Introduction to Clinical Medicine

Lecture : 4

Physical Examination- CVS

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* Shadan Fadda
* Introductory - CVS (2)

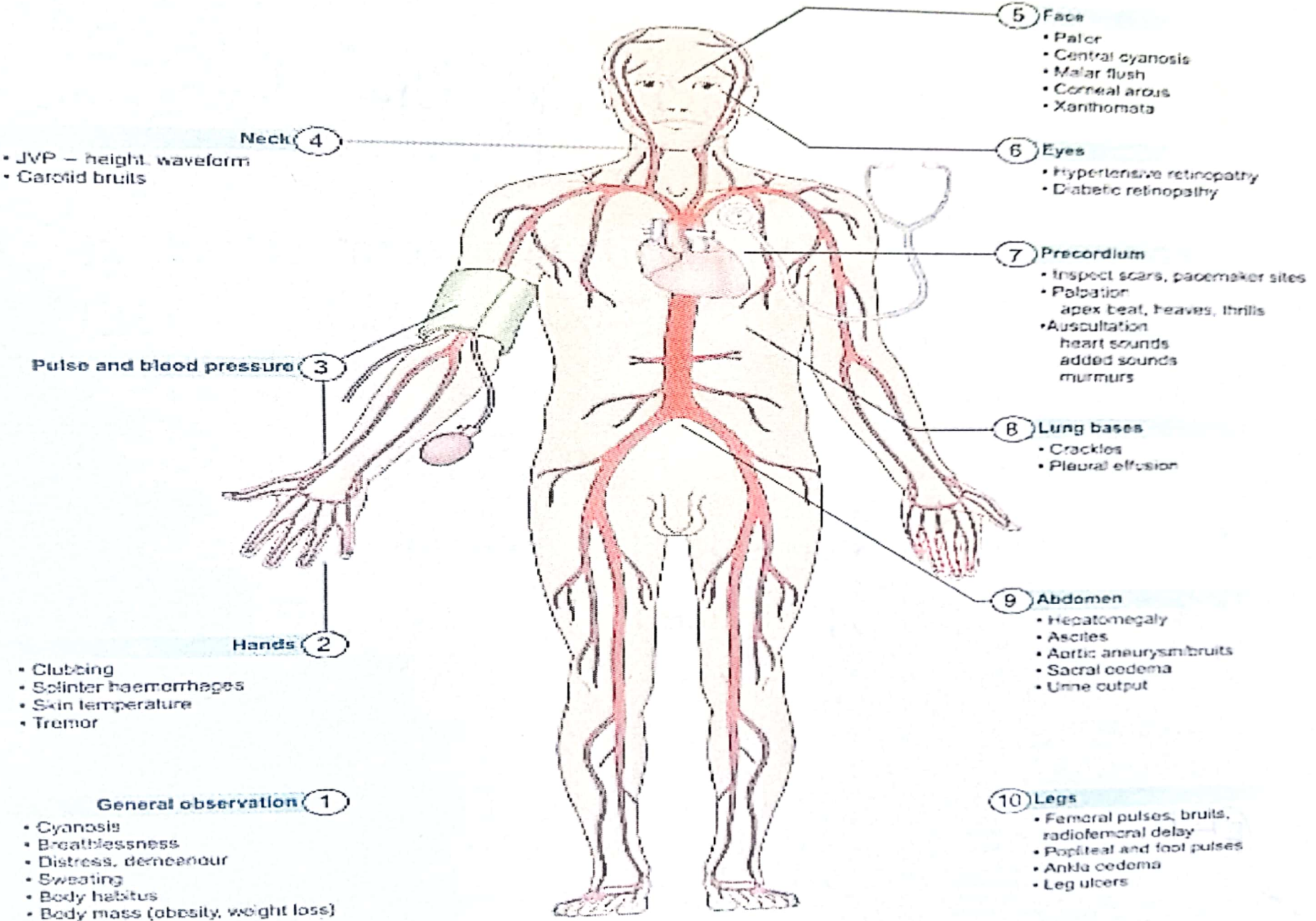
CARDIOVASCULAR SYSTEM

PHYSICAL EXAM

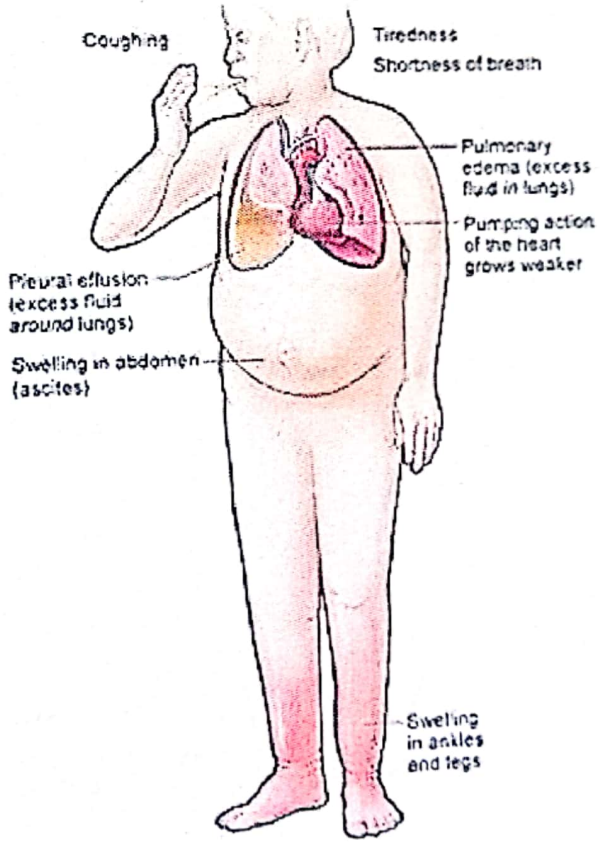
مواضيع المحاضرة:

1. Hand exam
2. Face exam
3. Arterial pulses
4. Blood pressure
5. Jugular venous pressure.

لا تنسى طبعًا إنه قبل الدخول الخمسة لازم نعمل بالأول General examination + Vital signs.



Heart failure



ركزي مش symptoms (لأنه ال symptoms المريض بخبرنا إياها أما ال signs احنا لازم نشوفها)

(to obtain signs)

* Physical examination steps :-

1. introduce your self, take permision & explain what u want to do
2. privacy
3. Good light
4. position → 45°
5. exposure → from above the waist

General impression (You obtain it from the 1st moment you see the pt.)

- comment on position in bed (lying comfortable , in distress...), connections → (canula/blood transfusion ... etc)
- Looks well or ill
- breathless, distressed or frightened
- LOC (Level of consciousness)
- cyanosed , pale , jaundiced

vital signs

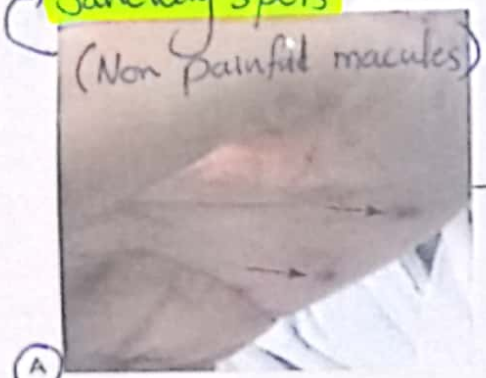
Include :

1. Measurment of the tempreture
2. HR , pulse rate , respiratory rate
3. Blood pressure

*Infective endocarditis

* This is petechial hemorrhage in the conjuctiva, and we can find it on any part of the skin (mainly on legs)
* You should examine infective endo. pt. in the whole skin

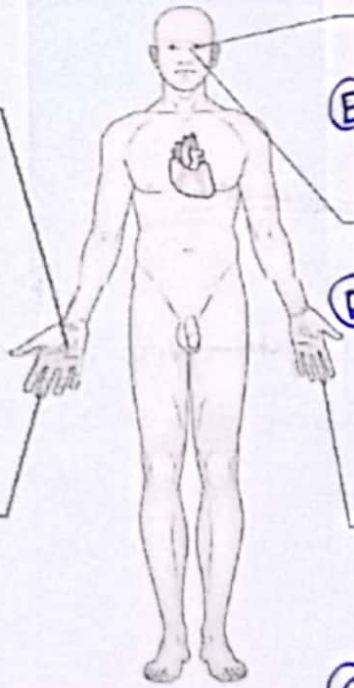
Janeway spots
(Non painful macules)



A

B

oster node



E

D

Roths spots (Retinal Hemorrhages)
ما بنقدر نشوفهم غير عن طريق opthalmoscope

C

Oster nodes
(very painful and tender lesions found on the side of the finger)

تابع ال infective endocarditis

clubbing fingers

*Other CVS causes of finger clubbing:

1] Infective endocarditis

2] Congenital cyanotic heart disease

3] Atrial myxoma
↳ This is a primary tumor of the heart

1. Hand examination in cvs

2.

Inspection

- Cyanosis
- Nails : tobacco staining, clubbing, splinter hemorrhages
- palms : janway spots , osler nodes, xanthomata on palms extensor surfaces,
- Skin : petechial rash

1/2 splinter hemorrhages could be normal (happened due to trauma or without any cause)

↳ caused by familiar hypercholestrolemia, and they present on the extensor surfaces of the tendon.

Palpation :

- Wet vs dry, hot vs cold , tremor
  - * pt. with wet & warm hand could have → Thyrotoxicosis
  - * Dry & cold hands → Hypothyrodism
  - * Fine tremor → Thyrotoxicosis
  - * Flapping tremor (Asterxis) → CO_2 retention / end-stage liver ds.

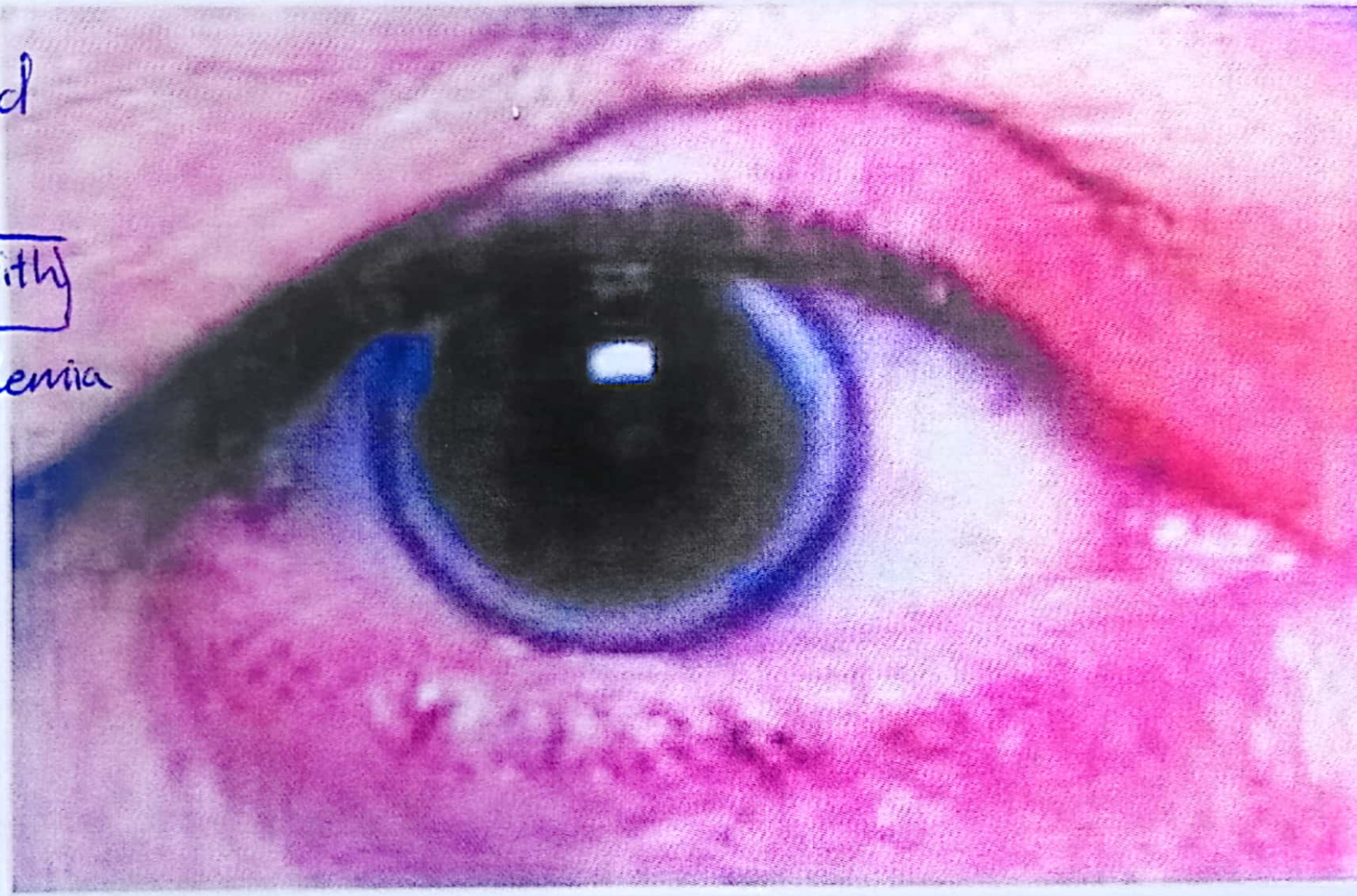
2. Face examination in cvs

- xanthelasma , if present check for xanthomata (found on the eyelids ⇒ also indicate familiar hypercholestrolemia.)
- corneal arcus
- conjunctival petechiae → seen in infective endocarditis.
- Fundus : dm & htn, roth spots ⇒ you should use opthalmoscopy to examine retinal changes
- Mouth : cyanosis ⇒ Blue tongue → indicates central cyanosis
- malar flush → seen in mitral stenosis.

Corneal arcus

(creamy-like circle found around the iris)

* Happens in Pts with
  - ⊓ hypercholestrolemia
  - 2) alderly pt.
    - ↳ here, it could be normal



r ds.

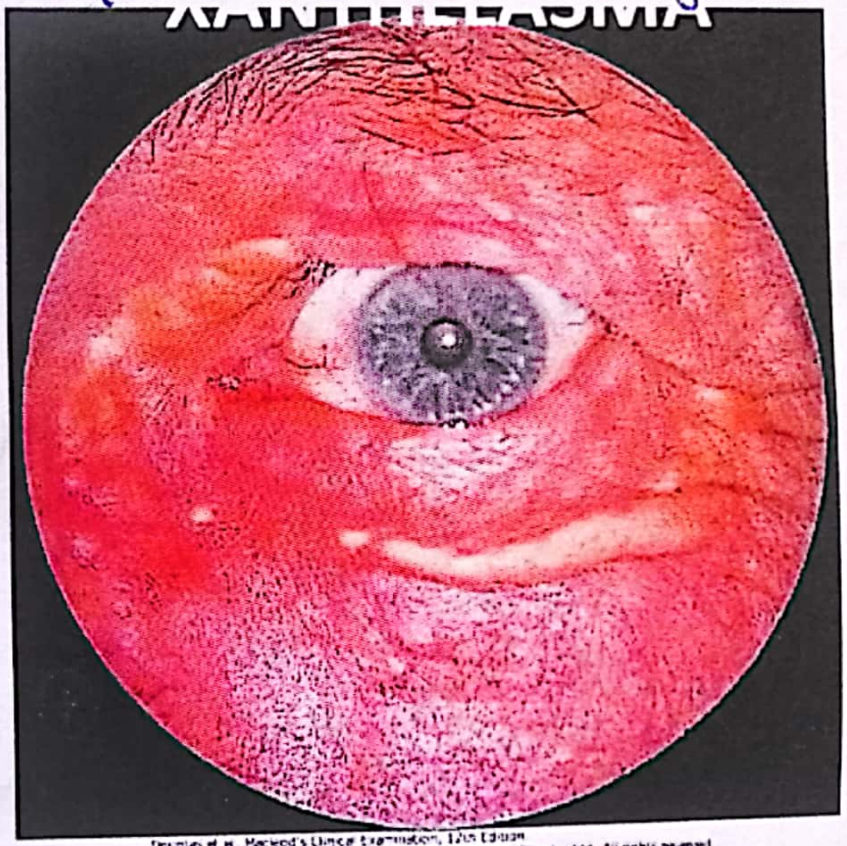
Dyslipidemia

Xanthomata

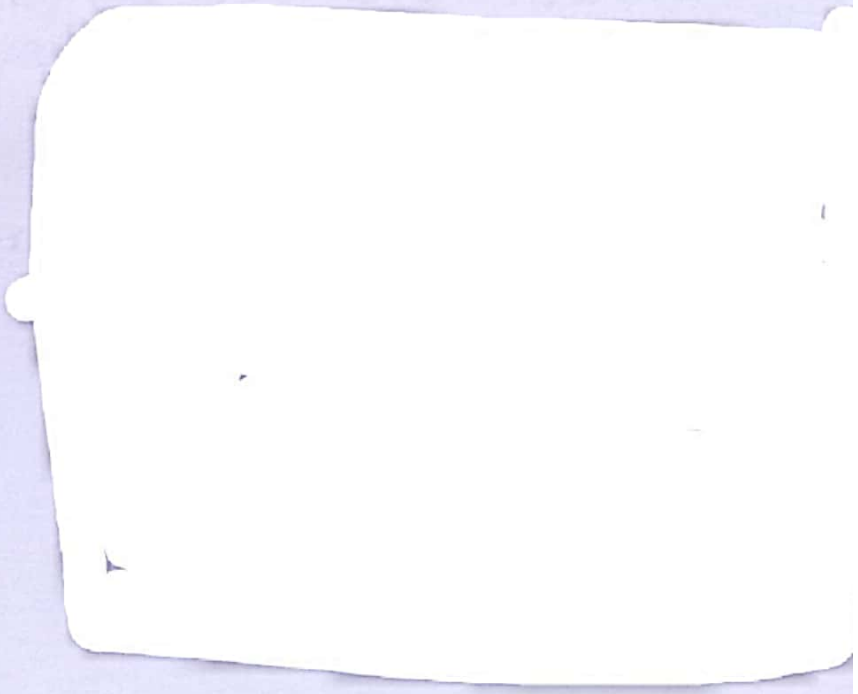
(on extensor surface of tendon)

Xanthelasma

(around the eyelid)



3. Arterial pulses



تعريف

- the palpable pulse in an artery reflects the pressure wave generated by the ejection of blood into the circulation from the left ventricle.

