.
- ★ response:
  - Normally absent in young patients.
  - Minimal closure of Lower jaw in old person > 50 yrs.
- ★ abnormality: Exaggerated (Brisk) reflex in:
  - bilateral UMNL above pons.
  - Pseudo bulbar palsy.
  - D.S.
  - Motor neurone disease.

## V. Facial Nerve

### a. Motor part:

#### 1. Inspection

- ★ asymmetry between both sides of face.
- ★ muscle wasting  $\Rightarrow$  in LMNL
- ★ fasciculations  $\Rightarrow$  in nuclear affection.
- ★ Upper Face For:
  - absent forehead wrinkles.
  - infrequent blinking & epiphora.
- ★ Lower Face For:
  - Flattening of naso-Labial Fold.
  - Deviation of mouth angle to healthy side in early Lesion, but (with long standing cases towards! affected side due to ms. Contracture).
  - Salivary dribbling from diseased side.

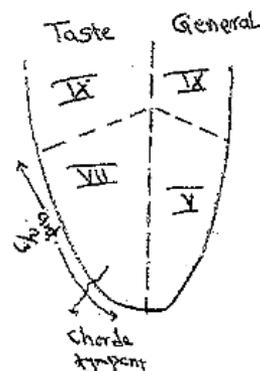
#### 2. Power of muscle (of face expression):

##### ★ Upper face:

- Frontalis  $\Rightarrow$  ask! patient to raise eye brow "Corrugation of forehead"
- orbicularis oculi  $\Rightarrow$  ask! Pt. to close his eyes firmly.

##### ★ Lower face:

- Buccinator  $\Rightarrow$  Blow cheeks.
- Orbicularis oris  $\Rightarrow$  Whistling
- Retractor anguli  $\Rightarrow$  Showing his teeth.



### b. Sensory part:

#### ★ Taste sensation of ant. $\frac{2}{3}$ of tongue.

##### • Method:

- patient closes his eyes.
- ! Examiner catches patient's tongue by use of a piece of gauze to prevent with drawal of tongue & to dry it.
- Test! taste sensation by use of: Sweet  $\Rightarrow$  Sour (Vinger)  $\Rightarrow$  salt  $\Rightarrow$  bitter (quinine)
- Each half of tongue is tested
- Patient shouldn't speak during! test but he should write.

### c. Glabellar reflex (Myerson's)

- ★ It's a deep reflex ... aff. = VII eff. = VII
- ★ Method: From behind! patient percuss! root of nose (glabella) by a hammer.

- ★ Normal response:
  - Bilateral brisk eye closure.
  - after 3-4 repetition of! reflex ⇒ absent response.
- ★ Abnormality:
  - prolongation of reflex ⇒ parkinsonism.
  - Exaggerated in UMNL.
  - Lost in LMNL.

⌘ **N.B:**

1. Facial myokymia: very fine involuntary movement in facial ms. in one side, Like Fine rippling under skin. treated by Tegretol.
2. Facial hemiatrophy:
  - ★ Absent Fat; Soft tissue, C-T in one side of face for unknown AE causing atrophy.
  - ★ plastic surgery may be required.
3. Hemi facial Spasm:
  - ★ Involuntary twitches of ms. in one side of face.
  - ★ muscles around! eye, cheek & around! Mouth ⇒ are usually affected.
  - ★ movement is irregular & repetitive.
  - ★ repeated injection of small doses of Botulinum toxins may improve! condition.
4. Causes of Facial numbness:
  - ★ Inflammation ⇒ D.S.
  - ★ Infection ⇒ H.Z
  - ★ Neoplastic ⇒ neuroma, meningioma.
  - ★ Vascular ⇒ pontine infarction.
  - ★ Toxic ⇒ Trichloroethylene.
  - ★ Granuloma ⇒ Sarcoidosis.

VI. Cochleo-Vestibular Nerve:

- a. Cochlear division
  1. Acuity of hearing:
    - ★ Whispering Test.
    - ★ Watch Test.
  2. Audiometry:
  3. Test for type of deafness:
    - Rinné test:
      - normally air conduction > bone conduction.
      - bone conduction > air conduction ⇒ in Conductive deafness.
      - both air & bone conduction are impaired ⇒ in perceptive deafness

- Weber test:
  - normally vibration are heard in middle of fore head.
  - in conductive deaf  $\Rightarrow$  vibration are heard in! affected ear.
  - in perceptive deaf  $\Rightarrow$  vibration are heard in! normal ear.
- b. Vestibular division:
  - ★ Caloric test.
  - ★ Rotating chair Test.
  - ★ Electro-nystagmography (ENG).

## VII. Glossopharyngeal & X. Vagus Nerves:

1. uvula:
  - ★ normally: Central in position.
  - ★ Unilateral Lesion (LMNL)  $\Rightarrow$  deviation to normal side.
2. Soft palate:
  - ★ Normally:
    - by inspection: no palatal dropping.
    - when Saying (Ah): elevated symmetrically.
  - ★ Lesion:
    - Unilateral Lesion  $\Rightarrow$  dropping of soft palate on diseased side.
    - Bilateral Lesion  $\Rightarrow$  when Say (Ah) no palatal movement with central uvula.
3. palatal reflex:
  - ★ aff. = V
  - ★ eff. = X
  - ★ Stimulate soft palate on both side by tongue depressor  $\Rightarrow$  elevation of soft palate & uvula with deviation of uvula to! stimulated side.
  - ★ Lost in bilateral LMNL (True bulbar palsy).
  - ★ Exaggerated in bilateral UMNL (Pseudo-bulbar palsy).
4. pharyngeal (gag) reflex:
  - ★ aff. = IX
  - ★ eff. = X
  - ★ use "2" tongue depressors (one to depress! tongue &! other to stimulate post pharyngeal wall)  $\Rightarrow$  gag reflex.
  - ★ Lesions as in palatal reflex.
5. Taste Sensation:
  - ★ in post  $\frac{1}{3}$  of tongue by electric stimulation, which Lead to  $\Rightarrow$  metallic taste.
6. Laryngoscope:
  - ★ Vocal Cord paralysis  $\Rightarrow$  (Specific for vagus).

### VIII. Accessory Nerve:

- a. Cranial accessory:
  - ★ distributed with vagus nerve.
- b. Spinal accessory:
  1. Sternomastoid muscle:
    - I. Both Sides  $\Rightarrow$  press chin against resistance.
    - II. Each side  $\Rightarrow$  Turn chin against resistance.
  2. Trapezius muscle:
    - ★ raise shoulder against resistance.
    - ★ upper  $\frac{1}{2}$  of muscle is Supplied by accessory, but Lower  $\frac{1}{2}$  by C<sub>3</sub> & C<sub>4</sub> directly.

### IX. Hypoglossal Nerve:

1. Inspection:
  - a. For fasciculation (while I tongue is inside mouth)  $\Rightarrow$  it occurs in nuclear Lesion (motor neurone disease & Syringobulbia).
  - b. For Deviation (while! Tongue is protruding)  $\Rightarrow$  it deviates to diseased side.
  - c. For wasting  $\Rightarrow$  in LMNL
  - d. Abnormal movement:
    - ★ Protrude 's retract:
      - In chorea.
      - Tremors.
      - In parkinsonism.
  - e. For Dimpling (while tapping! Tongue) occurs in  $\Rightarrow$  Myotonia.
  - f. Glazed tongue in Deficiency D.
  - g. Fissured tongue in Mongolism.
  - h. Ulcers in Behcet's D, Herpes Simplex.
2. power ... of intrinsic tongue muscles.
  - ★ by asking! patient to push I inner side of his cheek by his tongue.

### (4) Motor System Examination:

- I. Inspection.
- II. palpation (muscle tone).
- III. Percussion.
- IV. Muscle power.
- V. Reflexes.

## I. Inspection:

### 1. posture & Attitude:

- ★ Hemiplegia ⇒ Flexion, adduction of U.L. with L.L. extension.
- ★ paraplegia in Flexion ⇒ flexion of both L.L.
- ★ Parkinsonism ⇒ Flexion attitude.
- ★ peripheral neuropathy ⇒ bilateral wrist & foot drop.

### 2. Musculo-skeletal Deformaties:

- ★ Hammer toe in peroneal muscle atrophy.
- ★ pes Cavus in:
  - Duchenne myopathy.
  - Fredreich's ataxia.
  - Syringomyelia.
  - peroneal muscle atrophy.

### 3. Muscle State:

.Proximal ثم Distal وابدأ L.L. ثم U.L. ابدأ ب

- ★ Atrophy (wasting):
  - Myopathy ⇒ Bilateral, Symmetrical & proximal.
  - peripheral neuropathy ⇒ Bilateral, Symmetrical & distal.
  - UMNL ⇒ Diffuse.
  - A.H.C Lesion ⇒ patchy (Segmental).
  - P.M.A ⇒ Inverted champaign bottle appearance.
- ★ Hypertrophy:
  - True hypertrophy: ↑ muscle power Like in athlete.
  - Pseudo hypertrophy: ↓ muscle power.  
e.g.: ⇒ Duchenne & Becher myopathy.

### 4. Trophic changes:

- ★ Brittle nail.
- ★ Ulcers.
- ★ Loss of hair.
- ★ Pigmentation.
- ★ Diseases with marked trophic changes:
  - peripheral neuropathy (especially diabetic & Leprotic changes).
  - Cauda equina.
  - Tabes dorsalis.
  - Syringomyelia.
- ★ Causes of Leg ulcers:
  - Traumatic.
  - Inflammatory (Specific & non Specific).
  - Neoplastic.
  - Vascular (Varicose ulcers).

- Sickle cell anaemia.
- Neurogenic (D.M. ,Leprosy).

5. Involuntary movement:

a. Fasciculation:

- ★ Spontaneous contraction of muscle fiber (fascicle).
- ★ it's fine, rapid & Flickering.
- ★ elicited by muscle percussion.
- ★ it's visible & may be palpable.
- ★ it may be physiological or pathological.

	Physiological Fasciculation	Pathological Fasciculation
Cause	- Anxiety, fatigue & excess coffee	- Irritative lesion of A.H.C or cranial nuclei.
Character	- Coarse	- Fine
Wasting	- Absent	- Present
E.M.G	- Normal	- Giant Potentials

b. Fibrillation:

- ★ it's contraction of single muscle Fibre (Fibril).
- ★ it's hardly visible except in the tongue.

c. Chorea.

d. Athetosis.

e. Tremor.

**II. Palpation (muscle tone):**

a. In upper Limb:

- ★ Wrist: Shaking method (move up & down).
- ★ Elbow: passive Flexion & extension.
- ★ Shoulder: Gower method.

b. In Lower Limb

- ★ Ankle: Shaking method (move side to side).
- ★ Knee: passive flexion & extension.
- ★ Hip: Rolling method.
- ★ Shaking of Knee may lead to:
  - Frog position = Hypotonia.
  - Normal position ⇒ الرجل تطلع وتنزل بسهولة
  - Hyperextended ⇒ الرجل مثل قطعة خشب

⌘ N.B.1: muscle tone may be done by direct palpation of! muscle.

⌘ N.B.2: to comment on muscle tone:

- ★ Hyper - or hypotonia:
- ★ if hypertonia:
  - spasticity ⇒ Clasp-knife.
  - Rigidity ⇒ Cog wheel or Lead pipe.
- ★ Bilateral or unilateral.
- ★ Symmetrical or Asymmetrical.
- ★ which muscle group.

e.g.: Bilateral asymmetrical clasp-knife spasticity affecting both Lower Limbs, Lt. is more affected than Rt. & extensors more than flexors.

⌘ N.B.3:

- ★ Causes of hypotonia:
  - Shock stage of UMNL.
  - Cerebellar Lesion.
  - Rheumatic chorea.
  - LMNL.
  - post column Lesion.
  - Hypotonic form of cerebral palsy
- ★ Causes of flaccid paraplegia:
  - Poliomyelitis.
  - peripheral neuropathy
  - Shock stage of paraplegia.
  - Motor neurone disease.
  - Cauda equina.
  - Drugs
  - Myopathy
- ★ Causes of hypertonia:
  - UMNL (clasp knife spasticity)
  - Parkinsonism (Lead pipe or cog wheel rigidity).
  - Myotonia.
  - Catatonia = difficult to start movement.
  - Meningeal irritation.
  - Hysterical.

	Spasticity	Rigidity
Cause	Pyramidal Lesion.	Extrapyramidal Lesion.
Character	Clasp-Knife. (initial resistance to movement followed by sudden overcoming)	Lead pipe (Steady ↑ in resistance). Cog wheel (Resistance is intermittent)
Distribution	Distal > Proximal: Flexors of U.L. Extensors of L.L. (Antigravity muscle)	Proximal > Distal. Mainly flexors. (Progravity muscle)
Deep reflexes	Exaggerated.	Normal or ↓.
Planter reflex	Exaggerated.	Normal (flexor Planter).
Involuntary move	Absent.	Present.

### III. Percussion:

- ★ Tapping by a hammer to detect:
  - fasciculation (as tapping to trigger it)
  - Myotonia (hump Like in thenar & dimpling in tongue).