- When taking a pulse, assess:

1. rate: the number of pulses occurring per minute ← from the radial artery
2. rhythm: the pattern or regularity of pulses ← from the radial artery
3. volume: the perceived degree of pulsation ← from 1] brachial or 2] carotid or 3] femoral
4. character: an impression of the pulse waveform or shape. ← from 1] brachial or 2] carotid or 3] femoral
5. compressibility of the artery ← An artery is compressible (means that when you make a pressure over the artery, you can't feel the pulse any more.
→ * Uncompressible artery happens due to clacification, occlusions like thrombus - etc.)

The rate and rhythm of the pulse are usually determined at the radial artery; use the larger pulses (brachial, carotid or femoral) to assess the pulse volume and character.

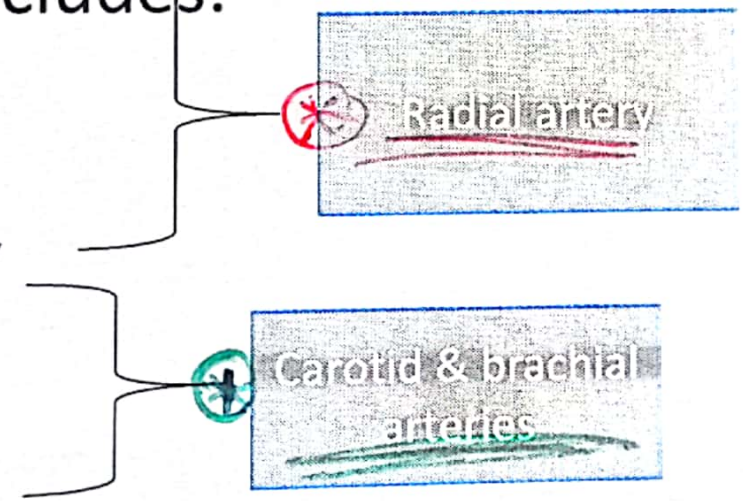
Arterial pulses

* What are the arteries that you will palpate in the physical exam?
  → >> radial , brachial , carotid, femoral , popliteal, post tibial , dorsalis pedis

>> Identify surface markings of peripheral arteries

>> Examination includes:

1. Rate
2. Rhythm
3. Compressibility
1. Volume
2. Character



Arterial pulses

Rate
- Normal rate: 60-100 b.p.m

* < 60 → Bradycardia
* > 100 → Tachycardia

Rhythm
- Regular pulse-pulse interval (Normal rythm is regular)
- Sinus arrhythmia
- Irregular: regular irregular vs. irregular irregular

Volume
- Volume refers to the perceived degree of pulsation = pulse pressure
- Normal volume
- Large or low volume

قيمة الـ p.p. تدل على الـ *Volume

جاي طريقة ذكرية دخلينا نميزه (من كترمايع تشوفي نفسك بكرا بتعرفي تميزي !!)

Character
- shape/the pulse waveform

* Irregular rythm (Abnormal rythm)

Regularly irregular
irregular rythems happen at regular intervals
eg: atrial extrasystoles
ventricular extrasystoles
AV block

Irregularly irregular
The irregularity is unexpected
eg: Atrial fibrillation

4.9 Causes of abnormal pulse rate or rhythm

Abnormality	Sinus rhythm	Arrhythmia
Fast rate (tachycardia, >100 bpm)	Exercise Pain Excitement/anxiety Fever Hyperthyroidism Medication: Sympathomimetics, e.g. salbutamol Vasodilators	Atrial fibrillation Atrial flutter Supraventricular tachycardia Ventricular tachycardia
Slow rate (bradycardia, <60 bpm)	Sleep Athletic training Hypothyroidism Medication: Beta-blockers Digoxin Verapamil, diltiazem	Carotid sinus hypersensitivity Sick sinus syndrome Second-degree heart block Complete heart block
Irregular pulse	① Sinus arrhythmia ② Atrial extrasystoles ③ Ventricular extrasystoles	① Atrial fibrillation ② Atrial flutter with variable response ③ Second-degree heart block with variable response

physiological causes

pathological causes

physio

patho

Irregular regular

Irregular irregular

لايوجد أي علاقة بين beat والتانية ∴ Irregular Irregular

diminish with exercise

extrasystole

* شو يلي بصير بالـ extrasystole بكون عنا نبضة (beat) بتيجي prematurly (يعني أبكر من المتوقع) بعدين بيجي بعدها شوي pause بعدين بيجي strog pulse with large volume. وسببها premature atrial contraction

هذا كل هاد لحتى يصير Regular intervals ∴ Irrgular regular (لانه شي طبيعي)

- ↑↓ pulse pressure (volume) : ↑systolic bp – ↓diastolic bp
- proportional to stroke volume & cardiac output
- Inversely proportional to compliance of aorta (compliance decreases in alderly ∴ they have high p.p (high volume)

Compliance ↓ بقل ال diastolic بقل ال pulse pressure ∴ بزيد

* Increased pulse volume :

1- Excersize , pregnancy , increased environmental temp ⇒ (high CO)

2- anemia , fever , thyrotoxicosis , av shunt , paget's disease ⇒ (high CO)

3- advanced age , htn ⇒ ↓ compliance → ↓ diastolic → ∴ ↑ p.p.

4- Aortic regurgitation : inc. EDV, inc. aortic sys p , dec. aortic dias p

   * ↑ end diastolic volume
   * ↓ aortic diastolic blood pressue
   ∴ ↑ pulse pressure

* **low pulse volume** : (caused by ↓C.O and ↓ stroke volume)

1. Left ventricular failure
2. hypovolemia
3. Aortic stenosis
4. Mitral stenosis
5. tamponade → here, there is decreased venous filling ∴ ↓ stroke volume ∴ ↓ pulse pressure

-Asymmetrical pulses on both sides may represent occlusive peripheral arterial disease or stenosis , and rarely , aortic disection

* Thready pulse → very weak pulse

Abnormal character

- **Collapsing pulse: rapid fall** ..the peak arrives early followed by rapid descend (wide pulse pressure) → Aortic regurgitation

rapid peak and rapid fall

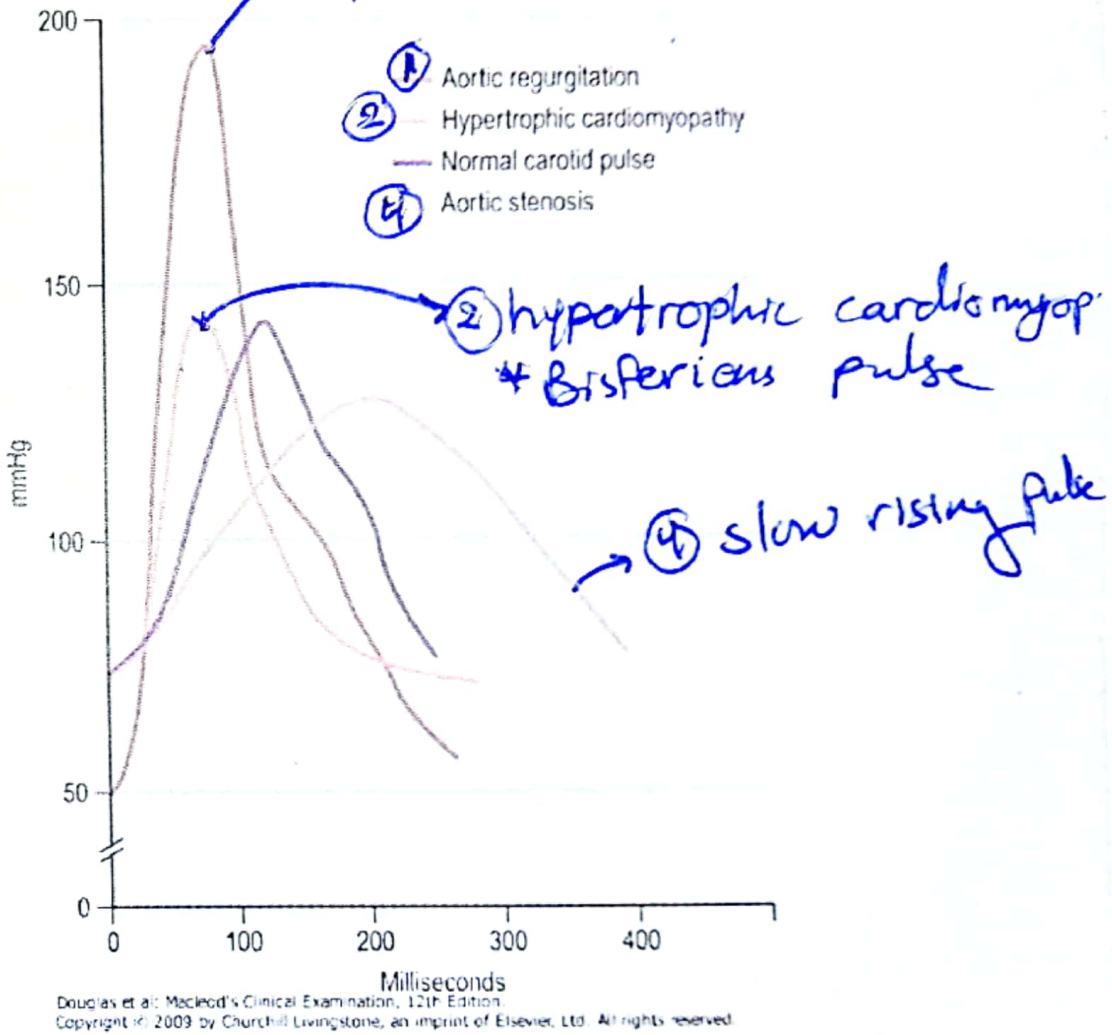
- **Slow rising pulse:** gradual upstroke with a reduced peak occuring late in systole → aortic stenosis

- **Bisferiens pulse:** two systolic peaks separated by midsystolic dip (concomitant ① aortic stenosis & regurg, & ② HOCM)

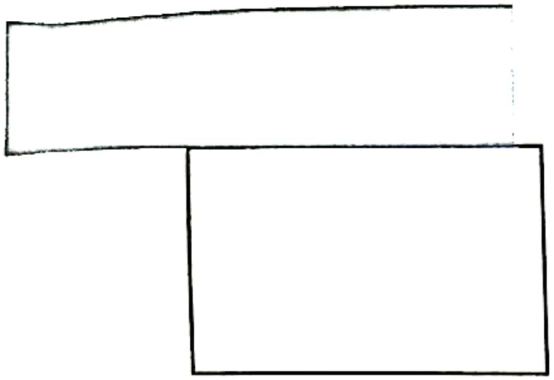
② Hypertrophic cardiomyopathy

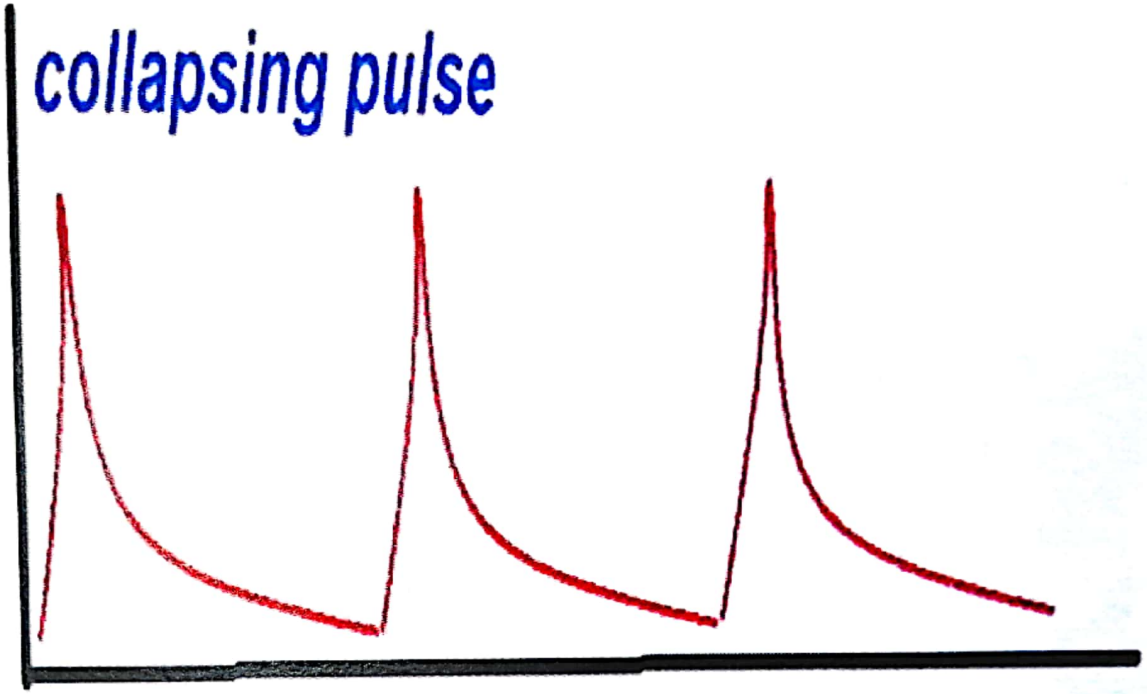
(with each others) حدث الاثنان معًا

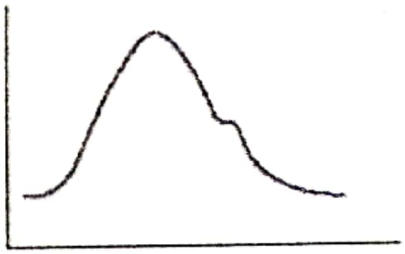
نزول خفيف



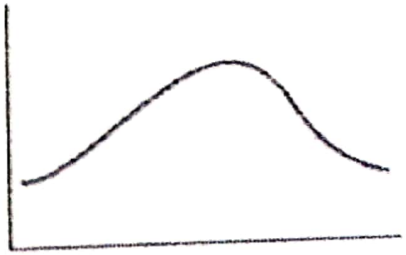
* Note that normal pulse has only 1 systolic peak BUT In Bisferiens pulse يفعل بنفس نزول خفيف & peaks



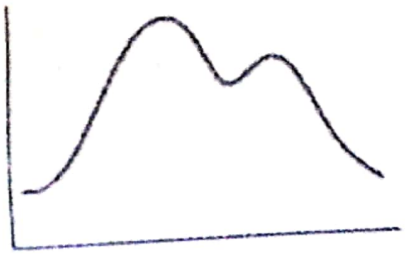




Normal



Slow rising e.g. aortic stenosis



Bisiferiens e.g. aortic stenosis mixed with aortic regurgitation

d. **pulsus alternans** : * 1 pulse with large volume followed by 1 pulse with low volume

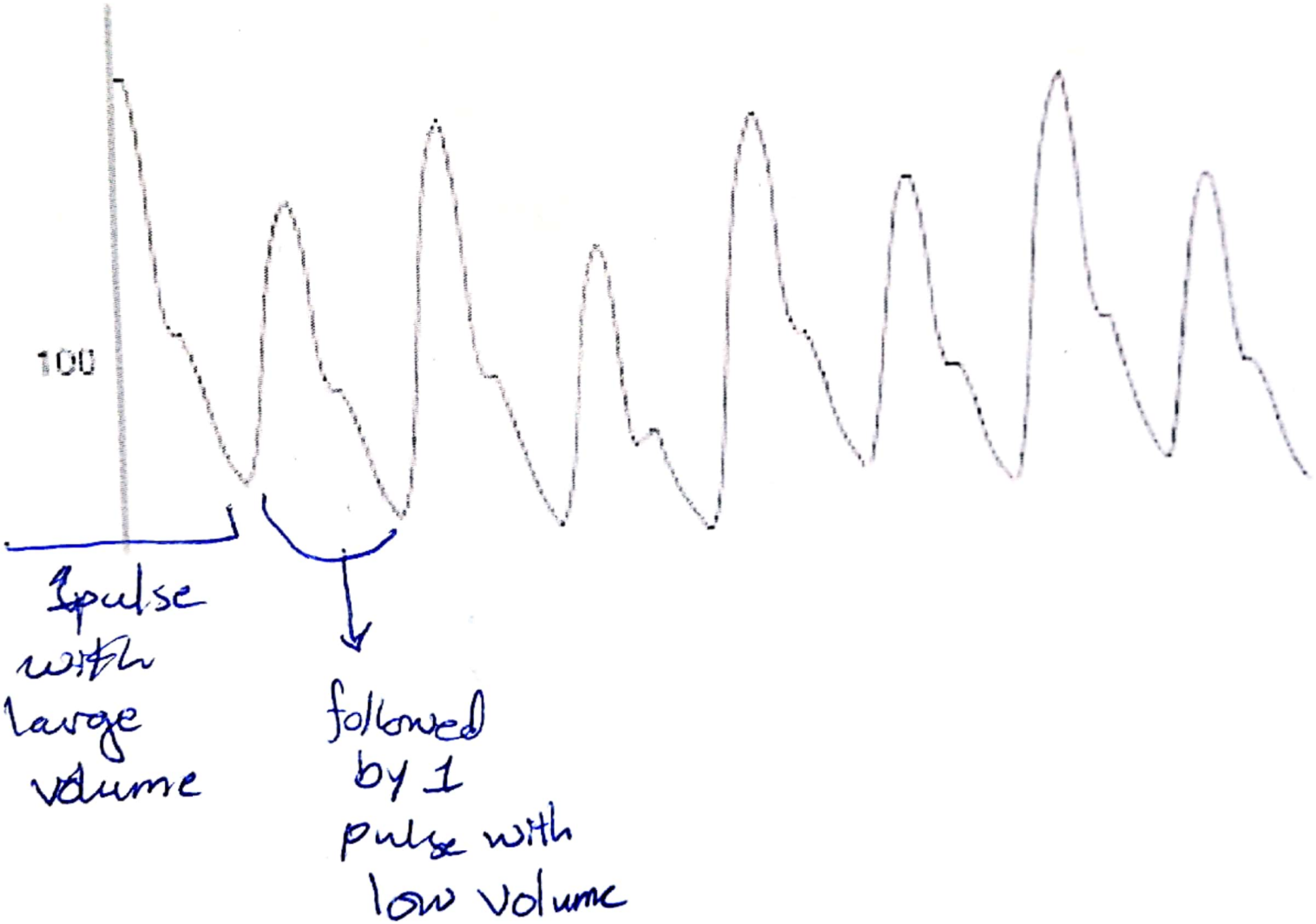
>> beat to beat variation in pulse volume with a normal rhythm .

>> occurs in advanced systolic heart failure

>> frank starling low (higher EDV>> more stretch on muscle fibers >> higher stroke volume)

ما شرحتها الدكتورة

Pulsus alternus



Pulsus paradoxus

- It is a misnomer (means normal exacerbation of a certain physiological response)

* Inspiration ⟶ شهيق ⟶ ① ↓ Intrathoracic pressure ⇒ ∴ ↓ JVP
② ↓ parasymp. activity ⇒ ∴ ↑ HR

Hemodynamic effects of respiration (Normal physiology)

	Inspiration	expiration
* Heart rate	Accelerates	Slows
* Systolic BP	Falls (up to 10 mmHg)	Rises
* JVP	Falls	Rises

* if it falls more than 10 → this is pulsus paradoxus

* JVP
Jugular venous pressure.

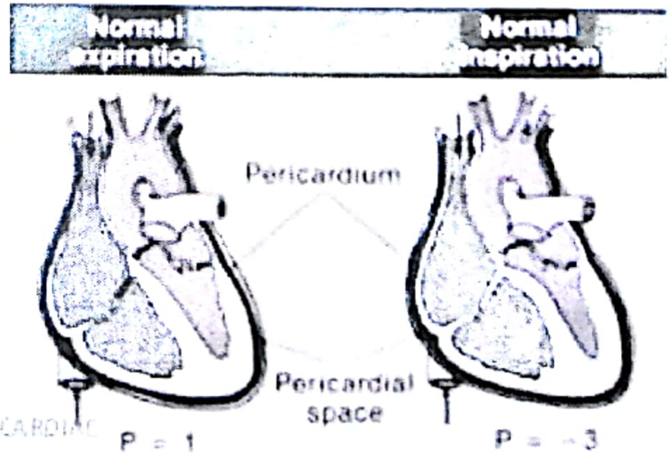
تفسير حدوث ال Pulsus paradoxus

Intraperi pressure (IPP) tracks- intrathoracic pressure.

* **Inspiration:**
  1. -ve intrathoracic pressure is transmitted to the pericardial space
  2. ↓ IPP (intra pericardial pressure) → Pericardium رح يكون الضغط بال venous system بالتالي الضغط بال
  3. ↑ blood return to the right ventricle
  4. ↓ jugular venous and right atrial pressures ⇒ صار عندي more filling ⇒ ∴ JVP & atrial pressure decrease
  5. ↑ right ventricular volume → IVS (intra ventricular septum) shifts towards the left ventricle ← صار عندك more filling
  6. ↓ left ventricular volume ← بسبب ال shift يلي صار
  7. ↓ LV stroke volume

⇒ ↓ blood pressure (<10mmHg is normal) during inspiration

اذا صار في نقصان لل BP أكثر من 10 هاد Pulsus paradoxus



PATHOPHYSIOLOGY OF CCP AND CARDIAC TAMPONADE

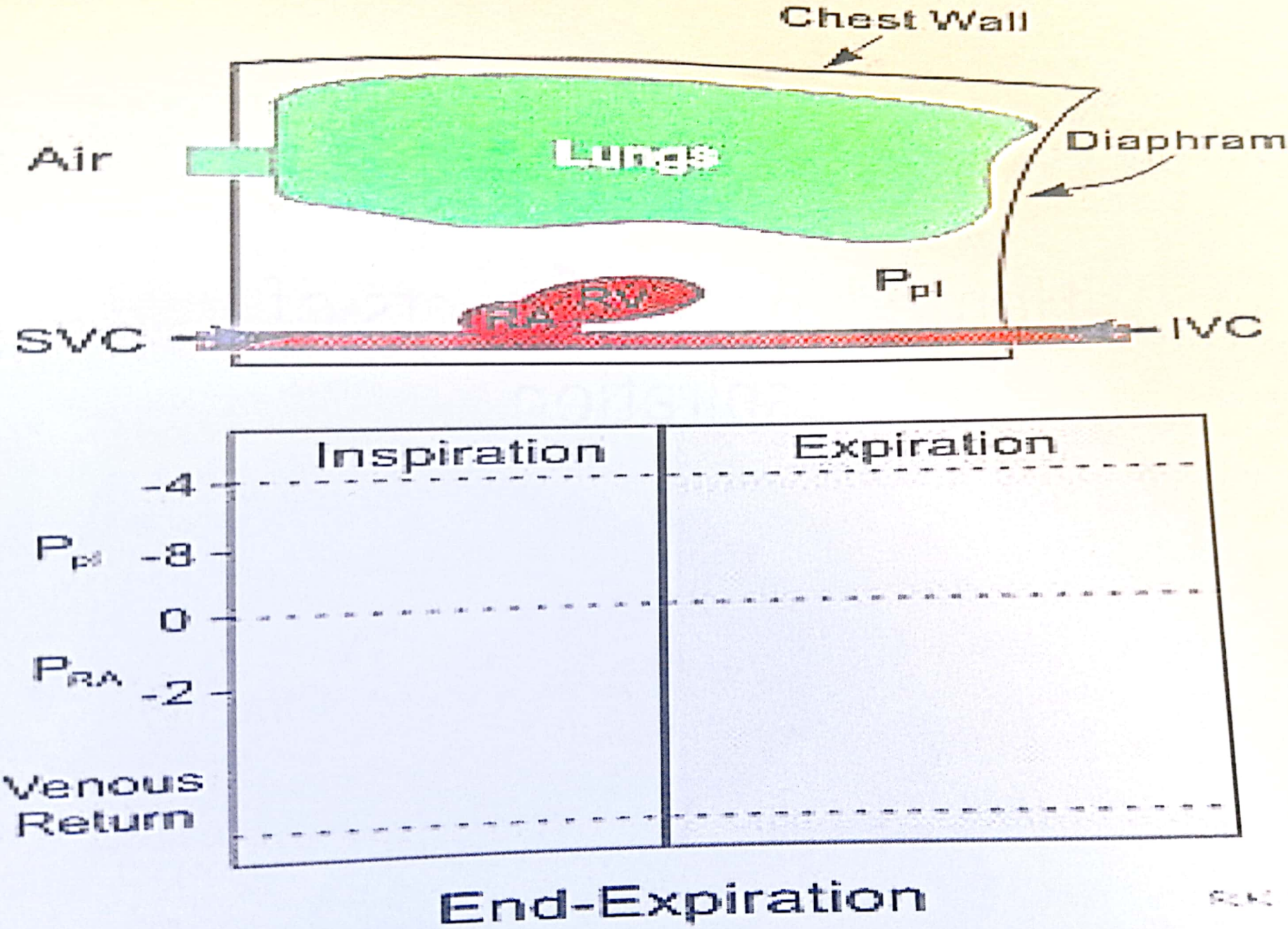
Pulsus paradoxus :

>> Misnomer

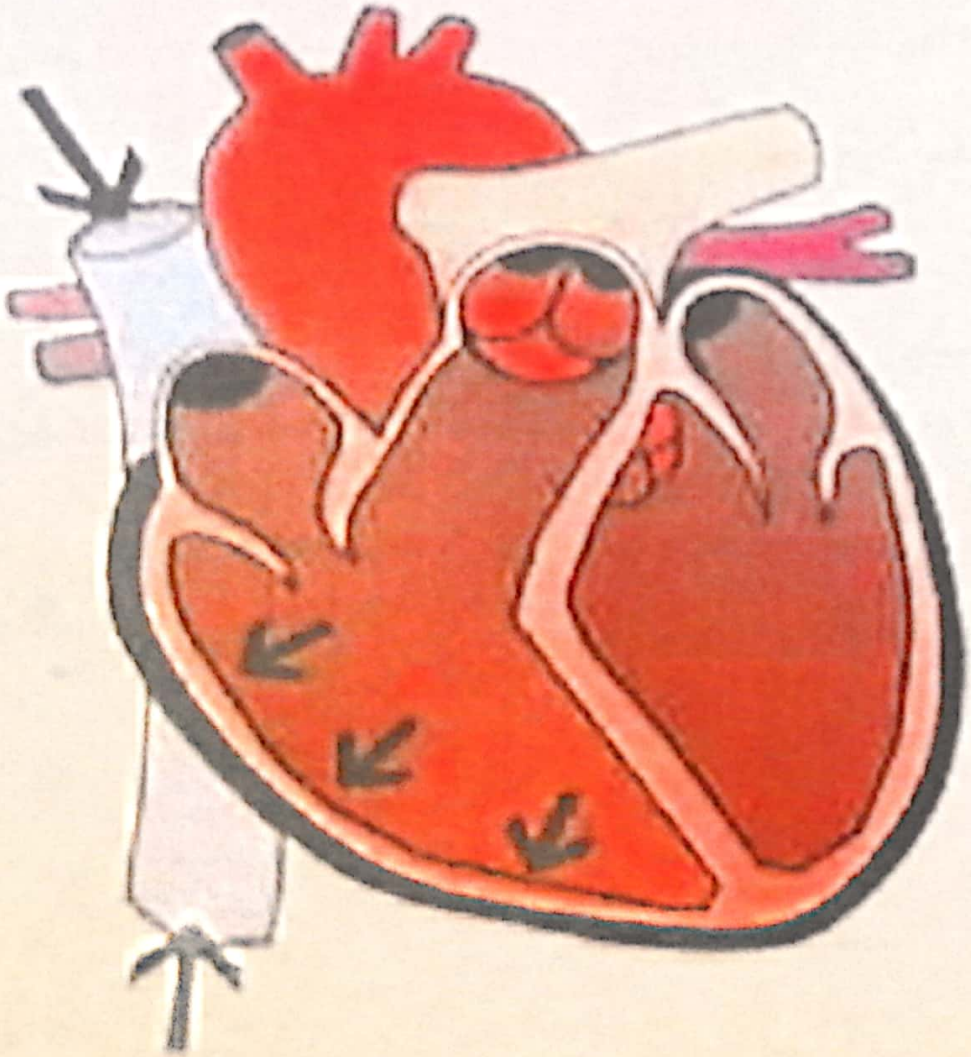
>> Exaggeration of the normal decrease of systolic blood pressure in inspiration

>> The decrease is more than 10 mmHg

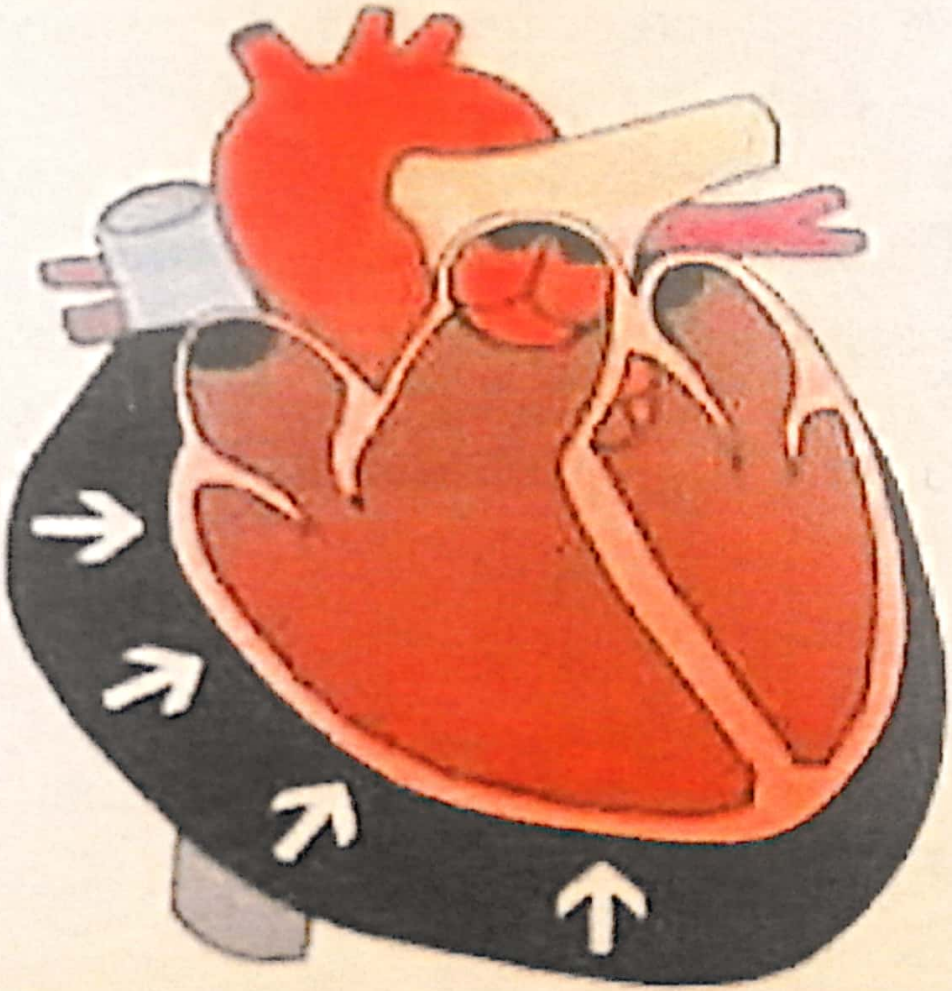
Your microphone is muted.



Healthy



Tamponade



* When will you see pulsus paradoxus ?

- causes :

1- Cardiac tamponade

2- Constrictive pericarditis

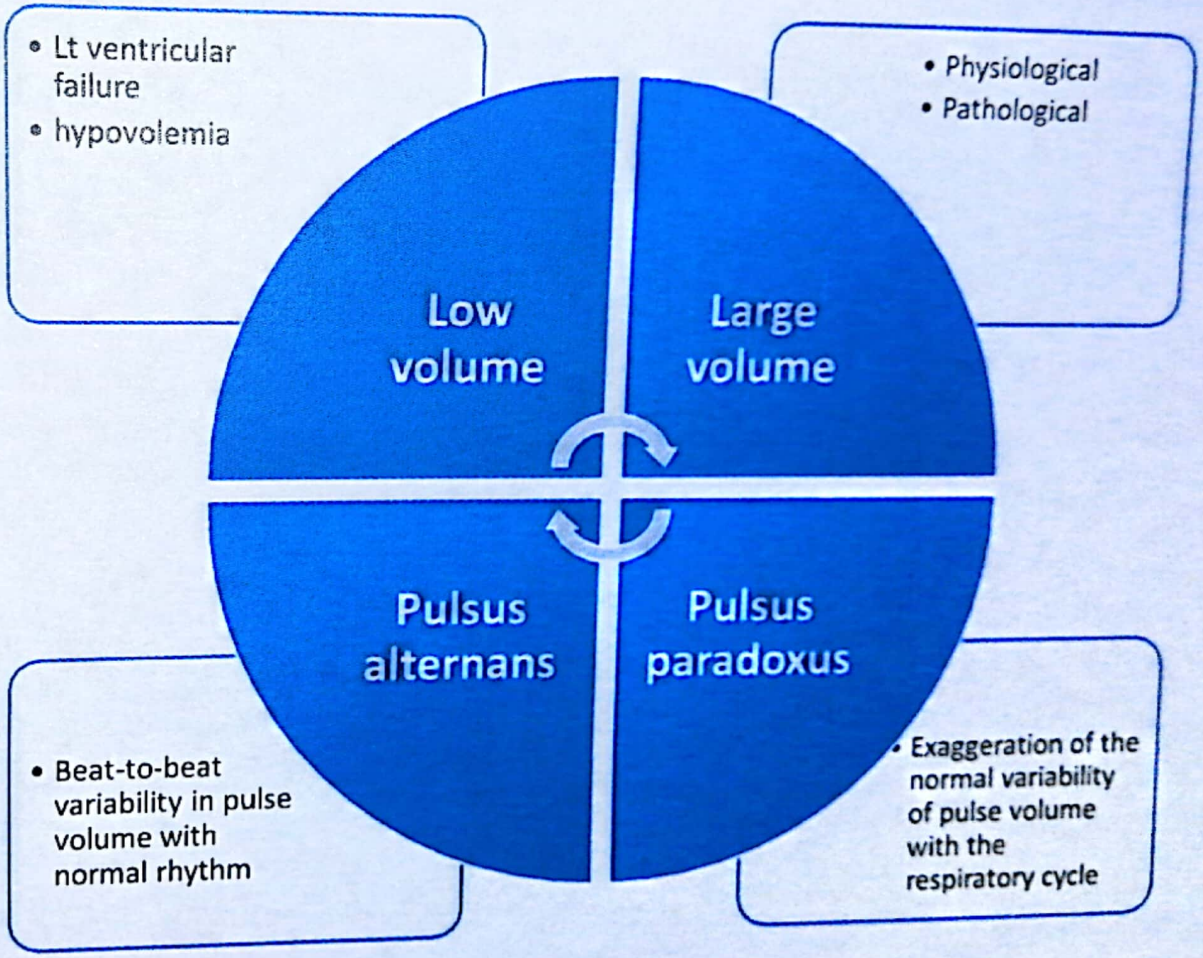
3- Severe obstructive lung diseases

↳ In all these conditions, there is equalization of pressure in all chambers of the heart