### IV. Muscle power:

- ★ Examine it first passively then against resistance.
- ★ in against resistance ايدك الشمال على الـ Joint إلى فوق الـ Joint التي انت بتفحصه

#### A. Lower Limb:

##### ★ Ankle:

- dorsiflexion خد مشط رجلك عليك
- planter Flexion مشط رجلك لتحت
- Knee:
  - flexion خد رجلك عليك
  - Extension افرد رجلك
- Hip:
  - Abduction. ابعد فخادك
  - Adduction ضم فخادك
  - Flexion. فخادك لفوق
  - Extension فخادك لتحت

#### : during extension against resistance.

- تشيل رجل العيان مع ايدك اليمين فوق الـ heel وايدك الشمال فوق الـ Knee وقوله نزل كعبك لتحت

## B. Upper Limb:

### ★ Hand:

- Abductor
- Adductor

### Against resistance

افتح صوابك متخلنيش اقلهم

اختبار بالورقة

### passive

فقط صوابك

ضم صوابك

### ★ Hand grip:

- Flexor
- Extensor
- Opponens

اقل ايديك متخلنيش افتحها

افتح ايديك

اعمل حلقة

سبح

### ★ Wrist:

- Flexor
- Extensor

خد رستك عليك

رجعه

### ★ Shoulder:

- Abduction
- Adduction
- Flexion
- Extension

### ★ Elbow:

- Flexor
- Extensor

اثنى كوعك

افرد كوعك

e.g.: Bilateral Symmetrical muscle weakness in both Lower Limbs affecting Flexors more than Extensors, distal more than proximal, abductors more than adductors.

## II. Individual Muscle Examination

1. Eye muscle ⇒ oculopharyngeal myopathy.

2. face ⇒ facio-Scapula-humeral myopathy.

3. Sternomastoid:

★ Unilateral

★ Bilateral

} بتعرف تحرك دماغك يمين وشمال ثم تعمل

4. Trapezius: بتعرف ترفع كتافك؟

ثم تخليه يرفع كتافه وتحاول تنزلهم ثم تخليه يرفع كتافه وانت بنزق لتحت

5. pectoralis major muscle:

1. clavicular head ⇒ shoulder Flexed 90° and elbow 180° & make him adduct against resistance.

2. Sternal head ⇒ Anterior Axillary fold

ايديك في وسطك وزق ، والدكتور يحس

6. Shoulder movement:

- a. flexion of shoulder  $\Rightarrow$  Ant. fibre of deltoid.
- b. Extension  $\Rightarrow$  post. Fibre of deltoid.
- c. Abduction:
  - ★ 0 -15  $\Rightarrow$  Supraspinatus:  
الذراع مفرودة في جنب المريض وتخلي المريض يحاول يزق لبره
  - ★ 15 – 90  $\Rightarrow$  Middle Fibre of deltoid  
الذراع 90 درجة وتقول للمريض متخلينيش انزلهم  
كما سبق
  - ★ 90 -180  $\Rightarrow$  Trapezius
- d. Adduction  $\Rightarrow$  Latissimus dorsi.

ذراع العيان 90 درجة والدكتور يضع ايده تحت ذراع العيان وت قوله نزل ايديك

7. Biceps: Flexion of the forearm with the hand is fully supinated.

8. Brachioradialis: Flexion with the arm in mid-position.

9. Triceps: Extension of the elbow.

10. Individual Muscles of The Hand:

- a. Abductor of the thumb. الاصبع يكون عمودي على كف اليد
  - ❖ Acted by Abductor pollices Brevis:
    - ! only muscle supplied by median nerve.
    - early affected in Carpal Tunnel Syndrome.
- b. Adductor of the thumb  $\Rightarrow$  Adductor pollices Longus and brevis.
- c. Flexion  $\Rightarrow$  Flexor pollices Longus & brevis. الحركة موازية لكف اليد
- d. Extension  $\Rightarrow$  Extensor pollices Longus is brevis. الحركة موازية لكف اليد.
- e. opposition  $\Rightarrow$  opponens pollices: Thumb touch ! Little Finger.
- f. Abduction of the medial 4 fingers  $\Rightarrow$  Dorsal interossei.
- g. Adduction of medial fingers  $\Rightarrow$  planter interossei
- h. Putting! fingers in writing position  $\Rightarrow$  Lumbricalis muscle.
- i. flexors of the fingers  $\Rightarrow$  Flexor digitorum Superficialis & profundus  
وضع تطبيق اليد
- j. Extension of the fingers  $\Rightarrow$  Extensor digitorum  
وضع فرد الاصابع

11. Wrist: C<sub>8</sub> T<sub>1</sub>

12. Examination of the abdominal muscle:

- a. Babinski rising up sign  $\Rightarrow$  passive.  
ايدي المريض في وضع المومياء وقوله قم بوسطك
- b. Beevor method  $\Rightarrow$  against resistance  
ايدي المريض بجانبه

13. Examination of hip joint:

- a. flexion of the hip  $\Rightarrow$  iliopsoas.
- b. Adduction  $\Rightarrow$  Adductor Longus & brevis.
- c. Abductor  $\Rightarrow$  gluteus minimus & medius.
- d. Extensor  $\Rightarrow$  gluteus maximus  $\Rightarrow$  examined in myopathy & foot drop.  
... to D.D. between root affection العضلة القوية P.N. & العضلة الضعيفة

العيان نايم على وجهه ويد الدكتور على ظهر العيان والأخرى على thigh و قول للعيان ارفع رجلك.

14. Examination of the knee:

- a. flexion  $\Rightarrow$  hamstring muscle.
- b. Extension  $\Rightarrow$  quadriceps group.

15. Ankle Examination:

- a. Dorsiflexion  $\Rightarrow$  Anterior Tibial group.
- b. planter Flexion  $\Rightarrow$  Calf muscles.
- c. Eversion  $\Rightarrow$  Peroneal muscle group.
- d. Inversion  $\Rightarrow$  Tibialis anterior, Tibialis posterior.

❖ Examination of Calf muscles:

- ★ to D.D. between pseudo - **OR** true hypertrophy.
- ★ Method:

- المريض نايم على جنبه ويد الدكتور الشمال تحت ال Knee واليد الأخرى على sole وتجعل العيان يزيق مشط رجليه لتحت (planter flexion)

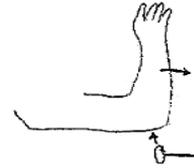
- طريقة اخرى: المريض نايم على وجهه ويعمل planter flexion

V. Reflexes:

1) Deep reflexes:

a. Upper Limb:

1. Biceps reflex ... (C<sub>5</sub>, C<sub>6</sub>)
  - ★ Flex elbow 120°, Slight pronation of forearm.
  - ★ Strike your index finger which placed on biceps tendon.
2. Brachioradialis reflex ... (C<sub>5</sub>, C<sub>6</sub>)
  - ★ Same position as above.
  - ★ Tap 3 - 4 cm directly above styloid process.
3. Triceps reflex ... (C<sub>6</sub>, C<sub>7</sub>)
  - ★ Flex elbow at Rt angle.
  - ★ Triceps tendon is tapped directly just above olecranon process.

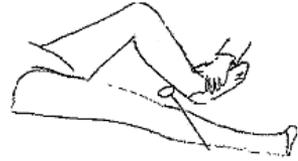


b. blower Limb

1. Knee reflex ... (L<sub>3</sub>, L<sub>4</sub>):
  - ★ patient in recumbent position
  - ★ put your forearm below both knee.
  - ★ Tap directly on Quadriceps tendon.
2. Ankle reflex ... (S<sub>1</sub>, S<sub>2</sub>):



- ★ patient's thigh is abducted & externally rotated.
- ★ Knee is flexed at 90°.
- ★ Ankle is slightly dorsiflexed by examiner's hand.
- ★ Tap directly on tendon achilles.



\*\*\* IF there is hyper-reflexia: ابحث عن

1. Pathological reflexes.
2. Clonus.

\*\*\* IF there is hypo-reflexia: you must do reinforcement by Jendrassik maneuver

⇒ clenching teeth & clutching hands. تقول للعيان كز على سنائك وشبك ايدك

❖ Pathological reflexes: ... normally -ve, if + ve indicates UMNL.

a. Upper Limb:

1. Supraspinatous reflex (C<sub>3</sub>, C<sub>4</sub>):

- Tapping Supraspinatous muscle directly.
- Results in visible contraction with slight abduction of shoulder.

2. pectoralis reflex:

- Direct percussion on pectoralis muscle.
- Leads to adduction of shoulder.

3. Finger Flexion Jerk:

- Middle 3 Fingers of! hand are slightly Flexed.
- Examiner put his index finger on their palmar aspect.
- Then tap on examiner's index.
- If +ve ⇒ rapid Flexion of patient's middle 3 Fingers.

4. Hoffman's reflex:

- Distal phalanx of middle finger is firstly Flexed & then Suddenly released.
- If +ve ⇒ the thumb & index will Flex & adduct.

5. Wartenberg's reflex

• الدكتور والمريض يشدوا صوابعهم ضد بعضهم البعض

- If +ve ⇒ Flexion & adduction of H

b. Lower Limb:

1. patellar reflex ... (L<sub>2</sub>, L<sub>3</sub>, L<sub>4</sub>):

- press upper border of patella downward by your index Finger
- Tap your index finger by hammer
- IF +ve ⇒ Contraction of Quadriceps muscle and upward displacement of! patella.

2. Adductor reflex ... (L<sub>4</sub>):

- patient's hip is externally rotated & slightly abducted.

- place your index finger just above adductor tubercle.
- Tap index Finger
- If +ve  $\Rightarrow$  the visible contraction of adductor muscle.

★ Clonus:

- Def.: Series of rhythmic contractions in response to sudden sustained stretch of muscle tendon.
- AE:
  1. organic = Sure sign of UMNL.
  2. Hysterical = where it persists in spite of release of muscle stretch.
- Types:
  - Sustained (inexhaustible) clonus:
    - ~ clonus is increased by continuous stretching of tendon & stopped by releasing! stimulus
  - unsustained (exhaustible) clonus:
    - ~ clonus is abolished inspite of continous streching of tendon.
    - ~ It occurs in early stage & recovery from UMNL.
- Methods to elicit it:
  - a. Ankle clonus: passive planter Flexion of ankle joint followed by Sudden dorsiflexion.
  - b. patellar conus: hold! patella displace it slightly upward, then followed by Sudden downward displacement of patella.
  - c. wrist clonus: Sudden & sustained extension of wrist.

🔗 N.B.1: Causes of hyper-reflexia:

- ★  $\Delta$  tract Lesion.
- ★ Tetany.
- ★ Psychoneurosis.
- ★ Thyrotoxicosis.

🔗 N.B.2: Causes of hyporeflexia:

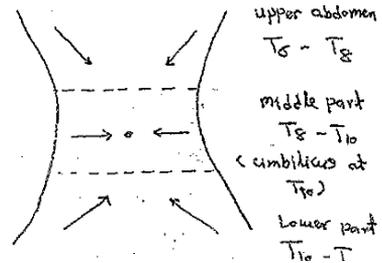
- ★ Muscle disease
- ★ Neuropathy.
- ★ Coma (bilateral Loss).
- ★ Shock stage of UMNL.
- ★ Great rigidity parkinsonism, Spasticity & ms contracture.
- ★ Normally in elderly patients.

2) Superficial reflexes

1. Abdominal Reflex ... (T<sub>6</sub>  $\rightarrow$  T<sub>12</sub>)

★ Method:

- Normal response: contraction of ipsilateral abdominal ms with deviation of Linea alba towards site of stimulation.



★ Causes of Lost abd. reflex:

- UMNL above Segmental Supply of! reflex.
- LMNL affecting reflex arc itself.
- Sever weakness or wasting of muscle (myopathy).
- Normally:
  - Infants.
  - Adults, obese. repeated pregnancy with Lax abdomen.

★ Causes of exaggerated abd. reflex:

- Psychoneurosis.

2. Planter Reflex ... (S<sub>1</sub>, S<sub>2</sub>)

★ Method:

- Babinski ⇒ scratch Lateral aspect of sole of foot from heel to toes.
- Shaddock ⇒ Scratch Lateral aspect of dorsum of foot from Lateral malleolus to little toe.
- Barrada ⇒ Scratch Lateral aspect (edges) of foot.
- Oppenheim ⇒ press firmly (Squeeze) on Lower part of tibia from above downward.
- Gordon ⇒ Squeeze calf muscles.
- Schaffer ⇒ squeeze tendon - achilles.
- Gonda ⇒ 3<sup>rd</sup> & 4<sup>th</sup> toes are passively Flexed then Suddenly released.
- Stransky ⇒ abduct little toe then sudden release.

★ Results:

- Normal response = planter Flexion of big toe.
- Inverted response (extensor planter response) (+ve Babinski sign).
  - = Dorsi Flexion of big toe with or without fanning of other toes.
  - occurs in ⇒ UMNL.
    - Deep Coma.
    - Deep Sleep or anaesthesia.
    - 1<sup>st</sup> year of Life (Infants).
- Absent response (equivocal response).

- occurs in:
    - LMNL at S<sub>1</sub>.
    - ↓ Superficial Sensation, on Sole (S<sub>1</sub>).
    - paralysis of extensors or flexors of big toe (myopathy).
    - Marked foot deformities.
    - Foot Coldness ⇒ repeat after warming.
3. Cremasteric reflex ... (L<sub>1</sub>):
- ★ Stroked! skin of inner side of thigh.
  - ★ Leads to contraction of cremasteric ms ⇒ retraction of testis.
  - ★ Impaired response in:
    - a. corticospinal tract Lesion.
    - b. Local Lesion at L<sub>1</sub>.
  - ★ Dartos reflex: Scrotum contract: under Cold influence.
4. Gluteal reflex ... (L<sub>4</sub>, L<sub>5</sub>):
- ★ stroked across one of buttocks with a pin.
  - ★ results in ⇒ contraction of ipsilateral gluteal ms
5. Anal reflex ... (S<sub>3</sub>, 4, 5)
- a. Superficial stimulus ⇒ scratch skin in perianal region resulting in contraction of external anal sphincter.
  - b. Deep stimulus ⇒ (occurring during P/R examination).  
Leads to contraction of anal sphincter.