So, this will cause exacerbation in this normal response

ملخص ١٢

Abnormal volume



Pulse Examination : You should start with the radial pulse

Examination of the Radial pulse

1. Calculate the pulse rate for 1 minute, comment on rate, rhythm , volume , character and compressibility, feel with pads of **THREE FINGERS**.
2. AFTER ENSURING NO ARM PAIN OR LIMITATION IN MOVEMENT , Examine for collapsing pulse with the base of fingers, then raise the pt hand above his head
3. Palpate the radial pulse from both sides simultaneously to assess for any delay or difference in volume. → This could due to occlusive arterial ds. / aortic dissection
4. Palpate the radial and femoral pulse simultaneously looking for radiofemoral delay which we encounter it in coarctation of aorta
5. Calculate the **pulse deficit** if the pulse was irregular

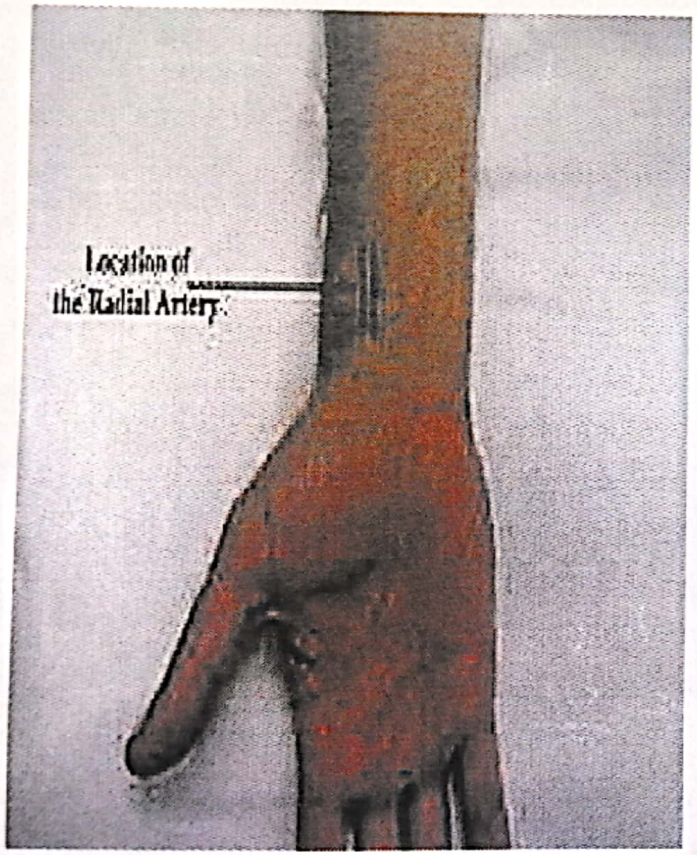
base of fingers — Volume — water hummer puls (collapsing pulse)

*It is the difference between the pulse rate that is calculated by (your fingers) & heart rate calculated by stethoscope from the apex of the heart

* radial

⇒ Normally : difference = 10 – 15 beat/min → Pulse deficit is seen in atrial fibrillation

RADIAL BILATERAL



To check the radial pulse → Use 3 fingers

BUT

To check the collapsing pulse → Use the base of fingers

RADIAL BILATERAL

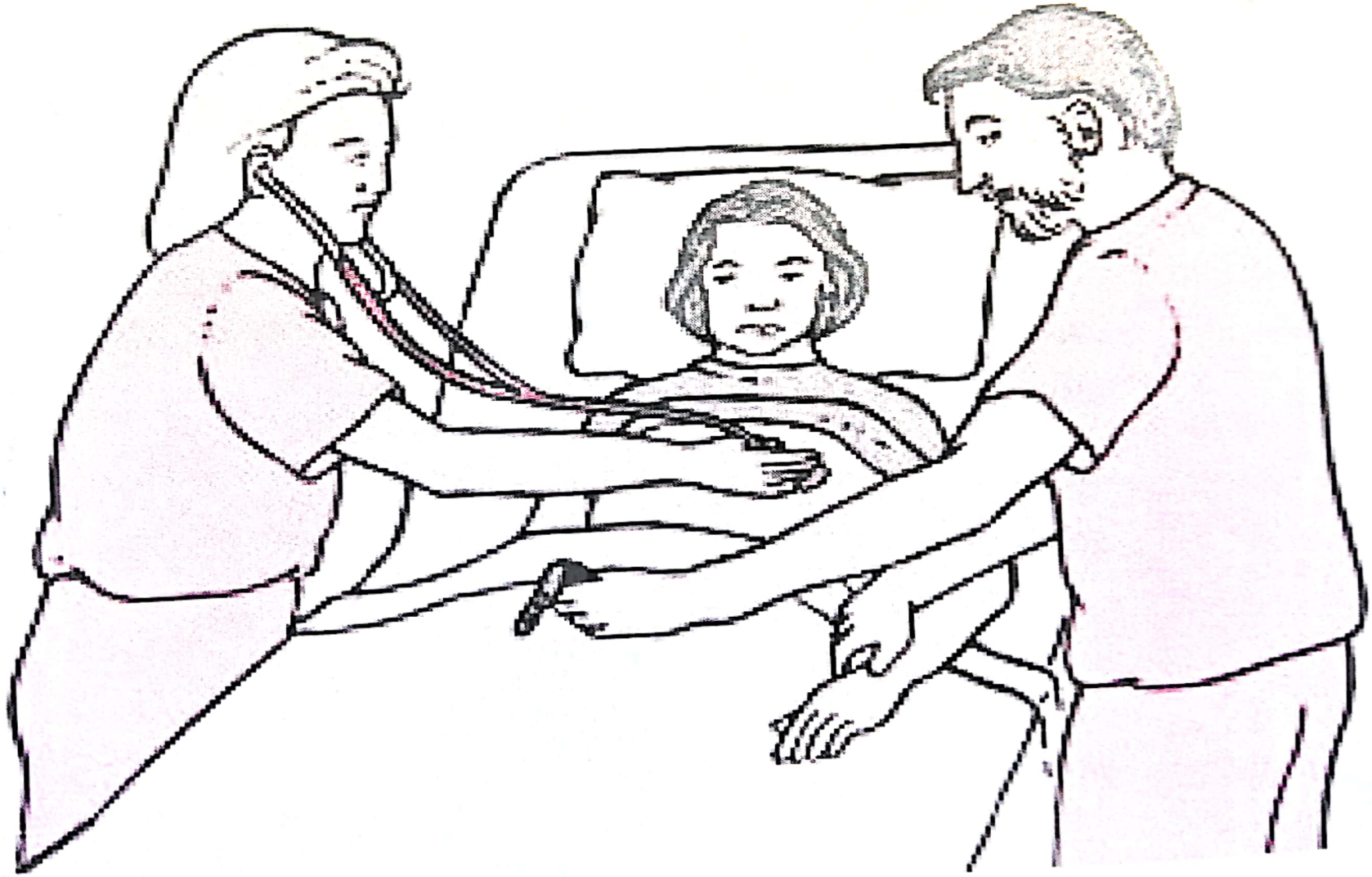
COLLAPSING PULSE

Any shoulder pain?

- Collapsing pulse
  - (Aortic regurgitation)
  - or pregnancy

Pulse deficit

Heart rate − Pulse rate

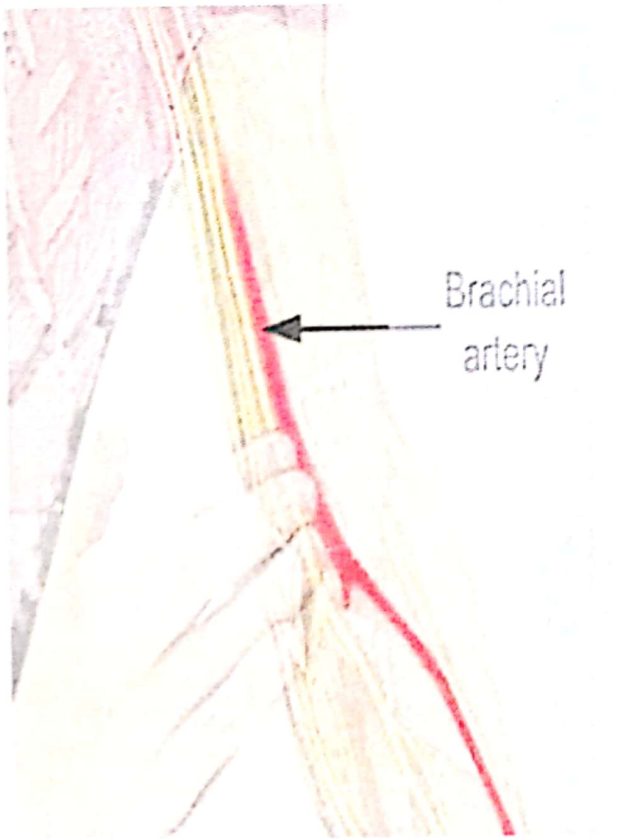


RADIO FEMORAL DELAY

ثانياً

BRACHIAL PULSE

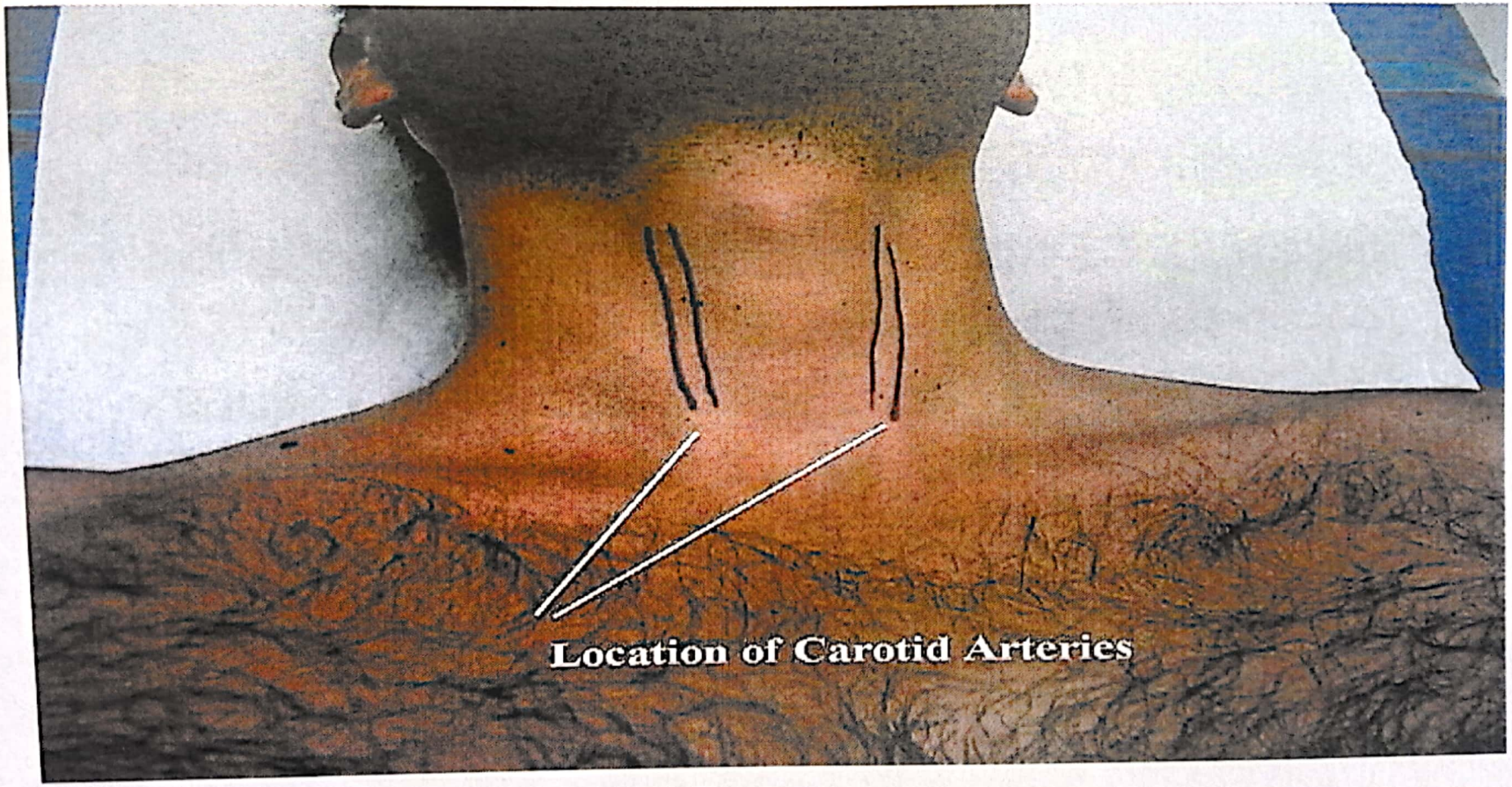
⇒ Medial to the tendon of the biceps - in the antecubital fossa -



* It is a large artery
↳ ∴ you will comment only on ♂
1] volume
2] character
3] compressibility
No rate / rythm

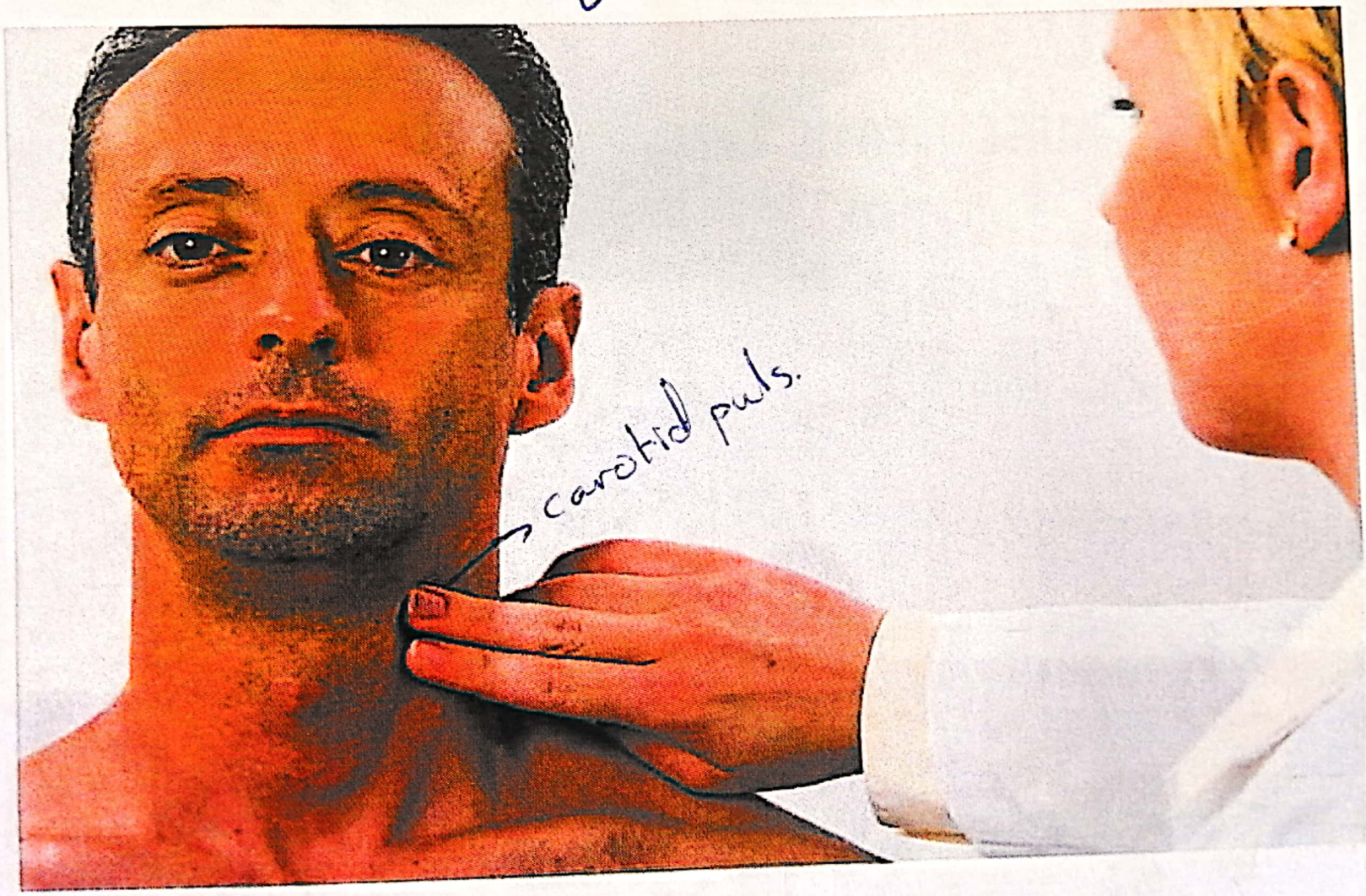
CAROTID PULSE

You palpate it in the angle jaw btw the larynx and the anterior border of the sternocleidomastoid



After comment on these, you should listen by the diaphragm of the stethoscope ⇒ لازم تخلي المريض ياخد نفس بعدين تسمعي

Comment on volume and character

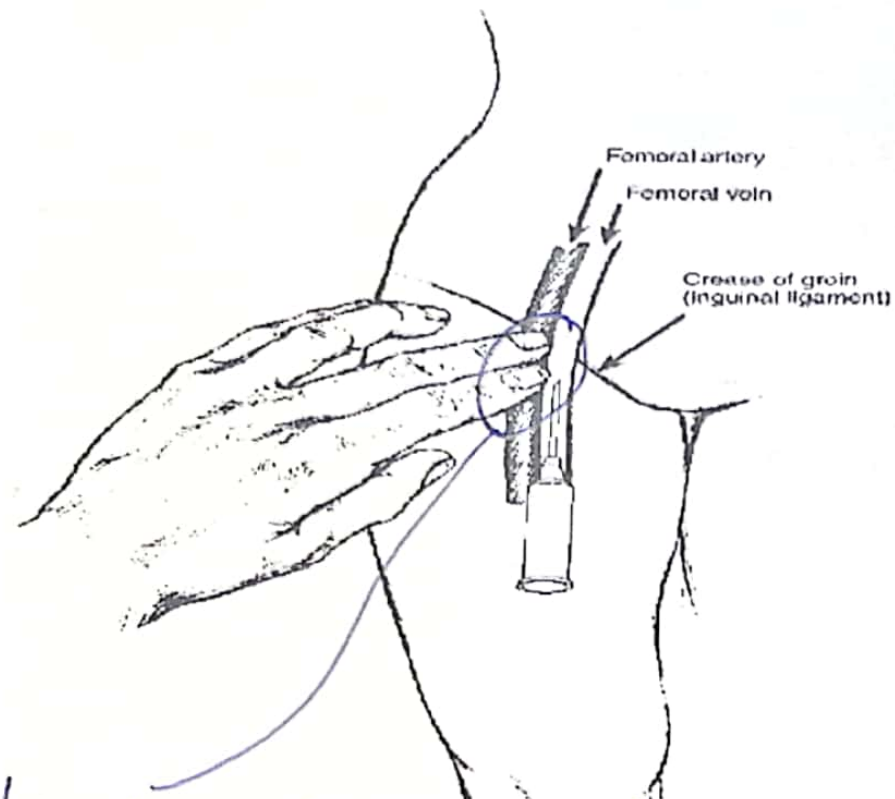


(العنق) Carotid pulse.

- Never bilateral simultaneously
  - palpation of it bilaterally will stimulate the carotid sinus, so the pt. will go through bradycardia, hypotension, collapse
- Gently press the tip of TWO fingers between the larynx and the anterior border of the sternocleidomastoid

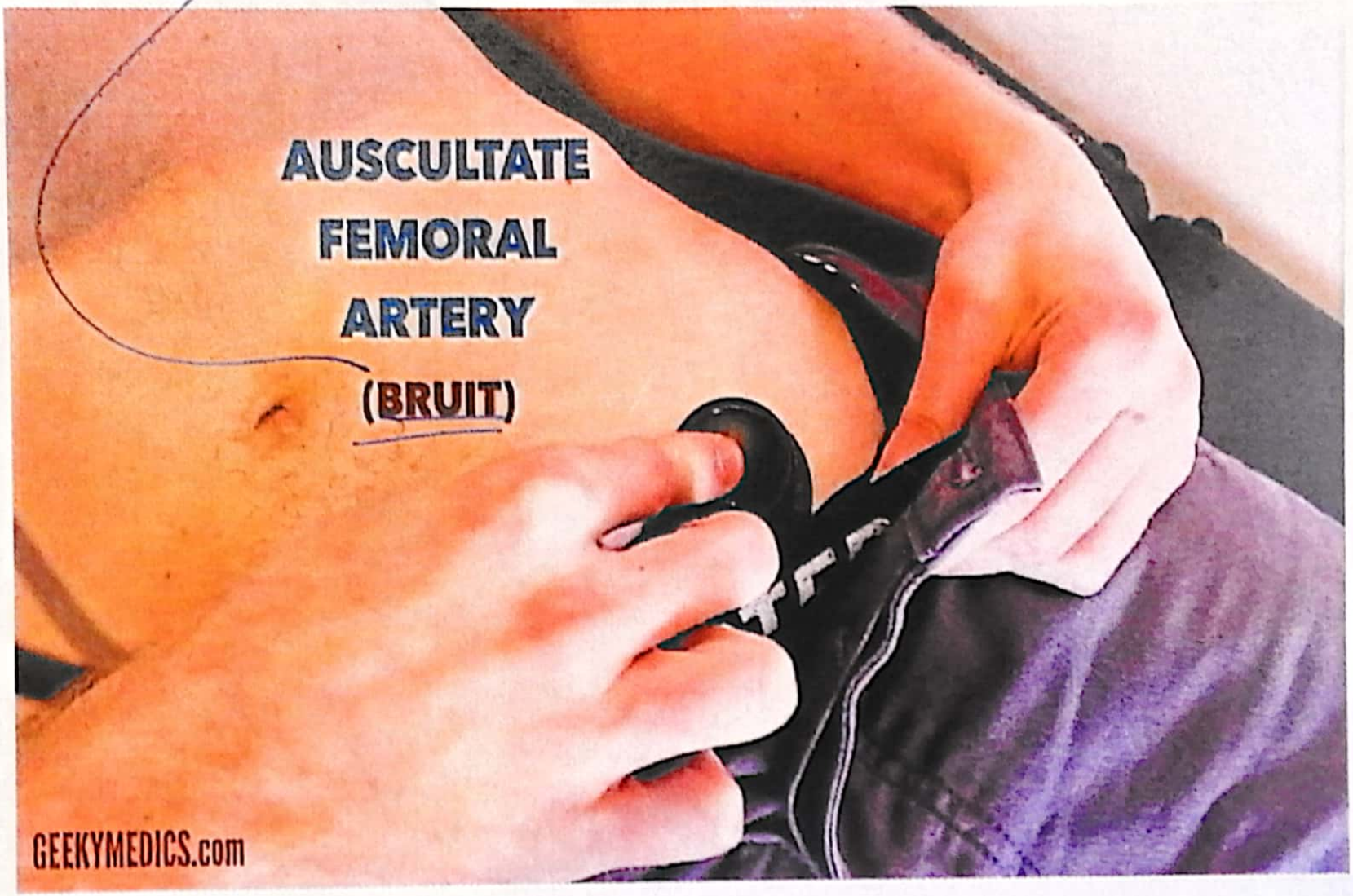
- Auscultate for bruits using the **diaphragm** with holding the breath

Femoral artery



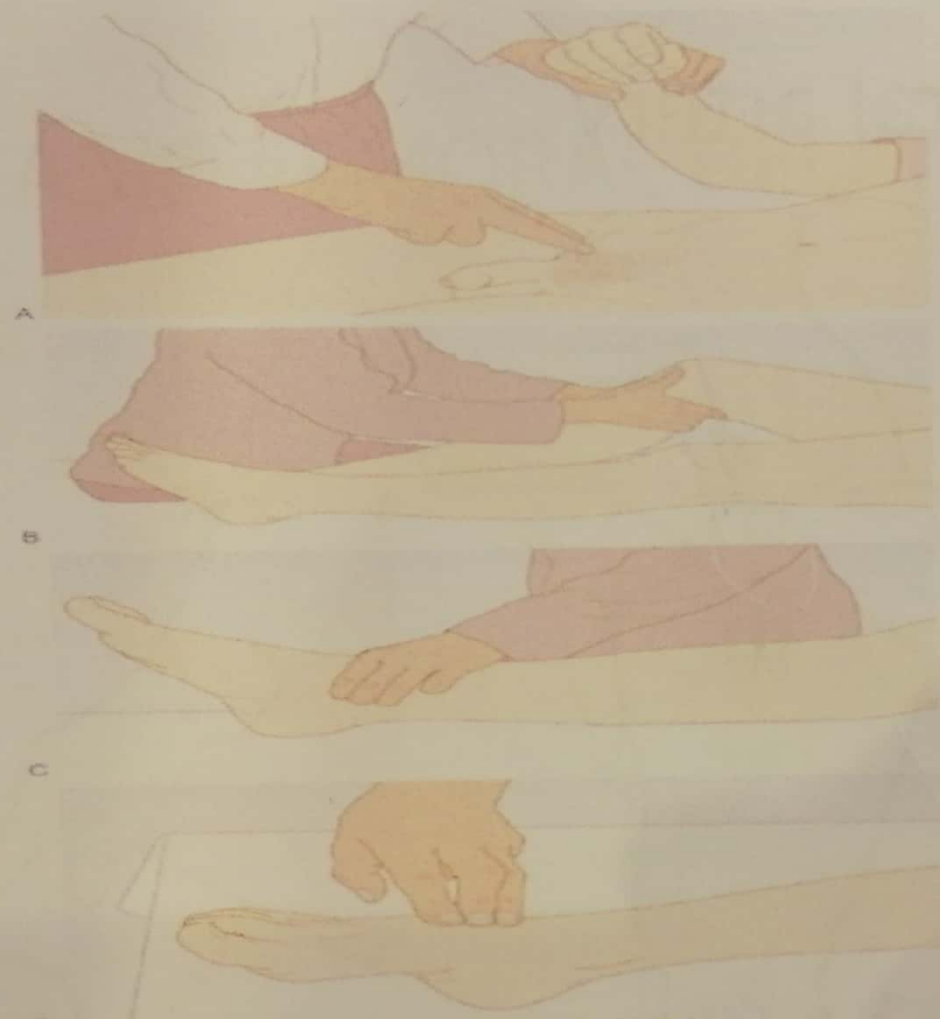
Location: In the mid inguinal point which is the mid point btw the ant. sup. iliac spine and the symphesis pubis

You can see bruies in pts with periphral arterial dis.



Lower limb pulses

- femoral artery : midinguinal point
- popliteal : popliteal fossa
- post tibial : 2 cm below & posterior to medial malleolus , it passes beneath the flexor retinaculum between flexor digitorum longus & flexor hallucis longus
- dorsalis pedis : lateral to tendon of extensor hallucis longus , at proximal extent of groove between 1st & 2nd metatarsals .



4. Blood pressure

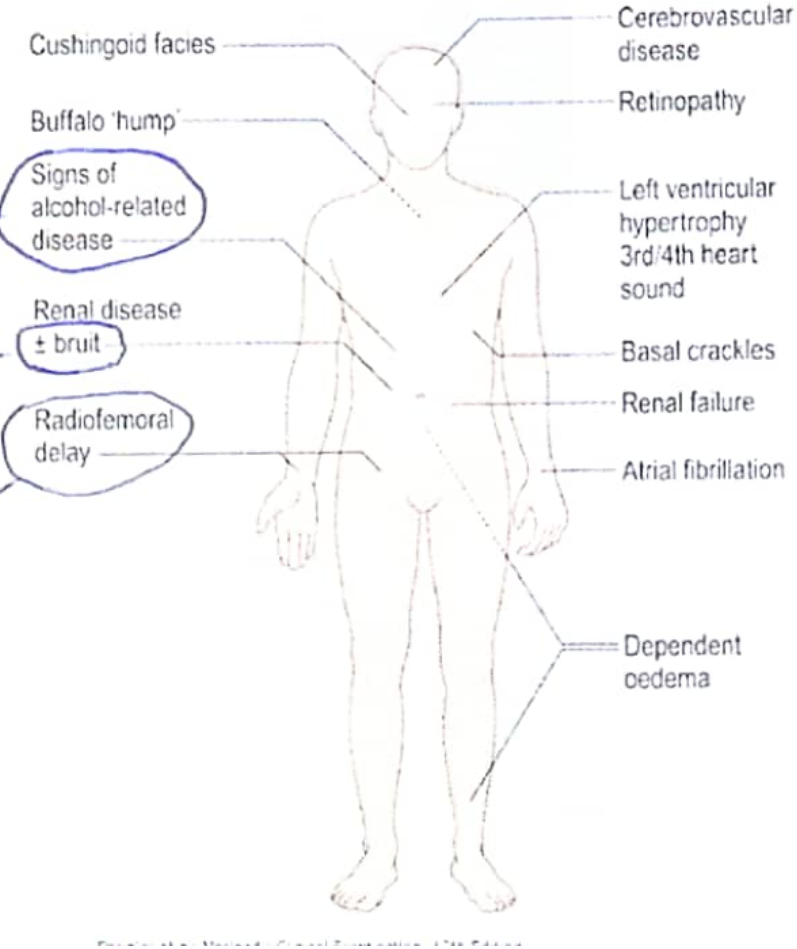
Blood pressure

- Blood pressure (BP) is a measure of the force that the circulating blood exerts against the arterial wall
- Systolic BP is the maximal pressure that occurs during ventricular contraction (systole)
- Diastolic blood pressure is BP during ventricular filling (diastole), it is maintained by the elasticity and compliance of the vessel wall
- **Hypertension** is abnormal elevation of BP that places the patient at an increased risk for end organ damage

- Invasive vs non-invasive BP measuring
- BP is measured in *mmHg* and recorded as *systolic pressure/diastolic pressure*, together with where, and how the reading was taken
- 'White-coat hypertension'
- Ambulatory BP monitoring

- **Essential hypertension** : in which there is no readily identifiable cause, occurs in >90% of patients with hypertension.
- **Secondary hypertension :** is rare, occurring in <1% of the hypertensive population, causes of secondary HTN include:
  - Renal artery stenosis
  - Conn's syndrome
  - Cushing's disease
  - Coarctation of the aorta ⇒ means: narrowing or constriction in a portion of the aorta.
  - Polycystic kidney disease
  - pheochromocytoma

Examination of the hypertensive patient



ascites ← eg
jaundice

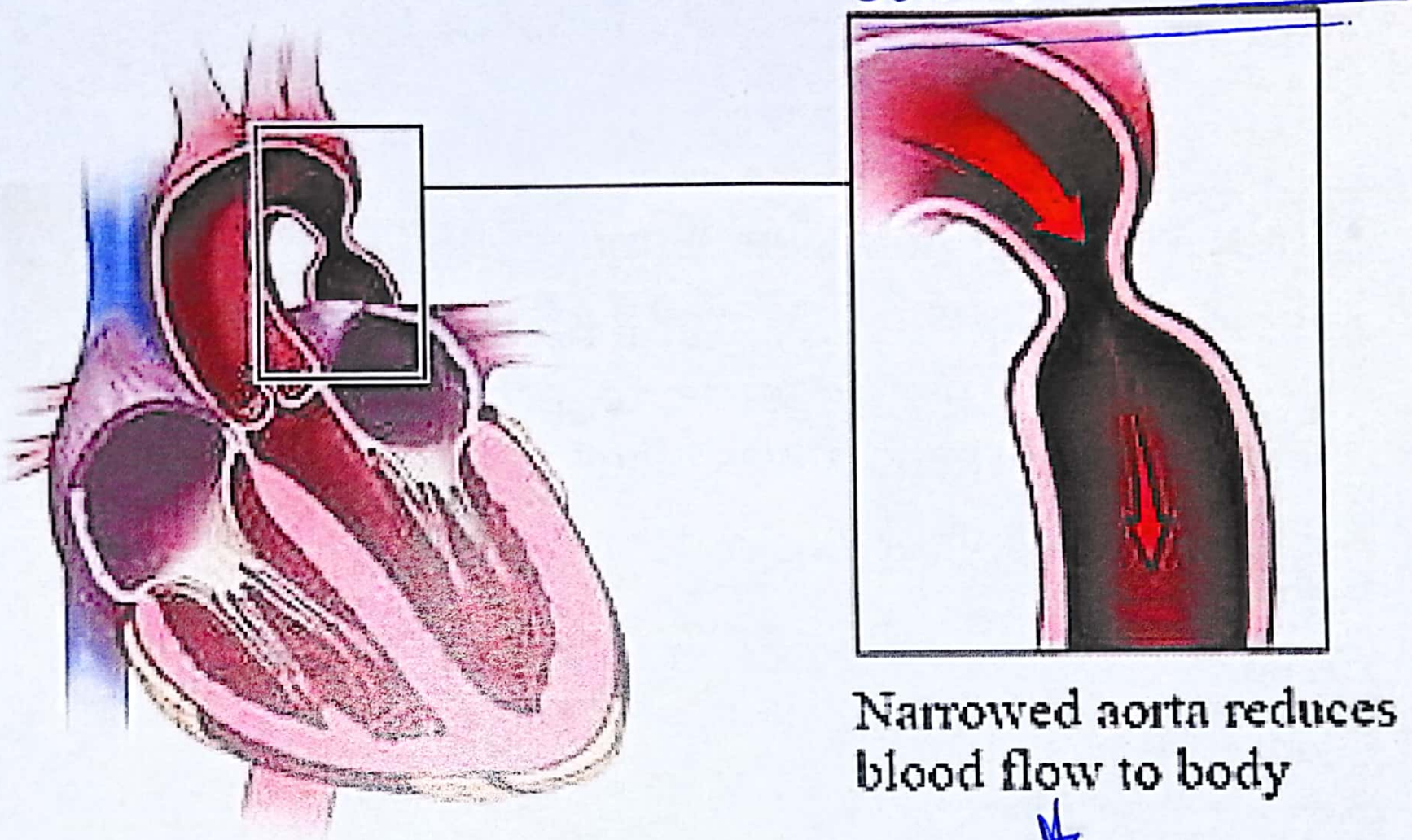
renal artery جاد

Coarctation of aorta

هاي الدرجة كلها
امراض / امراض
حدث ... بسبب
ال

high blood pressure.