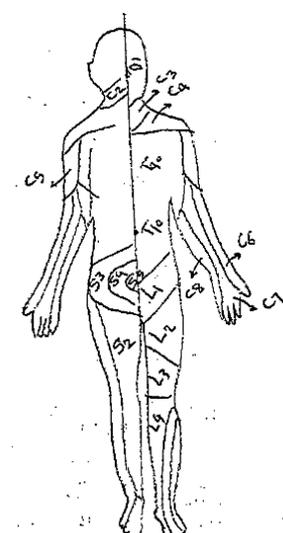
### (5) Sensory System Examination:

#### A. Superficial Sensation:

##### ★ Method:

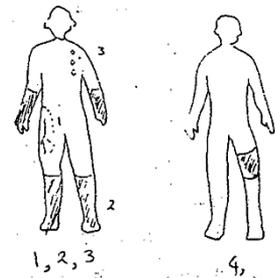
- Face. حاسس ؟
- Leg – arm – face. - الشبكة دي زي دي ؟ (اليمين والشمال)
- Leg/Leg.
- arm/arm.
- face/face.
- Leg (proximal & distal).
- Arm (proximal & distal).
- Leg & Arm circumference.
- Sensory Level: very important in:
  - Paraplegia ⇒ Peripheral neuropathy.
  - hemihypossthesia ممنوعة منعاً باتاً ⇒ normal person.

★ Body Dermatome

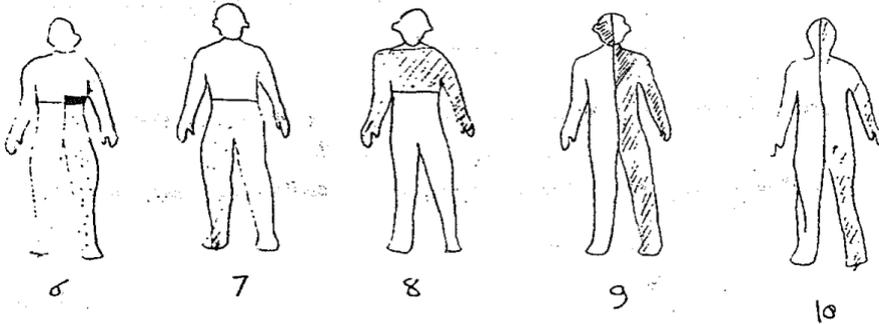
- C<sub>2</sub> ⇨ angle of jaw & Lateral aspect of neck.
  - C<sub>3,4</sub> ⇨ Shoulder down to manubrium.
  - C<sub>5</sub> ⇨ Lateral aspect of arm.
  - C<sub>6</sub> ⇨ Lateral aspect of forearm, thenar eminence & thumb.
  - C<sub>7</sub> ⇨ middle aspect of forearm, middle of palm & middle 3 Fingers.
  - C<sub>8</sub> ⇨ medial. aspect of forearm, hypothenar eminence & Little finger.
- 
- T<sub>1</sub> ⇨ medial aspect of arm.
  - T<sub>2</sub> ⇨ T<sub>7</sub>: Thorax (T<sub>4</sub> ⇨ nipple)
  - T<sub>8</sub> ⇨ T<sub>12</sub>: Abdomen (T<sub>10</sub> ⇨ umbilicus, T<sub>12</sub> ⇨ Inguinal Ligament).
  - L<sub>1</sub> ⇨ upper 1/3 of front of thigh
  - L<sub>2</sub> ⇨ middle 1/3 of front of thigh.
  - L<sub>3</sub> ⇨ Lower 1/3 of front of thigh.
  - L<sub>4</sub> ⇨ anterolateral aspect of thigh, front of knee, anteromedial aspect of Leg, medial aspect of foot & big toe.
  - L<sub>5</sub> ⇨ Lateral aspect of thigh, Lateral aspect of Leg, middle 1/3 of dorsum of foot & middle 3 Fingers.
  - S<sub>1</sub> ⇨ posterolateral aspect of thigh, posterolateral aspect of leg, Lateral 1/3 of dorsum of foot & Little Finger.
  - S<sub>2</sub> ⇨ posterior aspect of thigh, post. aspect of leg & Sole of foot.
  - S<sub>3,4,5</sub> ⇨ anal, perianal & gluteal region "Saddle Shaped area" in concentric manner.

\*\*\*Pattern of Sensory Loss:

1. Mononeural
  2. Glove & Stock
  3. Maculo – anaesthetic
  4. Radicular sensory loss ⇨ Lesion in! root.
  5. Saddle area loss ⇨ Lesion in! conus.
- } Lesion in peripheral nerve



6. Dissociated sensory Loss (Brown Sequard Syndrome)  $\Rightarrow$  unilateral cord lesion.
7. Sensory Level  $\Rightarrow$  Lesion is extramedullary.
8. jacket Sensory Loss (dissociated)  $\Rightarrow$  Lesion is intramedullary.
9. Crossed hemihyposesthesia  $\Rightarrow$  Lateral medullary Syndrome.
10. Hemihyposesthesia  $\Rightarrow$  Capsular & brain stem



Lesion.

B. Deep Sensation:

- ★ Joint sense (Sense of position & movement).
- ★ Muscle sense (Pressure pain).
  - Pinch (Squeeze) muscles of! Calf.
  - Result:
    - Normally  $\Rightarrow$  disagreeable sense.
    - Lost  $\Rightarrow$  in NeuroSyphilis (Abadie's signs).
    - Exaggerated  $\Rightarrow$  Tender muscles:
      - ~ D.VT.
      - ~ Myositis.
      - ~ Early diabetic neuropathy.
      - ~ Guillan - Barre Syndrome.
      - ~ Ruptured Becker cyst.
- ★ Nerve sense:
  - Roll! ulnar or Lateral popliteal nerve against bone.
  - Normally  $\Rightarrow$  electric sense.
  - Causes of thickened nerve:
    - Leprotic neuropathy.
    - Acromegally.
    - Myxoedema

- Neurofibromatosis.
- Interstitial hypertrophic polyneuropathy.

★ Vibration Sense:

- Shake tuning fork.
- place it over forehead or central incisor *أسأل العيان اذا كان حاسس ولا لا؟*
- place it over medial malleolus:
  - +ve
  - -ve ⇒ place it over A.S.I.S:
    - ~ +ve = P.N.
    - ~ -ve = post column lesion.
- place it over radial process:
  - if -ve ⇒ place it over olecranon process.
  - if +ve ⇒ So it's P.N

... Then place it over! shoulder if all -ve ⇒ so it's post column affection.

C. Cortical Sensation:

★ They are examined only when superficial & deep sensations are intact with closed eyes.

a. Tactile Localization:

★ Ask! Pt. to close his eyes, then prick his finger & ask him to localise site of prick.

b. Tactile discrimination (two-point discrimination):

★ with patient's eyes closed deliver 2 simultaneous pricks.  
(On! Finger 5 mm apart & on! Leg or! back 4 cm apart)

★ Normally 2 pricks are felt distinct from each other.

c. Stereognosis:

★ with his eyes closed ⇒ ! pt is asked to recognize familiar object placed in his hand.

d. Graphosthesia:

★ with his eyes closed ⇒! pt is asked to recognize a number or letter drawn over his palm.

★ If Lost = Graphognosia

e. perceptual rivalry (Sensory extinctions):

★ Normally if you deliver 2 Simultaneous pin pricks at 2 Corresponding sites of! body, both pricks are felt.

★ In Cortical Sensory Loss, only prick on! healthy side is felt.

\*\*\* These Sensations are examined when an intracranial lesion is suspected e.g.: hemiplegia.

(6) Examination for Co-ordination:

a. In Upper Limb:

1. finger to nose test.
2. Finger to finger test.
3. Finger to doctor's Finger test.

... In any of! above tests you may find:

- a. Decomposition of movement.
  - b. kinetic intention tremor, which become more evident as patient's fore Finger approaches the target.
  - c. Dysmetria in! form of hypermetria or hypometria.
4. Adiadochokinesia or Dysdiadochokinesia.
  5. Rebound phenomenon.
  6. Buttoning & unbuttoning test = earliest sign.

b. In Lower Limb

1. Heel to knee Test.
2. Walking.
3. Romberg's test.

(7) Examination of Back and Spine:

★ For:

- Deformity.
- Swelling.
- pigmentation.
- Tenderness over vertebrae.
- Scar.
- Tuft of hair.

(8) Examination of! Cranium:

★ For:

- Size
- Sutures & Fontanells.
- Deformity.
- Dilated vein.
- Thrill.
- Bruit.
- Cracked pot
- (hydrocephalus) = Mc Ewen's sign.

(9) Gait:

1. Circumduction gait:

★ in unilateral UMNL (hemiplegia).

2. Scissor gait:
  - ★ in bilateral UMNL (paraplegia).
3. swaddling gait:
  - ★ in myopathy (weak glutei).
4. High steppage gait: يرفع رجله عالي وينزل على مشط رجله
  - ★ in peripheral neuropathy.
  - as patient's Foot drops, he raises it high then brings it down, his toes touch floor Firstly.
5. Stamping gait: يرفع رجله عالي ويخبط كعبه في الأرض
  - ★ in post. column Lesion (Tabes dorsalis).
  - with eyes closed (or in! dark) patient raises his foot & brings it to! ground with heel touches! Floor firstly.
6. Short Steppage or shuffling gait:
  - ★ in extrapyramidal lesion (Parkinsonism).
7. Drunken (wide base) gait:
  - ★ in Archicerebellar Lesion (Fredreich's ataxia).
8. Zigzag gait:
  - ★ in bilateral Neocerebellar lesion (Marie's ataxia).
9. Deviation to! Side of Lesion:
  - ★ in unilateral Neocerebellar lesion (Cerebellar astrocytoma).
10. Hysterical gait:
  - ★ in Astasia Abasia = inability to stand or walk.

### ★ Paraplegia... ملاحظات حول حالات

ترتيب ال sheet كالآتي:

1. motor.
2. Sensory.
3. Sphincteric.
4. ↑ IC.T.
5. Cranial nerves.
6. speech.

- ★ History of Trauma is mandatory & if it's +ve, it must be written in! begining of! sheet & in! past history.
- ★ Detection of ! Level of lesion is from:
  - Sensory loss Level.
  - Level of Lost reflexes.

★ Site of Lesion:

	Vertebral	Meningeal	Cord
Onset of symptom	By Sensory symptoms (root pain)		By motor Sys. (heaviness)
Bladder affection	L A T E		Early
Saddle shaped area	E A R L Y		Late
Symmetry	Asymmetrical	Marked asymmetrical	Symmetrical
Sensory Level	Equal sensory loss level	Unequal sensory level	Jacket sensory
Vertebral Sign	+ve	-ve	-ve

★ Detection site of root & (Neurosurgery):

Spinal cord segment      افتح عند

- C<sub>1</sub> ⇨ C<sub>7</sub> ⇨      اطرح واحد (1)
- T<sub>1</sub> ⇨ T<sub>6</sub> ⇨      يعني مثلاً لو affection عند T<sub>10</sub> اطرح 2
- T<sub>7</sub> ⇨ T<sub>12</sub> ⇨      يبقى افتح عند T<sub>7</sub> اطرح 3
- L<sub>1,2,3</sub> ⇨      يبقى افتح عند T<sub>7</sub> اطرح 4
- L<sub>4,5</sub> ⇨      يبقى افتح عند T<sub>7</sub> اطرح 5
- Sacral roots      افتح عند L<sub>1</sub>

★ Abdominal reflexes are very important in case of paraplegia.

★ Back examination is mandatory in case of paraplegia ⇨ (Tenderness, rigidity, Scar, Sign of trauma).

★ Hemiplegia

ترتيب ال sheet كالآتي:

1. Motor
2. Sensory
3. Speech
4. Cranial Nerves
5. ↑ I.C.T.
6. Sphincteric.
7. Symptoms of other system affection.

C.V.S. Symptoms مهم جداً في حالات hemiplegia ان انت تسأل عن Cardiac sheet بالكامل من البداية. وبعدين تكتب

★ Site of Lesion:

• cranial nerve affection:

- absent:

~ Spinal cord Lesion.

~ Present:

✖ LMNL of cranial nerves on opposite side of hemiplegia  
(Crossed hemiplegia) = Brain stem Lesion.

✖ UMNL of facial, hypoglossal at! same side of hemiplegia.  
= Cortical, Subcortical of Capsular Lesion.

★ Peripheral neuropathy:

ترتيب ال sheet كالاتي:

1. motor
2. Sensory
3. Cranial nerves
4. Sphincteric (Impotence خاصة)
5. Speech
6. ↑ I.C.T

★ D.M. is mandatory in past history, we should ask about:

- manifestations, ttt & continuity of ttt. .

★ L.M.N.L.:

	A.H.C	P.N.	Muscle
Limb affected	UL > LL	LL > UL	Trunk > Extremities
Distribution	Segmental (Flexor > Extensor)	Diffuse (extensor > Flexor)	Irregular (equal affection)
Fasciculation	+ve	-ve	-ve
Wasting	Segmental	Bilateral, Symmetrical & distal	Bilateral, Symmet. & Proximal
Pseudohypertrophy	-ve	-ve	+ve
Sensory loss	If present ⇨ radicular.	Stock & glove hyposthesia	No sensory loss
Δ tract affection	May be present.	uncommon	absent

★ DD. between foot drop due to P.N. & root affection:

- by examination of gluteus maximus (L<sub>3,4</sub>, S<sub>1,2</sub>)
  - if normal muscle = P.N.
  - if weak muscle = root affection .... How?