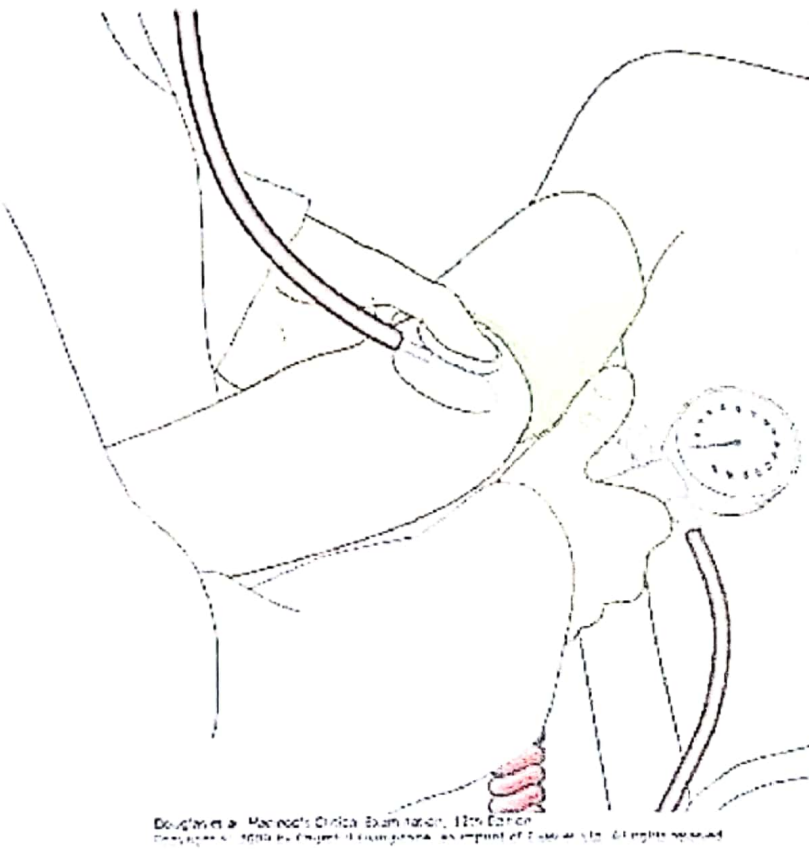
Coarctation of aorta



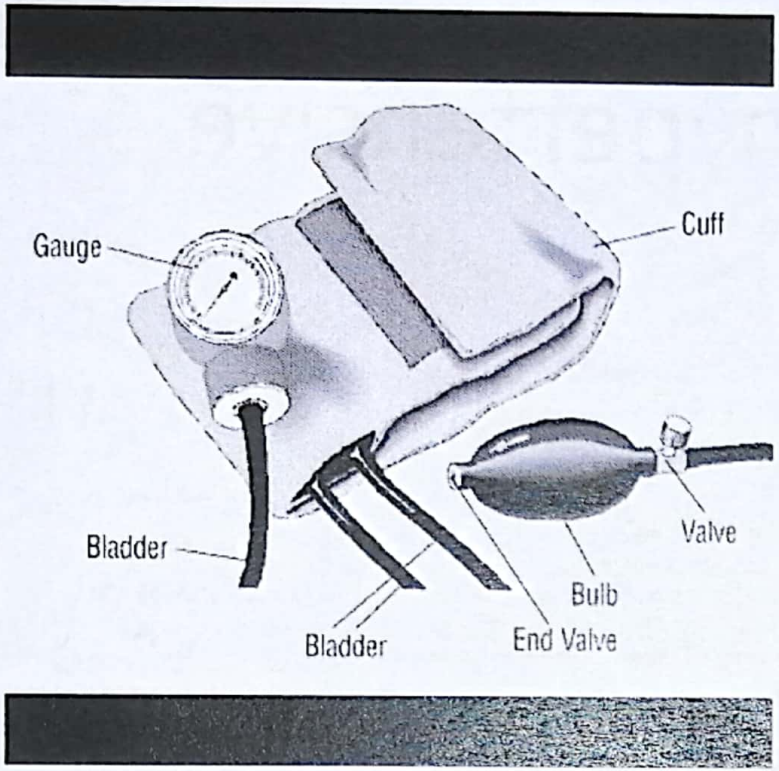
Narrowed aorta reduces blood flow to body

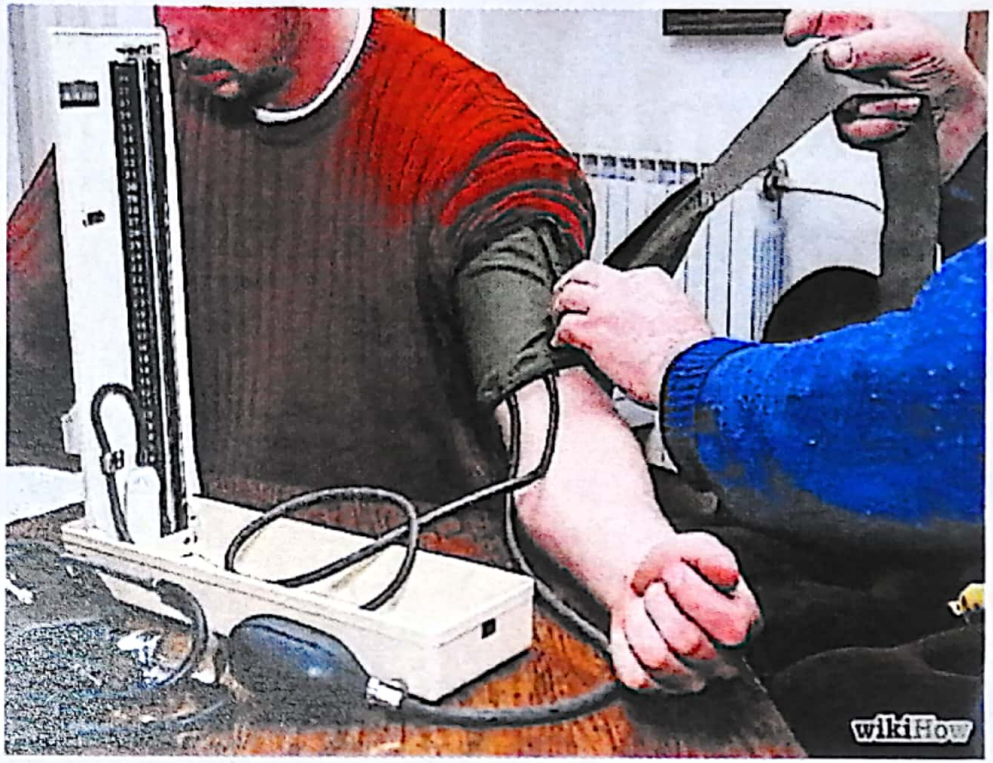
بالتالي رح نشوف عند المريض
Radio femoral delay and HTN

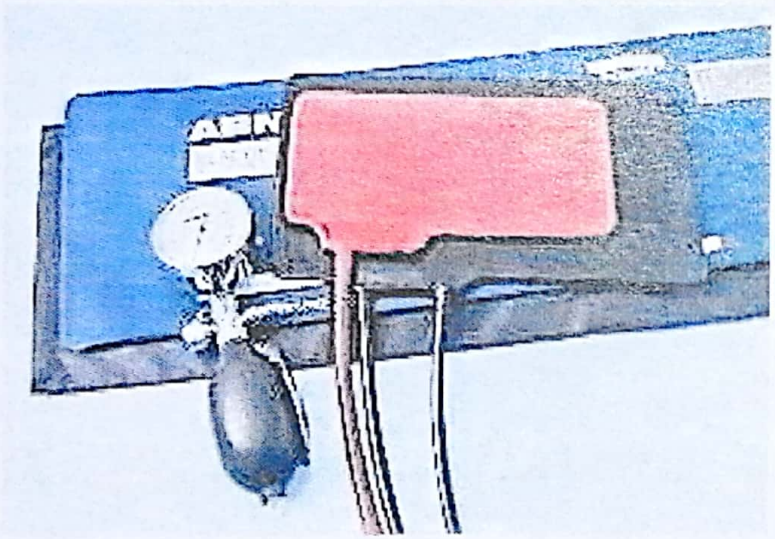
Measuring blood pressure

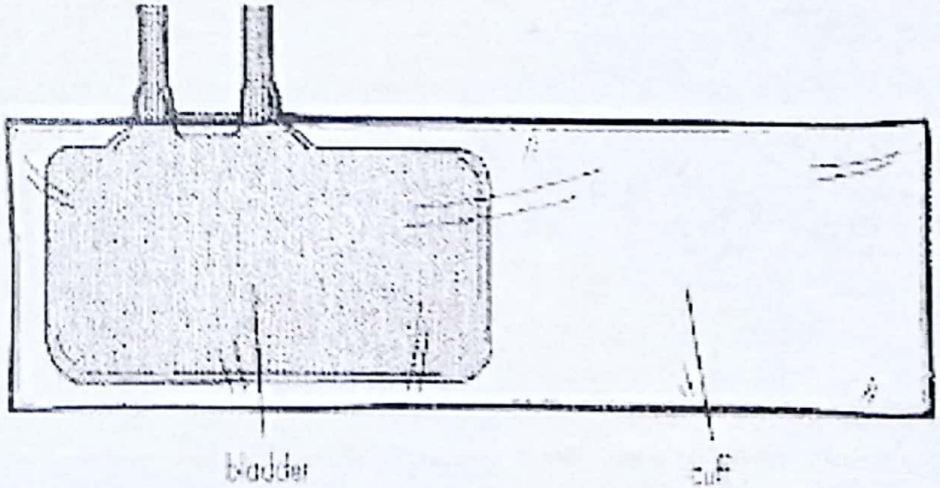


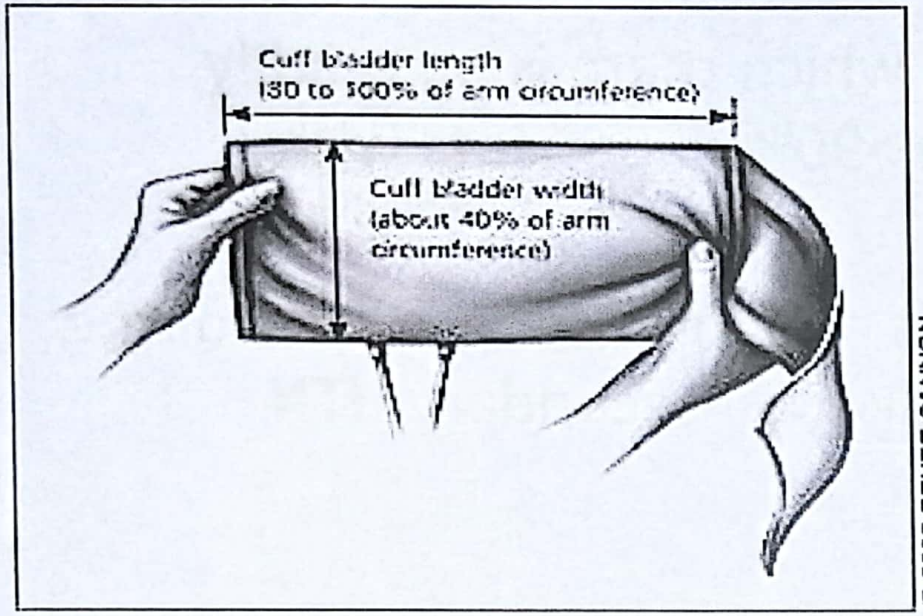
- Rest the patient for 5 minutes.
- Always measure BP **in both arms** & measure it **sitting & standing** with at least 2 min apart ..the higher reading is the closest to central aortic pressure.
- support his arm comfortably at about heart level
- Apply the cuff to the upper arm, with the centre of the bladder over the brachial artery
- Palpate the brachial pulse.
- Inflate the cuff until the pulse is impalpable
- Inflate the cuff another 30 mmHg and listen through the diaphragm of the stethoscope
- Deflate the cuff slowly (2-3 mmHg/s) until you hear a regular tapping sound (phase 1 Korotkoff sounds)
- Continue to deflate the cuff slowly until the sounds disappear.

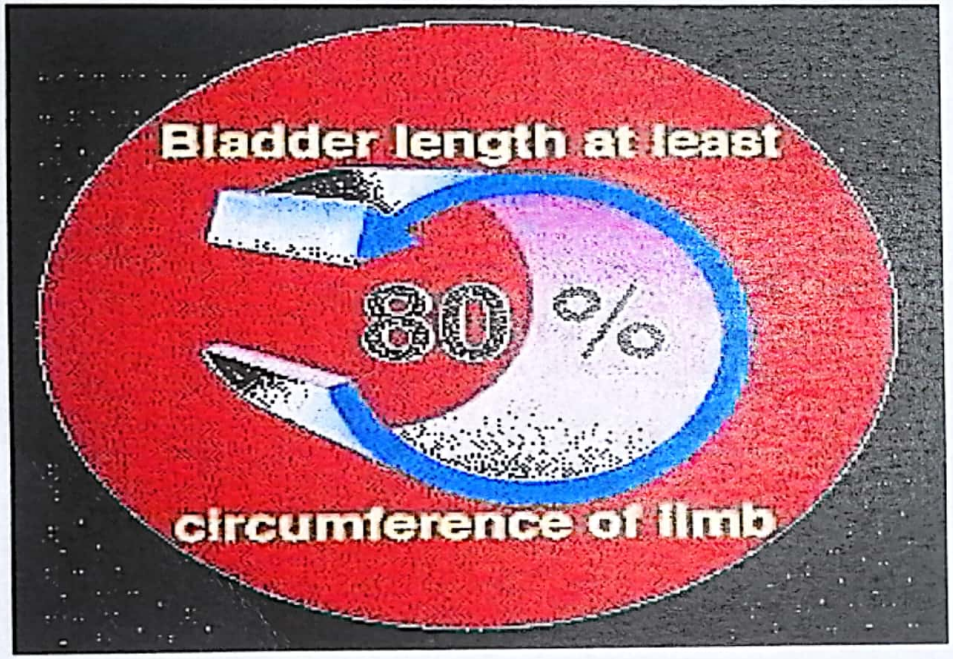


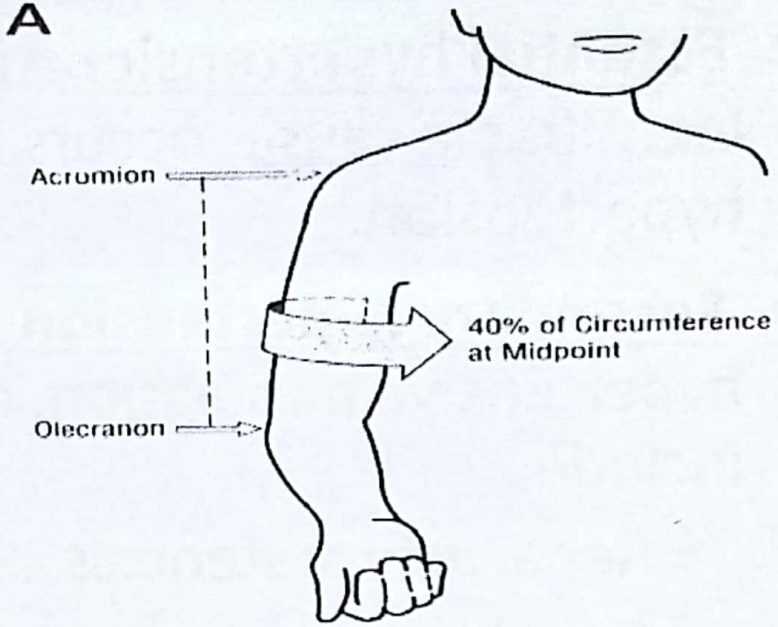


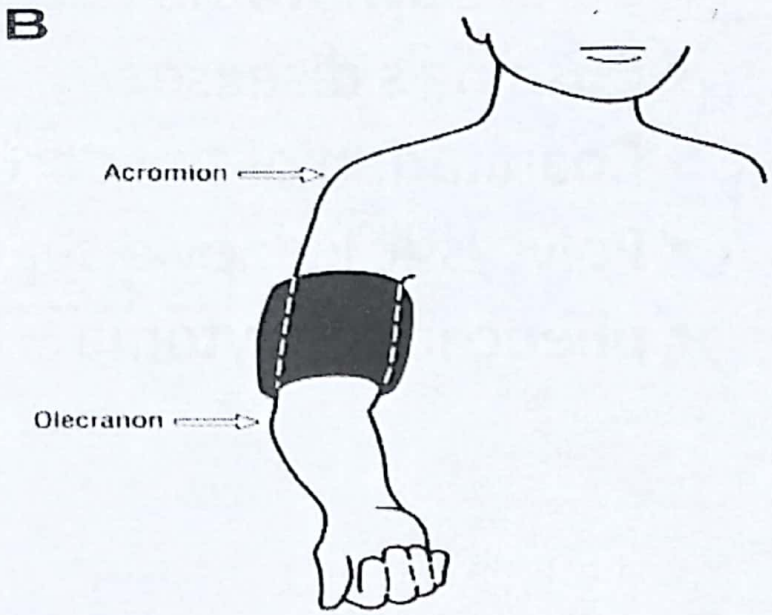








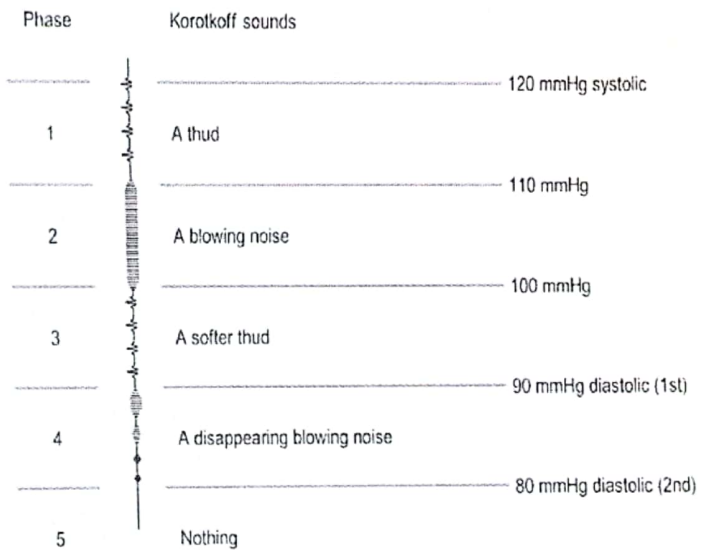




* Normal BP ↙ systolic : 120 – 135
↘ diastolic : 80 – 85

أي قيمة أعلى من 140/90 نعتبره HTN

Korotkoff sounds



* White coat HTN ⇒ Transient elevation of the BP in the pt. who sees doctors only.

⇒ Pts who have this condition are susceptible to have HTN, so we should do ambulatory blood pressure monitoring.

Common problems in blood pressure measurement

- BP different in each arm
- Wrong cuff size
- Auscultatory gap
- Postural hypotension
- Abnormal pulse pressure

↑JVP
↓
fluid over load
↓
Give diuretics

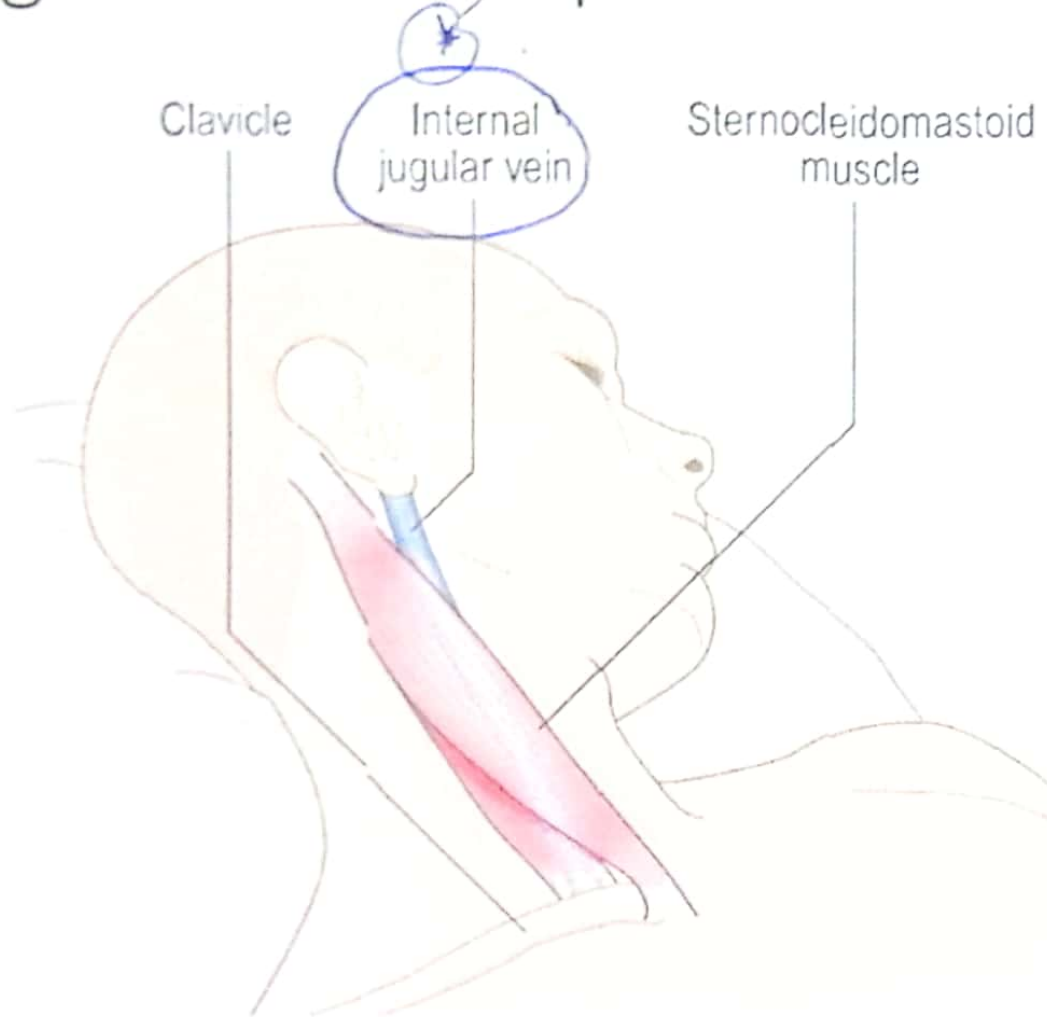
↓JVP
↓
Hypovolemia
↓
Give fluid

من الإنترنت
- ~~JVP~~ indirectly measures pressure in Rt atrium
- Causes of ↑JVP :
  1. HF
  2. fluid overload
  3. constrictive pericarditis
  4. Cardiac temponade.

Jugular venous pressure

→ It give us a sign of (1) central venous pressure. & (2) the volume status of the pt. (when the pt. has fluid overload bcs of HF. , he will have high JVP.) & when the pt. is hypovolemic he will have low JVP

Jugular venous pressure



لليش بنفضل هاد external ~~external~~ مش الـ

(1) Bcs it lies deep in the neck

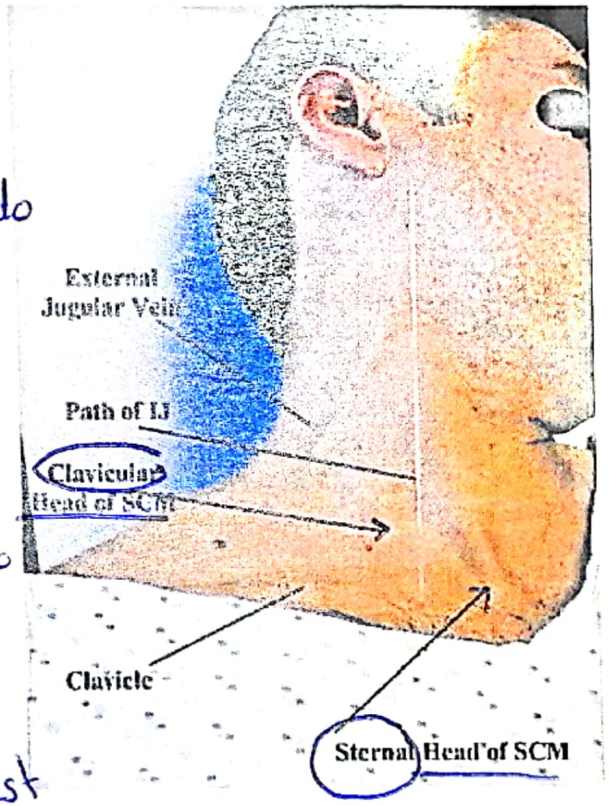
(2) it has continuous coarse with the superior vena cava and Rt. atrium so it estimate the central venous pressure better than the external jugular vein.

(3) The external jugular vein lies more superficially so it could be ~~effe~~ kinked or changed according to the position of the pt.

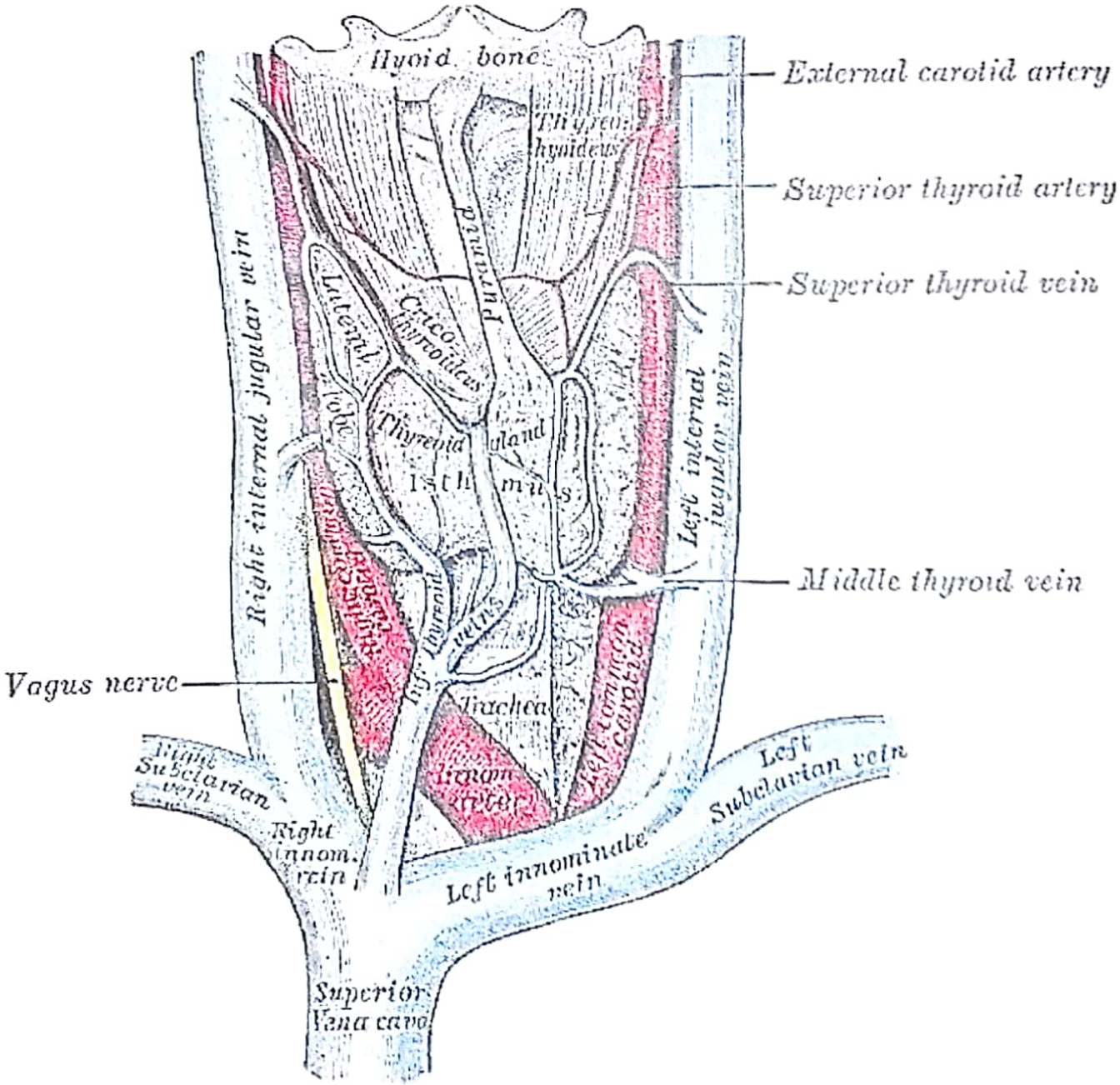
Anatomical landmarks of the IJV

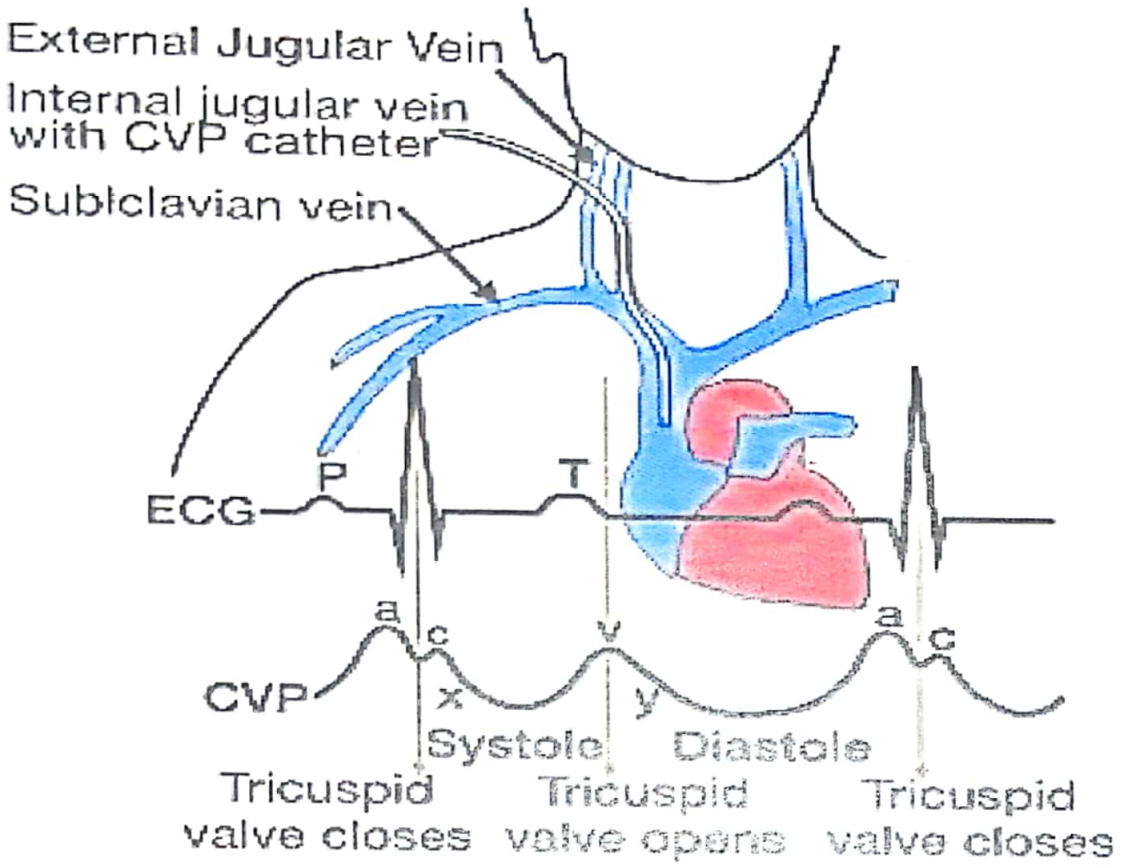
وين لازم
تطلعي عشان
تشوفي ال
Internal jugular vein

- ① Groove btw. the 2 head of sternoclaeido -mastoid ↓
  هاي هي النقطة الوحيدة اللي
  بكون ال vein فيها واضح.
  بعدها بيصير deep ←
  (behind the sternoclaeido -mastoid)
- ② after the end of sternoclaeidomastoid just beneath air lobule.



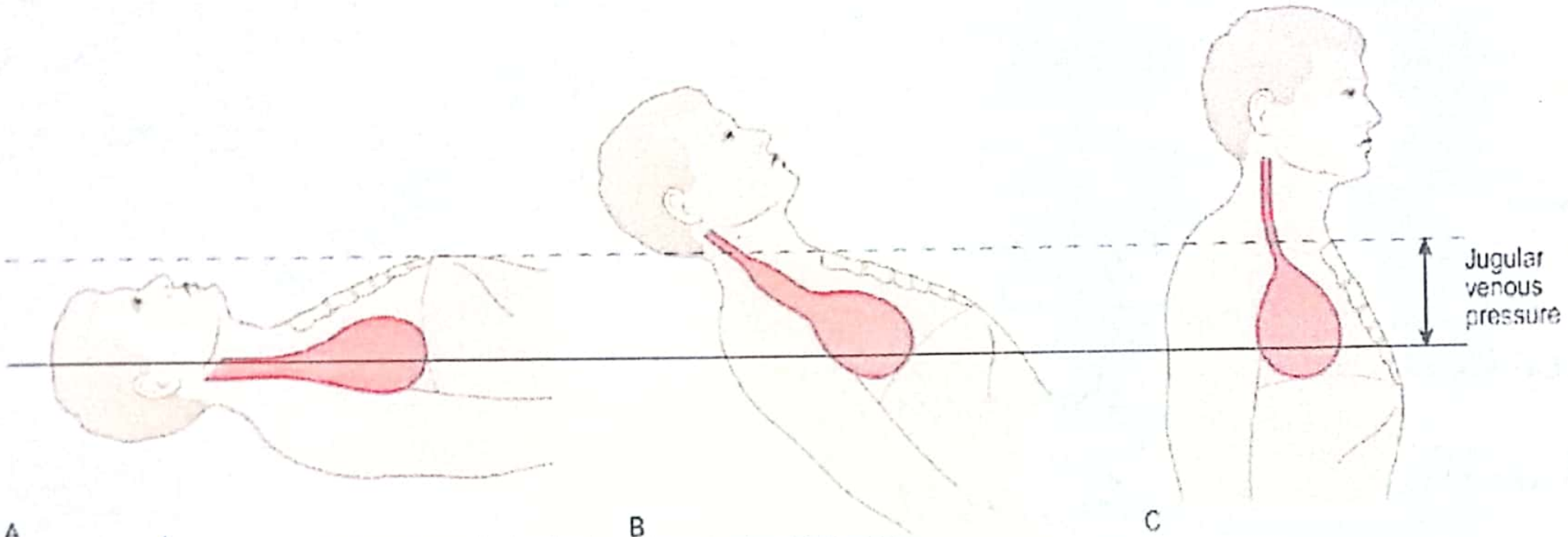
Va





a = peak atrial contraction (follows the P wave on ECG)
Tricuspid valve closes, causing dicrotic notch
c = RV contraction, bulging the TC valve into the atria
x descent = atrial pressure declines during atrial relaxation
v = passive atrial filling, against a closed tricuspid valve
Tricuspid valve opens
y descent = passive blood flow from RA to RV
a = peak atrial contraction

JVP



estimates ① ②

* JVP = Central venous pressure = Rt atrial pressure
* JVP is normally less than 7 mmHg/ 9 cm H2O
* The sternal angle is 5 cm above the right atrium so the normal JVP should be no more than than 4 cm above this angle when the patient lies at 45^0