- المريض ينام على وجهه
- اثن رجل المريض عند Knee
- ضع يدك اليسرى على ظهر العيان
- ضع يدك اليمنى على فخذ المريض من الخلف
- اجعل المريض يرفع فخذة لأعلى

★ Myopathy

- ★ Cardiac Symptoms are mandatory in ! sheet, as! main cause of death is Cardiomyopathy.

لازم في أي حالة Myopathy نعمل فحص للاتي:

- ocular ms.
- facial ms.
- Sternomastoid ms.
- Deltoid ms
- Trapezius.
- Pectoralis major ms.
- Serratus anterior ms.
- Abdominal ms.
- Gluteus maximus.
- Quadriceps.
- Calf ms.

نقول للعيان يقف ويزق بايده ضد حائط ونلاحظ على ظهره

- If weak Latissmus dorsi = inverted. V-shaped Scapulae.
- If weak Trapezius = V-shaped scapulae
- If both are weak = 11 (two parallel Lines).



★ Diseases affecting motor system only:

- Myopathy.
- myasthenia
- myositis
- myotonia
- motor neurone disease.

## ★ Ataxia

ترتيب ال sheet كالآتي:

1. motor.
2. Sensory.
3. Speech.
4. Cranial nerves.
5. ↑ I.C.T
6. Sphincteric.

### ⌘ N.B:

- Past history of drugs (phenobarbitone, Hydantoin).
- family history (Marie's & Fredreich's ataxia).
- Examination for Nystagmus should be done.

### ★ Causes of unilateral ataxia:

- Tumor.
- T.B.
- Nascular D.

	Cerebellar Ataxia	Sensory ataxia
Types of Inco-ordination	-Dysmetria. -intension tremor. -Decomposition, but movement is toward! Target whether! Eye is closed or opened	Movement is away from! Target only when! Patient closes his eyes with no dysmetria.
Gait	- Unilateral lesion ⇒ deviated - Bilateral lesion ⇒ Zigzag	- Stamping gait
Deep Sensory Loss	May or may not be lost	Must be lost
Speech	Staccato	Normal
Eye opening	No effect	Markedly impaired
Romberg's sign	+ve	+ve

### ⌘ N.B.1: D.D. between hysterical & organic hemiplegia:

❖ Hoover test:

... raise! healthy Limb of! pt by your hand which is below! heel, & ask! pt. to raise! diseased one:

- a. Organic  $\Rightarrow$  pt. exerts pressure by normal Limb in doctor's hand.
- b. Hysterical  $\Rightarrow$  No pressure.

❖ Side gait test:

... in organic lesion pt can only start movement towards normal side but can't start towards diseased side.

🔗 **N.B.2:** Disseminated lesion in medicine.

1. D.S.
2. DEM.
3. Disseminated  $\mathcal{S}$  Lesion.
4. Atherosclerosis.

🔗 **N.B.3:** How can you diagnose hemiplegia in Coma?

1. marked flaccidity on! paralyzed side.
2. movement of cheek in! affected side.
3. +Ve Babinski
4. Deviated eye:
  - ❖ away! lesion = irritative.
  - ❖ towards! lesion = destructive.

# ABDOMEN

## I. HISTORY

### Personal History:

 Name:

 Age:

- ★ Young ⇨ haemolytic jaundice.
- ★ Middle age ⇨ inflammatory bowel syndrome.
- ★ old age ⇨ neoplastic condition.

 Sex:

- ★ Male ⇨ Cancer colon & rectum
- ★ Female ⇨ Iry biliary cirrhosis, Cardiac achalasia

 Occupation:

- ★ Farmer ⇨ B

 Marital State

- ★ Liver cell failure ⇨ impotence.

 Residence

- ★ Rural areas ⇨ parasitic infestation.

 Special Habits

- ★ Smoking ⇨ gastritis, peptic ulcer.
- ★ Alcohol ⇨ gastritis, Liver cirrhosis & pancreatitis.

### Complaint

- ★ In patient's own words + Duration.

### Present History

- a. Pain.
- b. Swelling.
- c. Symptoms of different Systems.

#### I. upper GIT Symptoms:

1. Appetite.
2. Salivation.
3. Mouth odour.
4. Eructation.
5. Dysphagia

6. Heart burn.
7. Vomiting.
8. haematemesis.
9. dyspepsia.

II. Lower GIT Symptoms:

1. Flatulence.
2. Abdominal sounds.
3. Constipation.
4. Diarrhea.
5. Melena.
6. Bleeding per rectum.

III. Genito urinary Symptoms:

A. Genital:

1. erection.
2. infertility.

B. Urinary:

1. pain.
2. micturation.
3. urine.

IV. Hepatobiliary Symptoms:

1. jaundice.
2. ascites.
3. Lower Limb oedema.

A. **Abdominal pain**

في وجع موجود في البطن ولا لك ؟

★ Comment on:

- onset
- Course
- duration.
- character
- Site
- intensity.
- Radiation
- precipitating factors
- relieving factors.
- relation to meal:
  - during swallowing = oesophageal
  - ½ hr. after meal = gastritis.
  - 2hr. after meal = duodenal ulcer.

- relation to type of food:
  - é fatty food = cholecystitis.
  - é spices. = D.U
- associated symptoms:
  - Vomiting
  - Diarrhea
  - Constipation
  - General constitutional manifestation.
- ★ Types of abdominal pain:
  1. Le Visceral pain:
    - Due to ↑ tension in splanchnic nerve ending in muscular wall of Viscus.
    - Vague, non-Localized, difficult to describe.
    - It's deeply seated or colicky.
    - Commonly found in obstructive lesion of! intestine & bile duct.
  2. Parietal (somatic) pain
    - Due to irritation of parietal peritoneum.
    - It's sharp, Localized & easier to be described.
  3. Referred pain
    - pain felt at a site other than that stimulated, but in area supplied by the same neural segment.
    - e.g.: cholecystitis ⇨ Shoulder pain.
- ★ Causes of abdominal pain:
  - A. pain originating in! abdomen:
    - peritonitis.
    - Intestinal, biliary or ureteric obstruction.
    - Distention of capsule of Liver Spleen or kidney.
    - vascular disturbance:
      - embolism
      - thrombosis
      - ischaemic colitis.
      - ruptured aortic aneurysm.
    - Mechanical pain ⇨ muscle Trauma, Traction on mesentery.
  - B. Referred pain to! Abdomen:
    - From chest ⇨ pneumonia, myocardial infarction.
    - From Spine ⇨ radiculitis due to arthritis.
    - Genitalia ⇨ torsion testicles.
  - C. Metabolic:
    - Uraemia.
    - Diabetic ketoacidosis.

- porphyria.
- D. Toxic: poisoning.
- E. Neurogenic:
  - Tabes dorsalis
  - H.Z.

★ Commonest Causes of chronic recurrent abdominal pain:

1. peptic ulcer.
2. Biliary tract D.
3. pancreatitis.
4. peritonitis. (T.B.).
5. Inflammatory bowel syndrome.
6. chronic diverticulitis.
7. Cancer Colon.
8. Chronic intestinal obstruction.

★ Important sites of abdominal pain:

- × Oesophagus ⇒ Substernal.
- × Stomach ⇒ epigastrium + Lt upper quadrant.
- × Duodenum ⇒ epigastrium + Rt upper quadrant.
- × Small intestine ⇒ periumbilical.
- × Colon ⇒ below umbilicus on! side of! Lesion.
- × Rectosigmoid ⇒ Suprapubic region.
- × Rectum ⇒ posteriorly over ! sacrum.
- × Pancreas ⇒ epigastrium.
- × Liver ⇒ Rt upper quadrant (R.U.Q).
- × Gall bladder ⇒ R-U.Q. radiating to Rt. Shoulder.
- × Spleen ⇒ Lt. upper quadrant.

★ Types of splenic pain:

1. Dull aching ⇒ due to stretch of! Capsule.
2. Dragging ⇒ due to stretch of! Ligaments (weight of spleen) طوبة في بطني
3. Stabbing ⇒ due to perisplenitis. سكينه في جنبي

B. **Swelling** انت بطنك كبرت ولا لأ؟ في كل البطن ولا حته معينة؟

★ Ask about:

- onset.
- Course.
- Duration.
- Site.
- Size.
- Surface.

- other swelling.
  - Relation to meal.
  - Associated symptoms
- ★ Swelling:
- Organomegally = huge spleen.
  - Abdominal mass.
  - Ascites: most cases perform tapping, so ask about:
    - amount.
    - Color
    - aspect.
    - Complications e.g.: Sinus, infection, recurrence.

### C. Symptoms of different Systems:

#### I. upper GIT Symptoms:

1. Appetite انت شهيتك قلت ولا زادت ولا زي ما هي؟ نفسك مفتوحة للأكل؟

a. Anorexia = Loss of appetite.

AE:

- ★ psychogenic: anorexia nervosa & depression:
- ★ Stomach: atrophic gastritis & cancer colon.
- ★ viral hepatitis & Liver cell failure.
- ★ Debilitating D.: T.B., renal failure, anemia & malignancy.

b. polyphagia = increased appetite.

AE :

- ★ D.M.
- ★ Thyrotoxicosis.
- ★ parasitic infestations.
- ★ Steatorrhea.
- ★ psychogenic.

c. parorexia = perverted appetite (= desire for unusual Food).

AE:

- ★ Ankylostoma infestations.
- ★ Pregnancy.
- ★ Ca deficiency.

2. Salivation: ريفك يبجري عليك ولا ناشف زي الحطب؟

a. ptyalism = excess salivation.

b. Xerostomia = mouth dryness.

3. Mouth odour ريفك بوقك اتغيرت ولا لا؟

AE:

- ★ Foeter hepaticus = Liver cell failure.
- ★ Urineferous (ammoniacal) odour = Renal Failure.

- ★ Acetone odour = Diabetic ketoacidosis.
- ★ Halitosis (bad odour not noticed by! pt., but offensive to! others)

Causes:

- a. oral cavity:
  - ★ dental caries
  - ★ pyorrhea.
  - ★ Tonsilitis
  - ★ rhinitis
  - ★ Sinusitis
- b. GIT Causes:
  - ★ Cancer oesophagus.
  - ★ oesophageal diverticulum.
  - ★ pyloric constriction
  - ★ Gastrocolic fistula.
- c. Lung:
  - ★ Suppurative Lung syndromes
  - ★ Volatile fatty acids excreted by Lung.
- d. types of Food:
  - ★ onion
  - ★ Garlic

4. Eructation بيجيك زغطة اكثر من اللازم ولا لا ؟

- It's repulsion of air either From oesophagus or from stomach.
- It occurs in functional & organic gastric diseases.

5. Dysphagia في صعوبة في البلع ؟

- Def. ⇔ difficult in Swallowing.
- AE:
  - painful oral condition:
    - Stomatitis pharyngitis
    - Tonsilitis.
    - Retropharyngeal abscess.
  - Neurological condition:
    - Bulbar & pseudobulbar palsy.
    - Diptheric neuritis & Myasthenia gravis.
    - Achalasia & oesophageal Spasm.
  - oesophageal condition:
    - congenital atresia.
    - reflux oesophagitis.
    - oesophageal stricture.
    - Cancer oesophagus.

- Plummer Vinson Syndrome.
- Scleroderma.
- Compression of! oesophagus by:
  - Goiter
  - Lymph node
  - Aneurysm
- Comment:
  - Onset.
  - course.
  - Duration.
  - Complete or partial.
  - to Fluids or to Solids.
  - Associated symptoms.
  - painful or not.

⚡ N.B:

- ❖ Aphagia ⇨ Complete oesophageal obstruction due to bolus impaction (medical emergency).
- ❖ Odynophagia ⇨ painful ... Swallowing.
- ❖ Globus hystricus ⇨ sense of Lump Logged in! Throat
- ❖ phagophobia ⇨ Fear of Swallowing.

6. Heart Burn (Pyrosis): في حرقان في فم المعدة ولا لا ؟

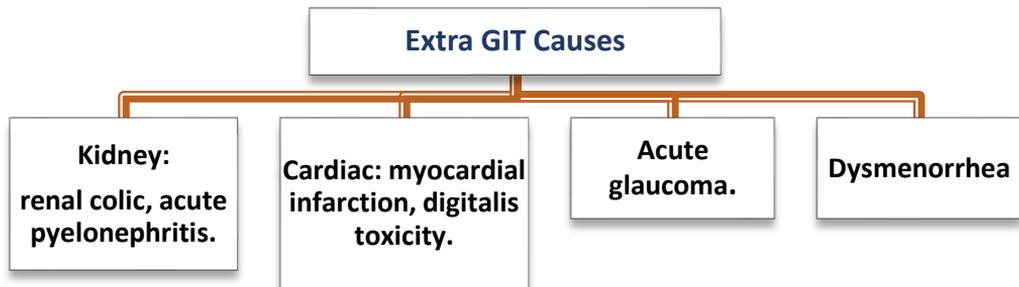
- ★ It's vague retrosternal burning sensation.
- ★ It's increases by recumbency & Leaning forward, decreased by antacids.
- ★ It's due to mechanical acid regurge from stomach in:
  - GORD.
  - peptic oesophagus.
  - hiatus hernia.
  - peptic ulcer.
- ★ D.D:

Heart burn	Angina pectoris
↑ with meal.	↑ with effort.
↑ with recumbency.	↓ with recumbency.
improved with antacids.	no effect with antacids.

7. Vomiting جالك ترجيع قبل كده ؟

- ★ Ask about:
  - relation to meal (Does it relieve pain?).

- ★ time of occurrence:
  - early morning = central.
  - during meal = oesophageal cause.
  - ½ hr. after meal = gastric ulcer.
  - 2-3 hrs. after meal = duodenal ulcer.
  - Later in day = pyloric obstruction.
- ★ preceded by nausea or not:
  - GIT troubles preceded by nausea.
  - ↑ ICT not preceded by nausea.
- ★ Quantity:
  - Large in case of pyloric obstruction
  - Frequency
  - Spontaneous or induced.
  - Odour
    - Foul ⇒ pyloric obstruction & fungating cancer stomach.
    - faecal ⇒ Intestinal obst. & Gastrocolic fistula.
  - Content: bile:
    - normal constituent giving yellowish or greenish appearance.
    - absent bile in case of pyloric obst.
- ★ Causes of Vomiting
  - a. Reflex causes:
    - Nasopharynx: F.B, Pharyngitis, tumor, induced Vomiting.
    - oesophagus: achalasia, stricture, Cancer.
    - Stomach:
      - acute & chronic gastritis.
      - peptic ulcer, pyloric obst., Cancer.
    - Intestine:
      - acute intestinal obstruction.
      - acute appendicitis.
    - Liver & gall bladder:
      - acute cholecystitis.
      - Viral hepatitis.
    - Acute pancreatitis.



b. Central causes:

- Hysterical.
- psychic: Smell, taste, sight.
- ↑ ICT.
- Medullary Lesion.
- Archi-Cerebellar lesion.
- Menier D.
- Migraine.
- Morphine toxicity (Centrally acting).

c. Others:

- uraemia.
- cholaemia.
- Hyper & hypoglycaemia.
- Acidosis.
- Alkalosis.
- Hyponatraemia.
- Hypo or hyperkalaemia.
- Addison's D.
- Hyper parathyroidism.

8. Haematemesis:

- ★ Def.: it's vomiting of blood.
- ★ It usually indicates bleeding proximal to Ligament of Trietz, since blood entering GIT below duodenum, rarely reenter stomach.
- ★ Ask about:
  - number of attacks
  - date of attacks
  - ppt. factors e.g.: drugs.
  - amount of blood loss.

- Color:
    - dark brown (acid hematin) = gastric.
    - bright red = oesophagus.
  - Content.
  - Followed by melena or not (blood is irritant to intestine = diarrhea)
  - associated symptoms e.g.: melena, confusion, epistaxis.
- ★ Causes of haematemesis
- I. Oesophageal causes:
- oesophageal varices.
  - oesophagitis.
  - Cancer oesophagus.
  - Mallory Weiss Syndrome
  - Ruptured aortic aneurysm.
- II. Gastro-duodenal causes:
- acute gastritis:
  - Chronic peptic ulcer.
  - hiatus hernia.
  - Cancer stomach.
  - peutz Jegher Syndrome.
- III. General Causes:
- Haemorrhagic blood D.
  - Haemorrhagic fever.
  - Sever hypertension.
- IV. False haematemesis: ingestion of blood after bleeding from nose, mouth or pharynx then vomiting of this blood.

9. Dyspepsia      الاكل بيريك ولا واقف على قلبك ؟

- ★ Def.: any abdominal discomfort related to meal.
- ★ Types of meal:
  - Fats ⇒ Chronic cholecystitis.
  - Meat ⇒ Cancer Stomach.
  - Starch ⇒ Gastric ulcer.
- ★ Dyspeptic symptoms:
  - early satiety (inability to finish normal sized meal)
  - epigastric fullness or discomfort.
  - epigastric pain.
  - abdominal discomfort.
  - bloatedness (flatulence).

- eructation or blenching.
- heart burn.
- nausea with or without Vomiting.

10.Flatulence انت بيجيبك انتفاخات كثير ولا لا ؟

- ★ sense of abdominal distention with frequent passage of Flatus & eructation.
- ★ Due to gastric or intestinal distention by gases as in biliary & colonic dyspepsia.

11.Abdominal Sounds (audible borborygmi)

في اصوات أو زغورة في بطنك ؟

12.Constipation

- ★ Ask about:

- Onset.
- Course.
- Duration.
- absolute or not.
- Frequency.
- associated symptoms.
- Stools: amount, consistency, color, odor.

- ★ Causes:

1. Low Fiber diet
2. prolonged rest in bed.
3. over - use of purgative.
4. Habitual neglect of defecation (rectal dyschasia) as in: Painful ano-rectal condition.
5. irritable bowel syndrome
6. Diverticulitis, ulcerative colitis.
7. Metabolic: pregnancy, myxoedema, hypokalaemia, hypercalcaemia.
8. Nervous: Hirshsprung's & autonomic neuropathy.
9. Ileus
- 10.Psychic: depression, psychosis, anorexia nervosa
- 11.Intestinal Stricture or tumor or Compression From outside.

13.Diarrhea

- ★ Def.: excessive motion, Loose stool, or both.
- ★ Ask about:
  - Onset.
  - Course.

- Duration.
- Frequency.
- Stools: amount, consistency, color, odor.

⌘ **N.B.1:** Causes of bloody diarrhea

I. Bacterial:

- ★ Shigellosis.
- ★ Salmonellosis.

II. parasitic:

- ★ Amoebic colitis.
- ★ B colitis.

III. Inflammatory Bowel D:

- ★ ulcerative colitis
- ★ Crohn's D.

IV. Others:

- ★ SLE.
- ★ ischemic colitis.
- ★ rectal polypi.
- ★ Cancer colon.
- ★ Cancer rectum.
- ★ mesentric Vascular occlusion.

⌘ **N.B.2:** Dysentery: diarrhea + tenesmus + passage of mucous or blood in stool.

★ Def. of tenesmus: Sense of incomplete evacuation, indicates Lesion in rectum or colon.

★ AE of Dysentery:

1. Infective:

- Bacteria! ⇨ Bacillary dysentery « Shigellosis».
- Helminths ⇨ B dysentery.
- Protozoal:
  - Amoebic dysentery.
  - Balantidium coli.
  - Giardia Lamblia.
  - Malaria.

2. Inflammatory:

- Diverticulitis.
- Ulcerative colitis.

3. Neoplastic:

- Cancer rectum & colon.
- 4. Toxic:
  - Mercury poisoning.
- 5. Metabolic
  - Uraemic dysentery.

#### 14. Melena

- ★ Def.: passage of digested blood with stool.
- ★ Character: black (tarry), glistening, Soft, offensive.
- ★ It usually indicates bleeding from oesophagus, stomach, duodenum.
- ★ however, lesion in jejunum, ileum can cause melena only if GIT transit time is sufficient (6-8 hrs).
- ★ Amount of blood must be > 60 ml.
- ★ D.D. From iron intake, charcoal or bismuth intake:

Melena	Iron intake
Diarrhea (loose stool)	Constipation (hard stool)
Glistening (tarry)	Just black
Offensive	Normal

#### 15. Bleeding per rectum (Haematochezia):

- ★ Def.: passage of bright blood per rectum.
- ★ Ask about:
  - number of attacks.
  - date of attack.
  - amount of Lost blood.
  - Color of blood.
  - relation to stool (before, with or after).
  - associated Symptoms.

#### D. Genito-Urinary Symptoms

1. Erection: potent or impotent (Partial or complete).
2. Infertility: 1ry or 2ry sterility:
3. pain:
  - ★ Renal ⇒ dull aching in! Loin referred to hypochondrium.
  - ★ Ureteric ⇒ colicky from Loin to groin.
  - ★ Bladder ⇒ Suprapubic referred to tip of penis.
  - ★ Prostate ⇒ as bladder pain + perineal pain
  - ★ Urethral ⇒ burning (scalding) pain during micturition.

#### 4. Micturition:

- ★ Retention ⇨ acute or chronic      البول اتحاش فيك قبل كده ؟
- ★ Precipitancy ⇨ Sever urgency, patient can't hold his urine:  
البول ببسبفك ؟
- ★ Hesitancy ⇨ difficult to start micturition.      بتتعايل على البول ؟
- ★ Strangury ⇨ intense desire with painful passage of Little Blood-tinged urine.
- ★ Urgency ⇨ strong desire to micturate.
- ★ Stream abnormalities:
  - Continuous or interrupted,
  - thick or thin,
  - Strong or weak,
  - biforked or stream.
- ★ Second micturition ⇨ in large bladder diverticulae.
- ★ Enuresis ⇨ involuntary Voiding of urine during sleep.
- ★ Frequency ⇨ diurnal & nocturnal.

#### 5. Urine:

- ★ Volume:
  - polyuria
  - diguria
  - Anuria
- ★ Color:
  - reddish ⇨ haematuria, haemoglobinuria, Food (beet root) & drug (riFampicin).
  - dark (tea - like) ⇨ obstructive & hepatocellular jaundice.
  - milky ⇨ pyuria, phosphaturia & chyluria.
- ★ Abnormal content:
  - blood (haematuria):
    - initial = urethral.
    - terminal = bladder.
    - total = renal.
  - Shreds of tissues (necroturia) = cancer bladder.
  - Stones:
    - Number.
    - Size.
    - Color.
    - Shape.
    - Gas (pneumaturia) = in fistula, cystitis.

### E. Hepato-Biliary Symptoms:

#### 1. Jaundice:

- ★ onset.

- ★ Course.
  - ★ duration.
  - ★ Color of urine & stool.
  - ★ fever.
  - ★ associated pain.
  - ★ associated itching.
  - ★ drug intake.
  - ★ bleeding tendency.
  - ★ malignant symptoms.
2. Ascites:
  3. Lower Limb oedema.
    - ★ Ask about:
      - Onset.
      - Course.
      - Duration.
      - uni or bilateral.
      - pitting or not.
      - Site of appearance.
      - Extent.
      - Tenderness.
      - relation to ascites.

### Past History D.D

1. Bilharziasis (in details).
2. Operations.
3. Drugs:
  - ★ Hepatotoxic drugs:
    - a. Dose dependent: paracetamol.
    - b. Dose independent:
      - I.N.H & P.A.S. ⇒ Acute hepatic necrosis.
      - I.N.H & aldomet ⇒ Chronic active hepatitis
      - Chlorpromazine ⇒ Cholestatic hepatitis.
      - Rifampicin & androgens ⇒ pure cholestasis.
      - Contraceptive pills & androgens ⇒ Liver Tumors.

### Family History

1. Familial polyposis.
2. Wilson D.
3. Iry biliary cirrhosis.
4. Ulcerative colitis.
5. Crohn's D.

## II. EXAMINATION

### I. General Examination

★ As General sheet:

During examination of head:

- Causes of parotid enlargement:
  1. Endemic parotitis.
  2. Epidemic parotitis.
  3. Leukaemia.
  4. Granulomas: T.B., S.
  5. Sjogren's Syndrome.
  6. Mikulicz Syndrome.
- Manifestations of vitamin B<sub>2</sub> deficiency (ariboflavinosis):
  1. Corneal Vasculization.
  2. Sulphur granules on ⇒ nasolabial folds.
  3. Cheilosis & angular stomatitis.
  4. Red glazed tongue.
- Lip examination:
  1. Exposure to cold ⇒ dryness Followed by desquamation, crackling of Lips.
  2. Angular stomatitis ⇒ painful inflamed cracks at! mouth corners.
  3. Herpes Labialis ⇒ vesicles ω are small due to herpes simplex.
  4. Angioneurotic oedema ⇒ Swollen Lips.
  5. Peutz Jegheur syndrome ⇒ mucocutaneous pigmentation + G.I.T. polyposis.
- Gum examination:
  1. Gingivitis ⇒ deep red congested ω bleeds easily.
  2. pus can be squeezed from! gum ⇒ Pyorrhea.
  3. Lead poisoning ⇒ blue Line at gum margin.
  4. Anemia ⇒ pale gum.
  5. Scurvy ⇒ Soft spongy & bleeds easily.
  6. Vincent angina ⇒ ulceration, Sloughing of gingiva.
  7. Epileptics taking phenytoin ⇒ gum hypertrophy.
- Tongue examination:
  1. Tongue dryness ⇒ in dehydration.
  2. Anaemia, Cyanosis, Jaundice.
  3. Macroglossia ⇒ in acromegaly, mongolism, Cretinism & amyloidosis.
  4. Leukoplakia: grey opaque areas separated by few inflamed patches.  
⇒ maybe in S.

5. Smooth tongue  $\Rightarrow$  in vit B<sub>12</sub> deficiency & with anticancer drugs.
6. Hairy tongue: elongated papillae on tongue dorsum & yellowish to black in color.  
 $\Rightarrow$  Spontaneously or following antibiotic therapy.
7. Geographic Tongue: scattered red areas on tongue dorsum which are denuded of papillae & Smooth. It's of unknown cause.
8. Fissured tongue  $\Rightarrow$  may appear with aging.

⌘ **N.B:** Tongue papillae:

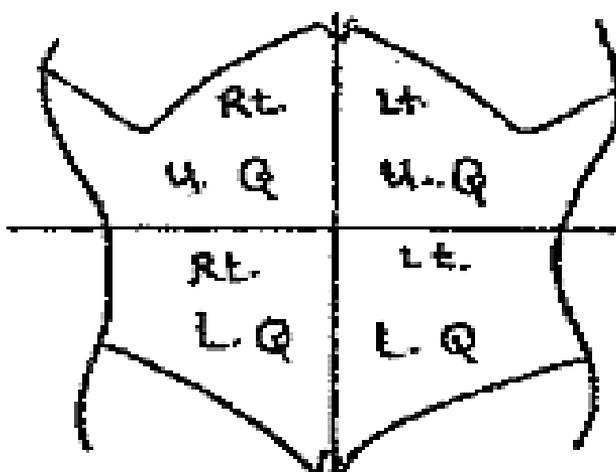
1. filiform papillae.
2. Fungiform papillae.
3. Circumvallate papillae.

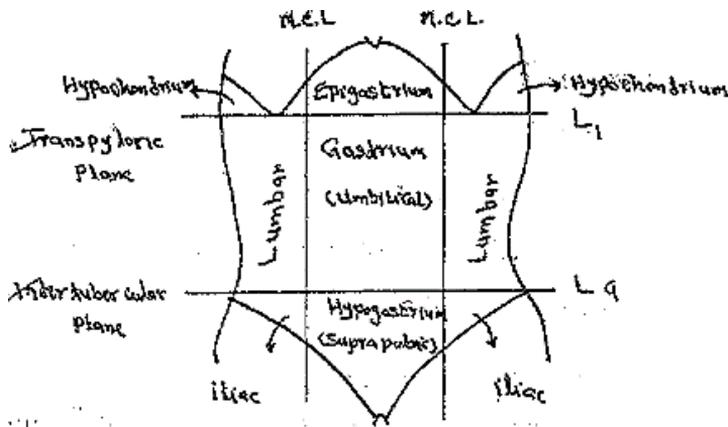
⌘ **N.B:** In abdominal Cases we should do: examination of neck Lymph node, as hepatosplenomegally may be due to:

- ★ Lymphoma.
- ★ Leukaemia.
- ★ T.B
- ★ Sarcoidosis.

## II. Local Examination

★ Abdominal regions:





## 1. Inspection

### A. At midline:

#### 1. Subcostal angle:

- ★ Normally  $\Rightarrow$  acute to right angle.
- ★ obtuse angle  $\Rightarrow$  in:
  - chronic upper abdominal swelling & ascites.
  - C.O.P.D.

#### 2. Epigastric pulsations:

- ★ either from:
  - Rt. Ventricle
  - Liver
  - Aorta.

🔗 **N.B:** D.D. of Aortic pulsation:

	Normally Seen Aortic pulsation	Aneurysm of Abdominal Aorta	Transmitted Aortic pulsation.
Site & shape	in epigastrium	Vigorous pulsation	Irregular outline of tumor
Knee elbow position	not so marked	no cessation of pulsation	Cessation of pulsation, as tumor falls away from aorta
palpation of pulsation	from posterior to anterior	expansile anterior swelling, two Fingers separated at systole.	Two fingers are not observed to be separated during Systole

3. Divarication of recti: هم بوسطك وماتشيلش ايدك \_

★ in case of:

- Increased Intra-abdominal pressure
- multiple pregnancies.
- ascites.

4. peristaltic movement:

- ★ in pyloric obstruction ⇒ Slow waves in upper abdomen from Lt. to Rt.
- ★ in small intest. Obst. ⇒ Step Ladder pattern around umbilicus.
- ★ in Large intestine Obst. ⇒ hoarse shoe pattern in upper abd from Rt. to Lt.

★ Simulated by:

- × gentle tapping.
- × drinking Soda water.
- × Cold stimulation of skin (2 drops of ether).

5. Umbilicus:

a. Site:

- ★ normally ⇒ centered in abd. midway between xiphoid process and Symphysis pubis.
- ★ Abnormally:
  - Shifted upward = pelvi-abdominal masses.
  - Shifted downward = Gastric, hepatic or splenic masses.
  - Shifted to one side = Mass occupying other side.

b. Shape:

- ★ normally ⇒ inverted.
- ★ abnormally ⇒ everted in cases of ↑ intraabdominal pressure.  
e.g.: Umbilical hernia, Ascites.

c. Dilated veins (Caput medusae).

d. Hernia.

e. Skin:

- ★ pigmentation ⇒ Addison's, Cullen's sign.
- ★ Nodules ⇒ Abdominal cancer, T.B. peritonitis.
- ★ Discharge:
  - pus = inflammation.
  - Urine = patent urachus.
  - Stools = Intestinal Fistula.
- ★ Ulceration
- ★ Scars

6. pubic hair:

★ Normally:

- male: triangular in shape é apex towards umbilicus.
- female: é upper horizontal Line.

★ Abnormally:

- feminine distribution in male = L.C.f
- Lost hair in male & Female = hypogonadism.

7. Scrotum & Spermatic cord:

★ T.B. epididymitis.

★ B mass in the cord.

**B. Abdominal contour**

★ normally: Slightly convex From Side to Side & from above downward.

★ abnormally:

a. Generalized fullness (distension) ... 5f

- Fat (obesity).
- Foetus (pregnancy)
- Flatus
- Full bladder
- Fluid ascites

b. Localized bulge:

- Symmetrical ⇒ Small intestinal obstruction (usually centered around umbilicus).
- asymmetrical ⇒ enlargement of one of abdominal viscera.

c. Scaphoid (Sunken, retracted):

- advanced stage of malignancy or starvation.

**C. Movement with respiration:**

★ normally: Freely mobile (bulge during inspiration & retracted during expiration)

★ abnormally: decreased or absent:

- rigidity
- ascites:
- diaphragmatic paralysis.

**D. Swelling:**

★ Comment on:

- Site.
- Size.
- Shape.

- Skin over.
- Surrounding.

### E. Dilated Veins:

1. Inferior vena Cava obstruction:
  - dilated veins presented at sides of! abdomen.
  - Fill From below upward.
2. portal system obstruction ⇔
  - dilated veins centrally placed around umbilicus.
  - Fills From above downward.

⚡ **N.B:** Glucose Test: 50 cc glucose I.V., then take a sample immediately from! dilated vein:

- ★ if ↑ = I.V.C. obst.
- ★ if not ↑ = portal system obst.

### F. Skin:

1. Scars:
  - ★ Comment as before.
  - ★ Cautery scar:
    - indicates severe chronic pain.
    - Localizes site of maximum pain.
2. Striae:
  - ★ due to rapid stretching of abd. wall with rupture of elastic Fibers.
  - ★ Types:
    - Striae alba in:
      - obese with Lost weight.
      - pregnancy (striae gravidarum).
      - ascites.
    - Striae rubra in:
      - Cushing Ⓓ.
      - Steroid therapy.
3. Scratching marks:
  - ★ in obst. jaundice.
4. Spots of haemorrhage:
  - ★ petechae, purpurae, echymosis in L. C. F.
5. Special Coloration:
  - ★ pigmentation in L.C.F.

## G. Breasts:

- Gynecomastia in:
  - L.C.F.
  - Iatrogenic:
    - Digitalis.
    - INH.
    - Spironolactone.
    - Cimetidine.
- Atrophy of female breast in: L.C.F.

## H. Hernial orifices:

- umbilical
- epigastric.
- inguinal
- Femoral.

## I. Back:

- Swelling.
- deformity.
- pigmentation.
- tuft of hair.

## 2. Palpation

### A. Superficial palpation:

#### 1. Tenderness:

- ★ pain on pressure.
- ★ Found in:
  - Peritonitis.
  - Rebound tenderness: inflammation of part of peritoneum.
  - Neurotic pt.
  - Gas distension of GIT (Tympanites).

#### 2. Guardness:

- ★ Localized: Contraction of muscle over inflamed area.
- ★ Generalized: Contraction of whole muscle in neurotic pt.

#### 3. Rigidity

- ★ generalized contraction of abd. muscle which Felt board  
e.g.: Generalized peritonitis.

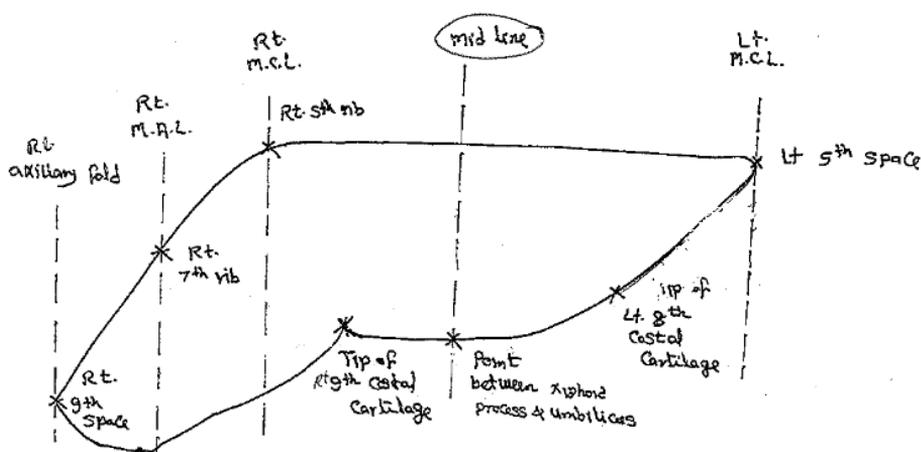
	Generalized rigidity	Generalized guarding.
palpation	Severe pain	not so severe
Explanation	will not relax	may relax
Respiration	not available with resp	movable with respiration
Bowel Sound	Ceased	normal

✎ N.B:

- ★ we must palpate Subcostal angle
- ★ we must palpate umbilicus for umbilical nodules (Sister Marrie Josef nodules).

B. Deep palpation:

1. Liver



★ methods:

a. upper border ⇒ detected by heavy percussion.

b. Lower border:

1. Ordinary method:

- حط ايدك اليمين في Rt. iliac fossa وحرف ايدك في مواجهة الـ Costal margin

- حرك ايدك اليمين لفوق لغاية ما توصل للـ Lower border

2. Bimanual method

- ايدك الشمال خلف العيان في 11<sup>th</sup> & 12<sup>th</sup> Spaces

- الايد اليمين موجودة في iliac fossa وصوابك مواجهة للـ Costal margin

- حرك ايدك اليمين لفوق لغاية ما توصل للـ lower border ثم علق على

★ Site.

★ Size. حط ايد العيان

- ★ Edge.
- ★ Consistency.
- ★ Tenderness.

- تشيل ايدك اليمين لأعلى ثم اعمل Roling عشان عدد الـ Surface  
 - ثم ايدك اليمين في subcostal عشان pulsation  
 - ثم الايد اليمين في Mid line وكرر نفس الكلام عشان Lt. lobe  
 - ثم علق في مجملته واحدة

### 3. Dipping method:

- ★ in tense ascites.

### 4. Hooking method:

- قف وظهرك لوجه المريض وبيديك الاثنين وبصوابك ابدأ فركها من Rt. Iliac fossa إلى أعلم حتى Lower Border

### 5. Scratching method

- حط السماعه تحت Costal margin في M.C.L.  
 - ثم scratch من فوق لتحت لغاية ما يتغير صوت حركة ايدك في السماعه

### ✂ N.B.1: Liver Span:

- ★ distance between upper & Lower border of Liver.
- ★ at Rt. McL. = 12 -16 cm.
- ★ at midline = 4 - 8 cm.

### ✂ N.B.2: Characters of hepatic swelling:

1. Intra-abdominal swelling.
2. in right hypochondrium.
3. Moves up & down with respiration.
4. Dull on percussion & Continuous with Liver dullness.

### 2. Spleen:

#### ★ Surface anatomy:

- It Lies opposite to! Left 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> ribs & separated from them by diaphragm, Lung & pleura.
- Its Lateral end reaches the opposite 9<sup>th</sup> thoracic spine about 1.5" From middle Line.
- Its medial end Lies opposite Lt. M.A.L.

#### ★ method of palpation:

نقسم طرق Liver palpation لكن:

- No Scratching method.
- No pulsation examination.
- When rolling surface ⇒ notice notch.

#### a. Ordinary method:

ابداً من Rt. iliac fossa حتى تصل إلى border of spleen

b. Bimanual method:

- ضع يدك اليسرى خلف العيان في Lt. 11<sup>th</sup>, 12<sup>th</sup> spaces
- حرك يدك اليمين من Rt. iliac fossa لغاية ما توصل Spleen border

c. Dipping method:

d. Hooking method:

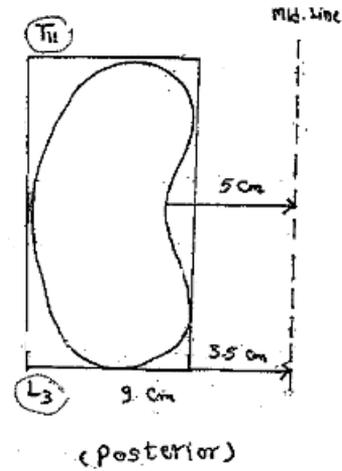
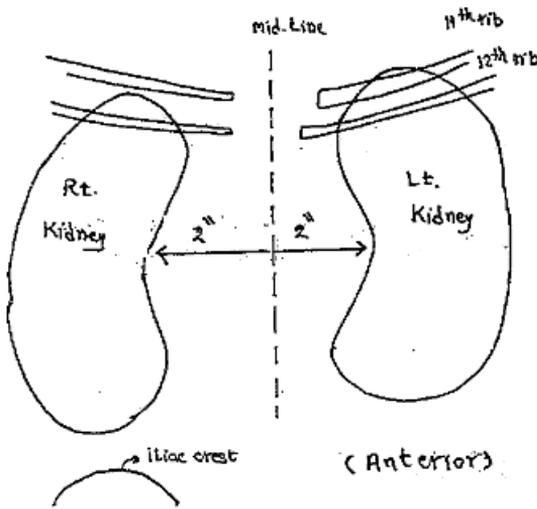
★ Characters of splenic swelling:

1. Intra-abdominal swelling.
2. In Lt. Hypochondrium.
3. Moves with respiration (downward & medially).
4. Has a notch on its Lower medial border (Pathognomonic).
5. You cannot insinuate your hand between it & costal margin.
6. You cannot get above! Upper border.
7. Does not Fill & cannot be pushed in renal angle.
8. Dull on percussion & Continuous with splenic dullness.

### 3. Kidney

a. palpation of At. kidney

- 1- ايدك اليمين فوق بطن العيان
- 2- انت واقف على يمين العيان
- 3- ايدك الشمال تحت ظهر العيان



b. palpation of Lt. Kidney

- 1- انت واقف على شمال العيان
- 2- ايدك الشمال فوق بطن العيان
- 3- ايدك اليمين تحت ظهر العيان

... اذا لم تغير مكانك لا تغير ايدك (يعني اذا كنت واقف على يمين العيان وعايز نفس الكلى الشمال ضع ايدك اليمين ل فوق والشمال لتحت)  
 ... في كلتا الحالتين لو زقيت بايدك اللي فوق = ant. ballotement  
 ولو زقيت بايدك اللي تحت = post. ballotement

c. palpation of renal angle:

- ★ renal angle: is! angle between Last rib & Lateral border of Sacro-spinalis ms.
- ★ examine for:
  - Tenderness.
  - Swelling.
  - Filling.
- ★ Method:

- العيان نايم على السرير عادي

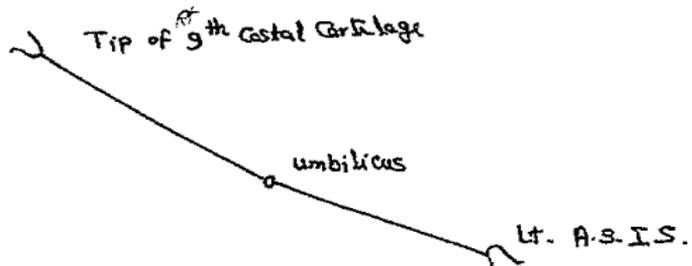
- ضع ايدك على last rib وامشى لغاية ما تلاقي obstruction

★ characters of renal Swelling:

1. Intra-abdominal swelling.
2. In Lumbar regions.
3. Moves up & down é respiration.
4. Reneform in shape.
5. You can insinuate your hand between it & costal margin.
6. You can get above its upper pole.
7. fills! renal angle.
8. A band of Colonic resonance Lies in Front of it.

4. Gall bladder

★ Surface anatomy:



★ method:

- as an ordinary method of Liver palpation.
- notice Murphy's sign in acute cholecystitis.

★ palpable gall bladder:

- normally ⇒ not palpable.

- Palpable in:
  - cystic duct stones.
  - G.B. tumor.
  - Cancer head of pancreas.

- ★ Characters of gall bladder swelling:
  1. Intra- abdominal organ.
  2. In Rt. hypochondrium.
  3. Moves up & down é respiration.
  4. pyriform or rounded in shape.
  5. Cystic in consistency (hard in malignancy).
  6. Mobile from Side to side but not vertically.
  7. Inseparable from Liver.
  8. Duli on percussion & continuous with Liver dullness.

### 5. Colon

- ★ By rolling method ... How?

- ايدك الشمال على بطن العيان

- ايدك اليمين فوق ايدك الشمال

- اليمين تزرق لتحت والشمال لتحتها من side to side

- ★ Characters of colonic mass:
  1. oblong Sausage-shaped.
  2. Does not move with respiration.
  3. Movable from Side to side (but not vertically).

### 6. Para - Aortic L.N.

- ★ By rolling method.

### 7. Urinary bladder

- ★ normally it isn't palpable.
- ★ Characters of bladder swelling:
  1. Lies in supra-pubic region.
  2. Its dome (upper border), can be felt.
  3. Its lower pole cannot be felt (pelvi-abdominal).
  4. Immobile.
  5. +ve Fluid thrill.
  6. Direct pressure on it ⇔ in desire to micturate.
  7. Dull on percussion.

## 3. Percussion

- ★ For:
  1. Detection of ascites.
  2. Detection of borders of organs.

## 1. Detection of Ascites:

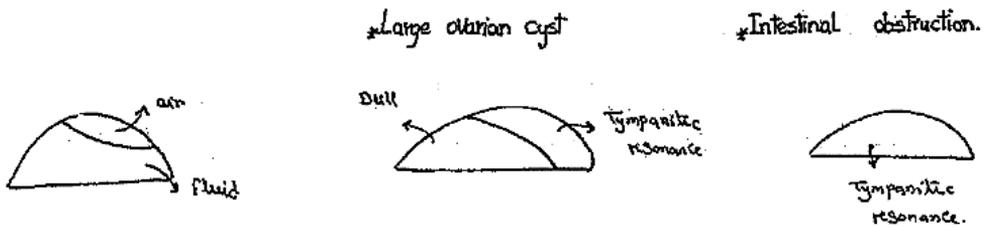
- a. minimal ascites ( $< \frac{1}{2}$  L.)  $\Rightarrow$  Knee-elbow position.
- b. moderate ascites  $\Rightarrow$  Shifting dullness.

- ضع اصبعك على mid line لبطن العيان  
- اعمل Percussion على احد جانبي البطن في اتجاه موازي للـ mid line  
- استمر حتى تصل الى Dullness  
- ميل العيان على جنبه ولا تحرك اصبعك لمدة دقيقة  
- اعمل Percussion في الاتجاه العكسي لحد المنطقة الـ resmant أصبحت dull

- c. tense ascites  $\Rightarrow$  Transmitted thrill.

- ضع ايد العيان على نص بطنه  
- اعمل tapping في ناحية واستقبل الـ thrill بالايدي الثانية

✂ N.B: D.D. between



### ★ In cases of ovarian cyst:

- in shifting dullness: dullness is found in middle of abdomen while resonance is found in Flanks.
- transmitted aortic pulsation can be felt on ovarian cyst but not in ascites.

✂ N.B: Causes of diffuse enlargement:

1. Fat:
  - ★ Thick abdominal wall.
  - ★ Sunken umbilicus.
  - ★ Scattered dullness & tympany.
2. Flatus  $\Rightarrow$  Generalized tympany.
3. Foetus:
  - ★ umbilicus displaced upward.
  - ★ Foetal heart can be heard.
4. Ascites:
  - ★ Umbilicus displaced upward.
  - ★ central resonance with dullness in! Flanks.

## 2. Detection borders of organs:

### a. Liver:

#### ★ upper border:

- by deep percussion in Mic.L. From 2<sup>nd</sup> Space.
- normally you Find! upper border in 5<sup>th</sup> space.

#### ★ Lower border: by Light percussion starting From Rt. iliac Fossa.

### b. Urinary bladder:

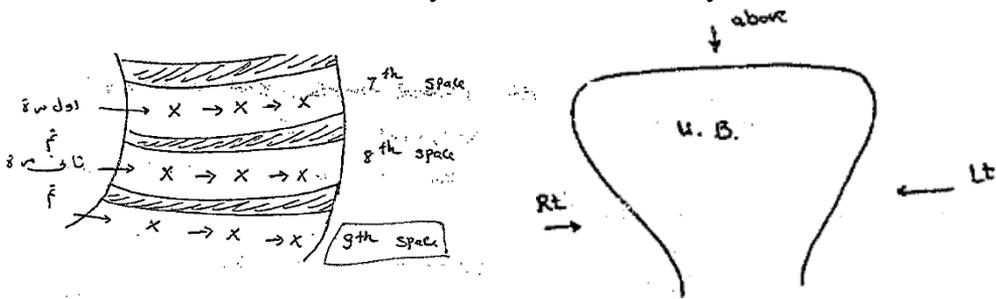
#### ★ Percuse in 3 directions.

#### ★ you must percuse U.B. before any examination of ascites.

### c. Medial border of Spleen:

#### ★ normally: medial border of spleen not exceed midaxillary Line.

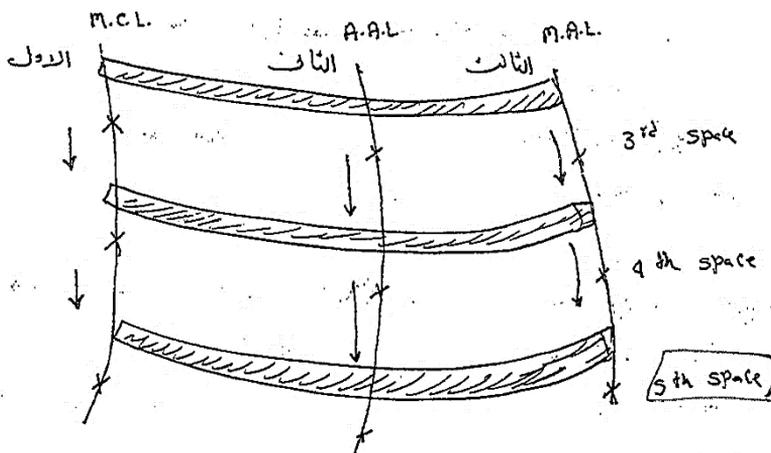
#### ★ method: Start From 7<sup>th</sup> intercostal space & move space by Space From anterior axillary Line till mid axillary Line.



### Traub's area:

#### ★ by light percussion.

#### ★ percuse in 3 lines.



#### 4. Auscultation

1. Intestinal Sounds:
  - ★ normally ⇒ it's intermittent of Variable Frequency (5 - 30/min).
  - ★ increased in ⇒ diarrhoea & early intestinal obst.
  - ★ absent in ⇒ paralytic ileus & generalized peritonitis.
  
2. Venous hum (kenawy Sign):
  - ★ in upper abdomen between Xiphisternum & umbilicus.
  - ★ due to porto-Systemic anastmosis (portal hypertension).
  
3. Arterial bruits (Systolic murmur):
  - ★ bell of Stethoscope is deeply seated into abdominal wall over abdominal aorta and to! Lt. of Umbilicus.
  - ★ Causes:
    1. Arterial Stenosis ⇒ renal, mesentric or iliac.
    2. Coarctation of aorta.
    3. Malignant Tumors ⇒ hepatoma & hypernephroma.
  
4. Friction rub:
  - a. Splenic rub:
    - ★ in Left hypochondrium.
    - ★ due to: Splenic infarction & perisplenitis.
  - b. Hepatic rub:
    - ★ in Rt. hypochondrium.
    - ★ due to: hepatoma & perihepatitis.
  
5. Succussion splash:
  - ★ in pyloric obstruction (Viscous distended é gas & Fluid).
  
6. pregnancy Sound:
  - a. Fetal heart sounds.
  - b. Uterine suffle.
  
7. Murmur over haematoma.

#### ⚡ N.B.1: Causes of Fatty Liver:

- ★ D.m.
- ★ Obesity.
- ★ Anaemia.
- ★ Malnutrition.
- ★ Chronic toxaemia.

★ Chronic alcoholism.

⌘ N.B.2: Causes of huge Liver:

- ★ Liver Congestion.
- ★ Liver metastasis.
- ★ Liver inflammation.

⌘ N.B.3: Abdominal Causes of emaciation:

- ★ Dyophagia.
- ★ Vomiting.
- ★ Malabsorption.
- ★ Chronic abd. pain.
- ★ Intra-abdominal malignancy.
- ★ parasitic infestation.

⌘ N.B.4: Normally felt abdominal structures:

1. Abdominal. ms. (ileo-psoas) in a thin individual.
2. Lumber vertebrae L<sub>3, 4, 5</sub>
3. Colon (Caecum, sigmoid), Specially if Filled with gas or Fluid.
4. Lower pole of Rt. Kidney during deep inspiration in thin Female.
5. Abdominal aorta, just to! Lt. of midline.
6. Lower edge of Liver (1-3 cm) in thin individual during deep inspiration.

# RHEUMATOLOGY

## I. HISTORY

### Personal History:

✍ Name:

✍ Age:

- ★ Young  $\Rightarrow$  Rh. Fever
- ★ Middle age  $\Rightarrow$  Rheumatoid arthritis (R.A.)
- ★ old age  $\Rightarrow$  Osteoarthritis (o.A.)

✍ Sex:

- ★ R.A.  $\Rightarrow$  ♀: ♂ = 4: 1
- ★ S.L. E  $\Rightarrow$  ♀ > ♂
- ★ Gout is common in ♂ & post menopause.

✍ Occupation:

- ★ Labourers  $\Rightarrow$  Spondylosis.

✍ Marital State

- ★ If married think in  $\Rightarrow$  S or Gonorrhoea.

✍ Residence: farmers  $\Rightarrow$  B mansoni  $\Rightarrow$  Transverse myelitis

✍ Special Habits:

- ★ Alcohol  $\Rightarrow$  gout
- ★ Heavy Smokers.

### Complaint

- ★ In R.A.  $\Rightarrow$  limitation of movement in joints of upper & lower limbs 15 years ago.

### Present History

A. Articular manifestation:

- ★ affected joint.
- ★ other joints:
  - Temporomandibular joint
  - cricoarytenoid joint.
  - atlantoaxial joint.
- ★ Ask about (if pain):
  - Onset.
  - Course.
  - Duration.

- في صعوبة في المضغ ولا لأ؟
- انت صوتك اتنبج ولا لأ؟
- في وجع في رقبتك ولا لأ؟

- Site
- Reference
- What ↑ & what ↓.
- pattern of joint involvement:
  - migratory
  - asymmetrical.
- Event's preceding joint pain:
  - trauma.
  - prolonged walking
- Character
- Intensity.

B. Extra articular manifestation:

- ★ muscle wasting.
- ★ S.C. nodules. - في كلاكيع في جسمك؟

C. Systemic manifestation:

- ★ Ocular. - انت عينك تعبتك او نظرك قل أو في صعوبة في غلق العينين؟
- ★ C.V.S. - عندك نهجات أو كرشة نفس؟
- ★ Respiratory. - في كحة أو كرشة نفس؟
- ★ C.N.S.

### Past History

- ★ Trauma.
- ★ D.M.
- ★ Hypertension
- ★ operation.
- ★ Drug therapy (local steroids in Knee).

### Family History

- ★ R.A.
- ★ Familial mediterranean fever.
- ★ Gout.
- ★ Ankylosing Spondylitis.
- ★ Seronegative arthritis.

## II. EXAMINATION

### I. General Examination:

As general sheet +

★ Skin examination:

1. Psoriasis ⇒ psoriatic arthropathy.
2. Scleroderma.
3. Marphoe ⇒ circumscribed hard waxy plaque é violaceous halo on forehead or sternum healed by Fibrosis.
4. Acrosclerosis:
  - Skin is firm, indurated, tight bounded to underlying structure.
  - in Fingers, feet, face (loss of wrinkles, expression, inability to open! mouth in a full size).
  - acrosclerosis + telangiectasia

★ Nodules:

- a. S.C. nodules = Rh. Fever, Rh. arthritis.
- b. Tophi = yellowish white nodules.
- c. Heberden's nodule.
- d. Bouchard's nodule.

... D.D. ⇒

Rheumatic fever nodules	Rheumatoid arthritis nodules
Extensor surface	Elbow & tendon achilles
pea size	Variable size
Aschoff bodies	Fibrosis.
R.F. ⇒ -ve	R.F. ⇒ -Ve

### A. Local Examination:

#### I. Inspection

- a. Distribution of joint affection.
- b. Dislocation of joint.
- c. Swelling of joint:
  - ★ at wrist ⇒ from dorsum, not from palm as Flexor retinaculum masks palmar Swelling
  - ★ at MCP joint ⇒ appears as obliteration of knuckles
  - ★ at shoulder ⇒ in Front:
    - at elbow ⇒ around olecranon process.
    - at ankle ⇒ around both sides of tendon achilles.

- d. Muscle atrophy:
- ★ Causes:
    - Disuse.
    - Carpal tunnel Syndrome.
    - Myositis: due to lymphocytic infiltration.
    - Drugs:
      - steroids ⇔ myopathy.
      - Dapson ⇔ neuropathy.
  - ★ Affects:
    - Dorsal interossi (dorsum of hand appears grooved).
    - Thinner & hypothinner muscles.
- e. Scars, Sinuses, dilated veins.
- f. Deformities:
- ★ Types of hand deformities:
    1. Radial deviation at wrist.
    2. Ulnar deviation at M.C.P.
    3. Swan neck deformity: Flexion in D.I.J. & hyperextension in P.I.J.
    4. Boutonniere deformity: Flexion of P.I. J. & extension of D.I.J. due to destruction in extensor tendon.
    5. Z-shaped thumb (S-shaped thumb).
    6. piano sign: dorsal subluxation of ulnar styloid process. (depression of ulnar head under pressure).
    7. Mallet-Finger: inability to extend joint of Finger due to rupture of extensor tendon.
    8. Fusiform swelling (Spindle-shaped Finger): in P.I.J. & not D.I.J. (due to very thin synovial membrane). Found in:
      - R.A.
      - Trauma.
      - S.
      - Sarcoidosis.

## II. Palpation:

- a. Tenderness ... é! following grades:
- ★ grade 0 ⇔ no pain.
  - ★ grade I ⇔ mild pain.
  - ★ grade II ⇔ pain with swinging
  - ★ grade III ⇔ with drawing! limb away on examination. (sever pain).
  - ★ grade IV ⇔ (very severe pain) not allow examination.

- b. Temperature (hotness):
  - ★ it's sign of inflammation.
  - ★ by examiner's hand dorsum.
- c. Nature of Swelling
  - ★ effusion.
  - ★ thickened synovial membrane.
  - ★ bony over growth.
- d. passive movement:
  - ★ Causes of limitation:
    - Pain.
    - Deformity.
    - Contracture.
    - Effusion.
    - Muscle wasting.
    - Muscle spasm.
- e. Examination of muscle power ... as neurology sheet.
- f. Examine For crepitus.

✂ N.B: In T.M.J:

- ★ put your hand on! joint & ask! patient to open his mouth, if joint is affected you will feel crepitus.
- ★ if coarse = osteoarthritis.
- ★ if Fine = Rh. arthritis.

III. Range of motion (R.O.M.):

- ★ Normally:
  - R.O.M. of fingers ⇒ tips of Fingers touch palm of hand.
  - R.O.M. of wrist ⇒ 70° Flexion & extension.
  - R.O.M. of elbow ⇒ Flexion & extension.

## II. Knee Examination

I. Inspection:

- ★ Swelling: in Suprapatellar pouch (horse shoe swelling).
- ★ Sinus: (T.B. ⇒ pus). - يدك تمر من تحت الركبة
- ★ Scar of arthroscopy. < > للداخل
- ★ Deformities: < > للخارج

- Flexion deformity
- Genu Varus.
- Genu Valgus.
- Genu recurvatum  $\Rightarrow$  hyper-extension of Knee.
- ★ Muscle wasting: of quadriceps muscle seen on medial aspect of knee, as it's site of insertion of Fleshy fibers of Vastus medialis.
- ★ Redness: Sever arthritis:
  - dry skin = gout.
  - moist skin = septic arthritis.
  - moist skin & migratory = Rh. Fever arthritis

## II. Palpation:

- ★ Nature of swelling.
- ★ Tenderness.
- ★ Synovial thickness:
  - Seen in R.A. & not in O.A.
  - we feel cord like structure on medial aspect of Knee joint, because in each site synovial membrane is affected.
- ★ Hotness.

## III. Range of motion (R.O.M):

- ★ Normally:
  - Flexion  $135^\circ$  = reach buttocks.
  - Extension  $0^\circ$ .

## IV. Special tests for knee:

1. Tests to detect knee effusion:
  - a. patellar tap test:
    - ★ Determine upper border of patella.
    - ★ Compress Suprapatellar pouch to push Fluid under patella.
    - ★ Do down perpendicular pressure on patella  $\Rightarrow$  huge knee effusion.
    - ★ False -ve in:
      - minimum knee effusion (normally 2ml).
      - maximum knee effusion
  - b. Cross Fluctuation test:
    - ★ Both hands are on upper & lower poles of patella.
    - ★ Upper one compress & lower one sense.
  - c. Bulge test:
    - ★ push Fluid at one side it leaves depression.
    - ★ Then push other side and notice the depressed area when elevated.

★ It's used in minimum knee effusion.

❖ D.D. between Baker's cyst & DVT

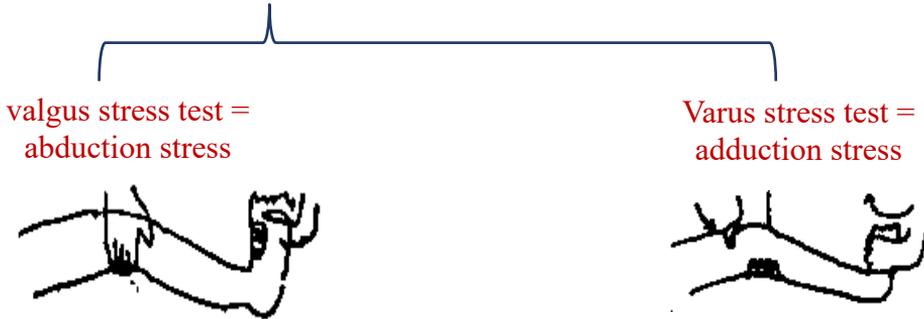
1. History of arthritis.

2. Dopplex.

3. Hoffman Sign +ve in DVT (Dorsiflexion of foot ⇒ pain in calf).

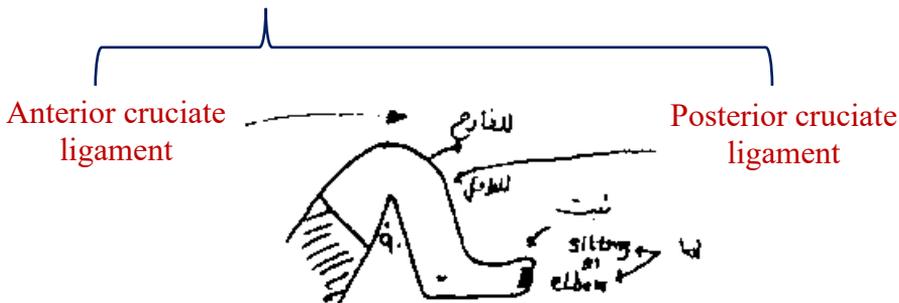
2. Tests for:

a. collateral ligaments:



❖ é knee semiflexed 10° to avoid knee locking.

b. Cruciate ligaments:



❖ -ve ⇒ no movement.

❖ +ve ⇒ ant. Post. bulg or we hear click.

c. Lemnisci = Mc Murray's test.



❖ Complete Flexion of knee ⇒ fix knee joint on both sides:

▪ gradual extension é external rotation ⇒ med lemniscus.

▪ gradual extension é internal rotation ⇒ lateral lemniscus.

- +ve test ⇒ if there is pain.

### Lower Back pain "L.B.p"

★ Def: Acute or chronic pain in lumbosacral region é or é out sciatica.

★ Causes:

I. Local causes “most common”:

II. Referral pain.

III. psychogenic Causes.

#### I. Local Causes:

1. Trauma: e.g. fracture dislocation of spine.
2. Bony deformities: e.g. kyphosis, Scoliosis.
3. Congenital deformities: e.g.:
  - ★ Spina bifida.
  - ★ Spinal canal stenosis
  - ★ Lumbralization of S<sub>1</sub>.
  - ★ Sacralization of L<sub>5</sub>.
  - ★ Spondiololysis.
  - ★ Spondiololyses:

#### ⚡ N.B:

- ★ Spondiololyses: defect in pars interarticularis é out displacement of vertebrae.
- ★ Spondiololyses: defect in pars interarticularis é vertebral displacement.

4. Infective:

- ★ nonspecific ⇒ osteomyelitis
- ★ Specific ⇒ T.B.

5. Inflammatory: seronegative arthropathy (Ankylosing Spondylitis).

6. Degenerative:

- ★ Deg. disc prolapse.
- ★ lumbar spondiololysis.

7. Metabolic: e.g. osteoporosis, osteomalacia.

8. Tumors:

- ★ Benign: osteoma.
- ★ Malignant:
  - Iry ⇒ liomyosarcoma.
  - 2 ndry.

## II. Referral pain

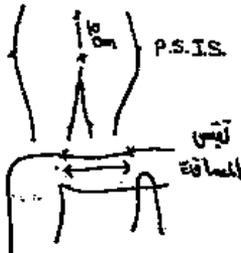
- Causes:
  1. Renal lesions  $\Rightarrow$  Stones, Pyelonephritis.
  2. Pelvic lesions:
    - ♀ Uterine prolapse.
    - ♂ Cancer prostat
  3. Chronic duodenal ulcer.
  4. Aneurysm of descending aorta.

## III. Psychogenic pain:

e.g. Depression, anxiety.

### ★ Special tests:

1. Straight leg raising test:
  - normally leg can be elevated up to  $90^\circ$  without pain.
  - in Sciatica  $\Rightarrow$  can't reach.
2. Femoral nerve stretch test:
  - patient in prone position, doing passive Flexion of knee.
  - in Sciatica  $\Rightarrow$  pain in front of thigh.
3. Wall occiput test (For dorsal Kyphosis):
  - تقف وتلمس بكعبك الحائط فالطبيعي أنه تلمس الرأس الحائط.
  - in kyphosis  $\Rightarrow$  occiput can't touch wall.
4. Limited chest expansion (due to stiffness):
  - at 4<sup>th</sup> intercostal space (nipple). قيس بالمازورة.
  - during inspiration... it increases by 1" (2.5 cm).
5. Schober's test:
  - to detect limited spinal Flexion.
  - abnormally  $\Rightarrow$   $< 5$  cm.
6. Sacroiliitis:
  - Tests to examine Sacroiliac joint:



- a. Side to side compression test:
  - Compress on 2 iliac bones from side to side.
- b. Distraction test:
  - Compress on 2 ant. Sup. iliac spines to outside.
- c. Sacral Compression test.
  - Compress on lower  $\frac{1}{2}$  of sacral joint by both hands as it's synovial part.
- d. Faber test (patric test):
  - Flexion of hip & knee.
  - abduction of thigh.
  - external rotation of thigh.

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## For laughing





## المؤلف في سطور

- ولد بإحدى قرى محافظة الشرقية مصر
- عمل نائباً لمدير مستشفى الحسينية بالشرقية ومديراً للطوارئ.
- عمل بمستشفيات الساحل التعليمي والمطرية التعليمي والإسماعيلية العام وجامعتي الزقازيق وجامعة قناة السويس ومعظم مستشفيات الشرقية ووحداتها
- عمل مدرساً بجامعة سيناء
- عضو اتحاد الأطباء العرب
- عضو بالعديد من الجمعيات الطبية.
- له مؤلفات طبية واجتماعية أشهرها  
(1) الحجامة من منظور طبي وإسلامي  
(2) القائد في اللغة الإنجليزية
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