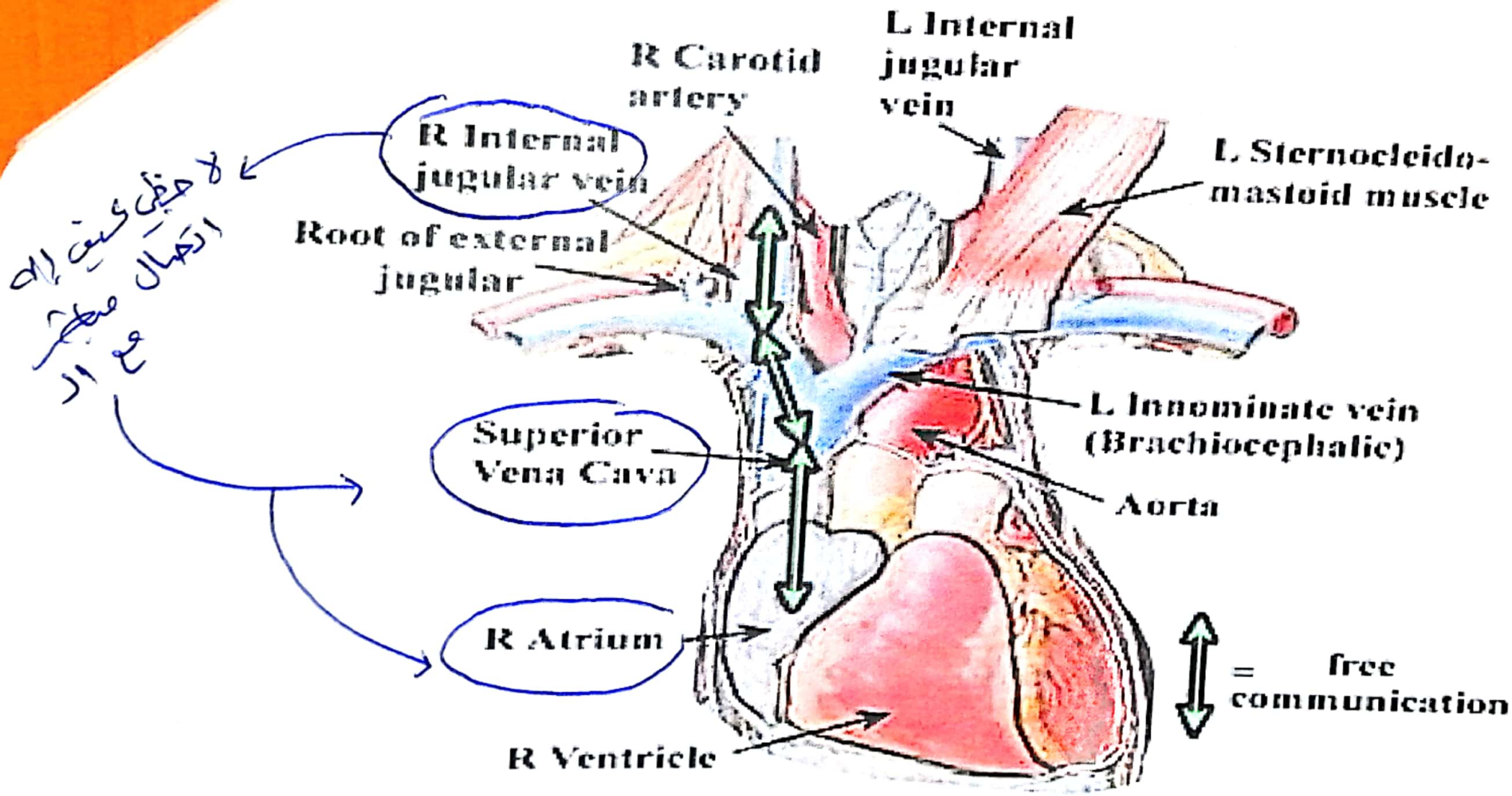
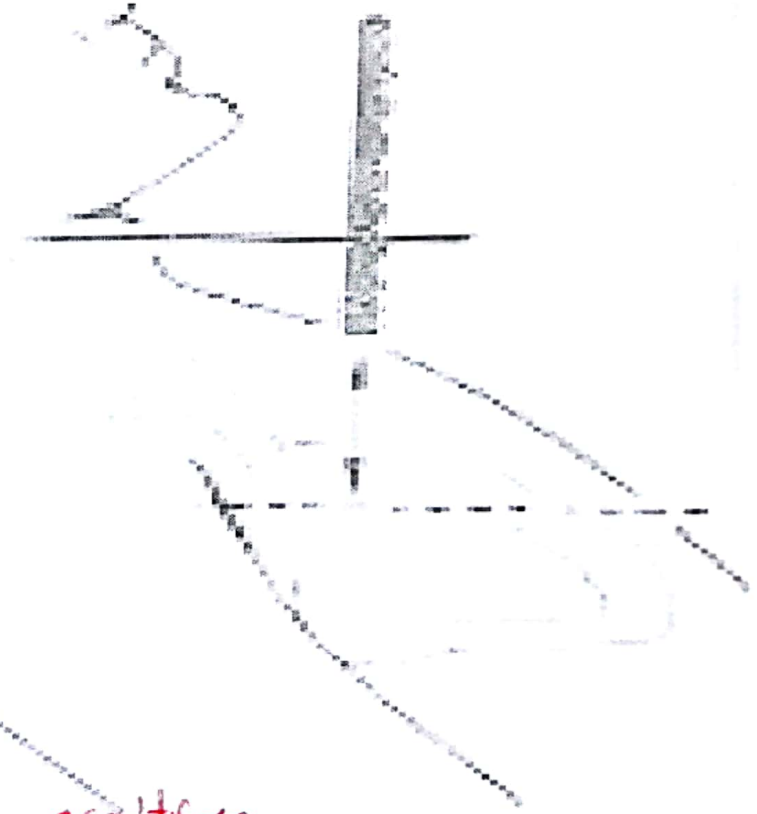


Figure 1. The right internal jugular vein as an extension of the right side of the heart

JVP examination:

1. exposure of the pt. above the waist
2. The pt. should be in a 45° degree. * Note that the position can affect the JVP very easily
3. Good light should be available.
4. Look to the neck then search for visible pulsation
5. When you see the pulsation, you should confirm if it is JVP or it is a carotid pulse

→ Inspection
then palpation
then make pressure
then notice changes w/ inspiration
then ask the pt. to change his position
then make abdominal pressure then notice the abdominal jugular reflex.



* Normal JVP is less than 9 cm
∴ (The pt. doesn't have overload or low volume status)

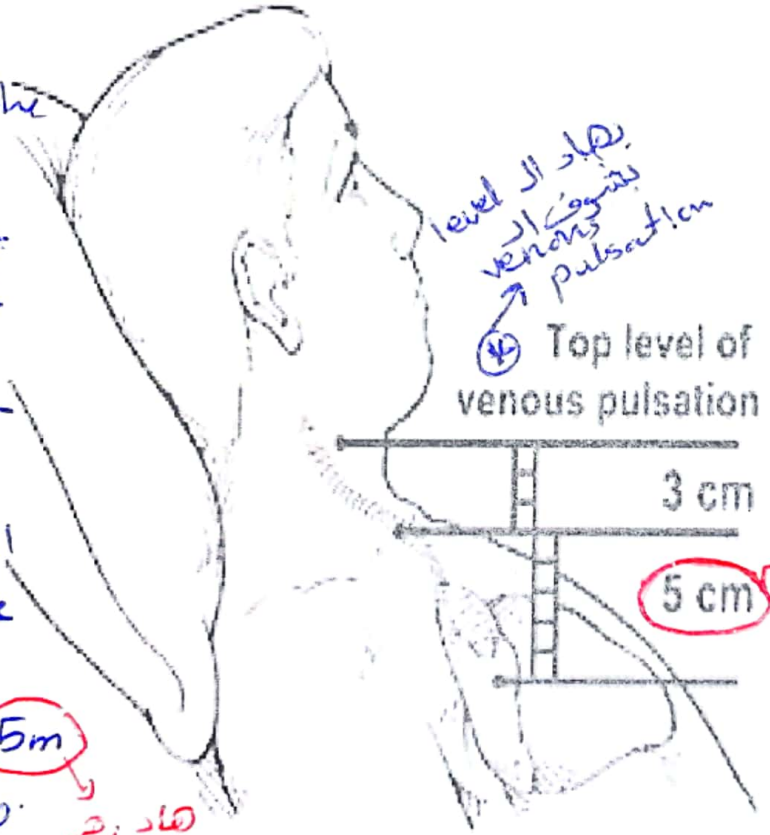
3 cm (from sternal notch)
+ 5 cm (from right ventricle to sternal notch)
8 cm H_2O jugular venous pressure normal

بس تشوف ال pulsation in the neck بتحطي مسطرة افقية وبتقيس المسافة بين هاد ال pulsation & the sternal angle. بالحكي هاي المسافة 3cm طلعت

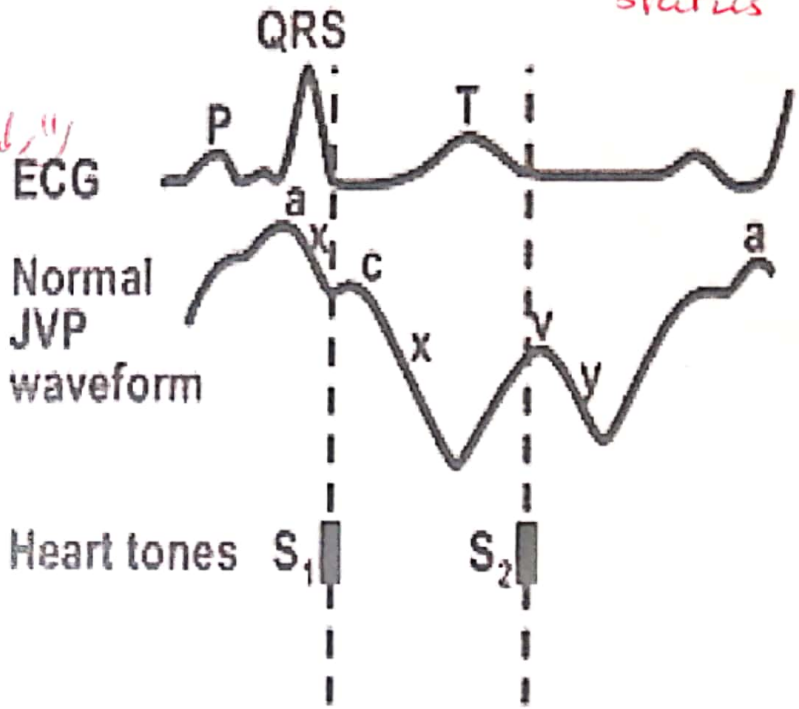
هلأ لازم نضيف على ال 5cm اللي طلعت معنا عشان نعرف ال JVP.

∴ JVP = 3cm + 5m
= 8 cm H_2O.

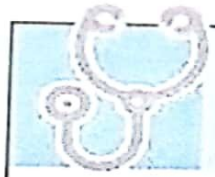
هاد رقم ثابت دايما بطريقة



This is the pressure that found btw the sternal angle and Rt. atrium



* كيف بتميزي إنه هاد ال pulsation هل هو شغلة بالشريان carotid pulsation or Jugular venous pulsation



6.23 Differences between carotid artery and jugular venous pulsation

	Carotid (artery)	Jugular (vein)
Inspection (1)	Rapid outward movement	Rapid inward movement
(2)	One peak per heart beat	Two peaks per heart beat (in sinus rhythm)
Palpation (3)	Palpable	Impalpable
Make pressure then see (4)	Pulsation unaffected by pressure at the root of the neck	Pulsation diminished by pressure at the root of the neck
(5)	Independent of respiration	Height of pulsation varies with respiration (it decreases w/ inspiration)
(6)	Independent of position of patient	Varies with position of patient * It increases when the pt. is lying down * it decreases " " " " standing
(7)	Independent of abdominal pressure	Rises with abdominal pressure * when you make a pressure over the liver (in the Rt. upper quadrant of the abdomen) you will notice a rise in JVP.

*Note that we examine the Rt jugular vein.
bcs we want to assess the pressure in the Rt atrium.

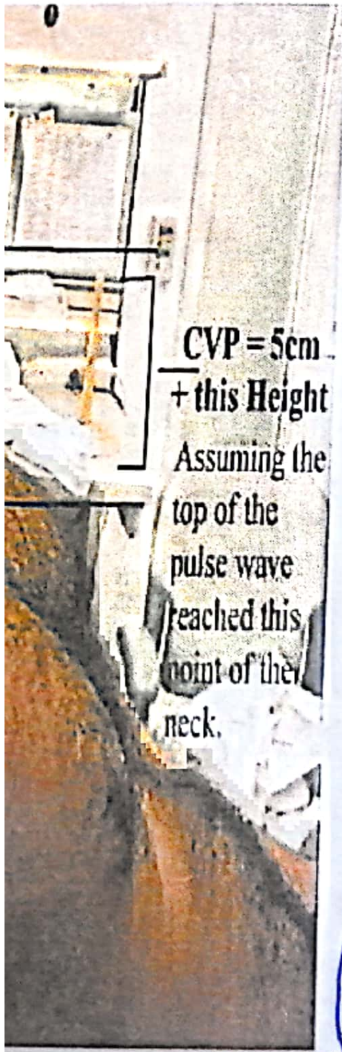
JVP

- EXAMINATION SEQUENCE:

1) Position the patient starting at 45°
2) Rest the patient head on a pillow
3) Head slightly tilted to the left & look to the Rt
4) Identify the wavy pulsations:
   a) Diffuse Inward movement
   b) Two waves per pulse
5) By palpation:
   a) Impalpable
   b) Disappears with compression at root of neck
   c) Rises with abdominal pressure
6) Special maneuvers:
   a) Varies with respiration
   b) Varies with patient position
7) Measure height of JVP: *the JVP is the vertical height in centimeters between the top of venous pulsation and the sternal angle (+5cm water)*

*normally is less than 9cm water

rium.



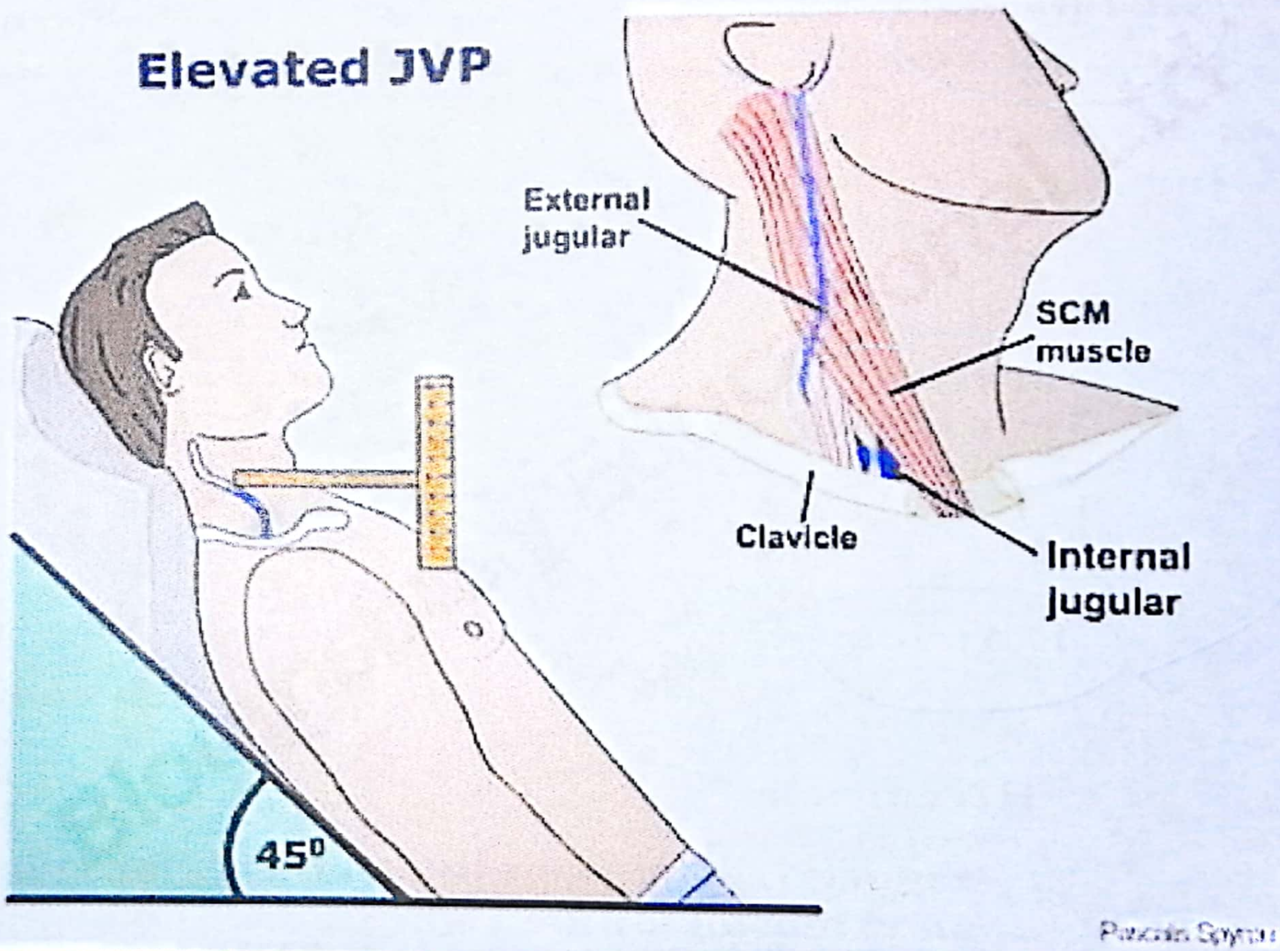
More than 9cm H2O

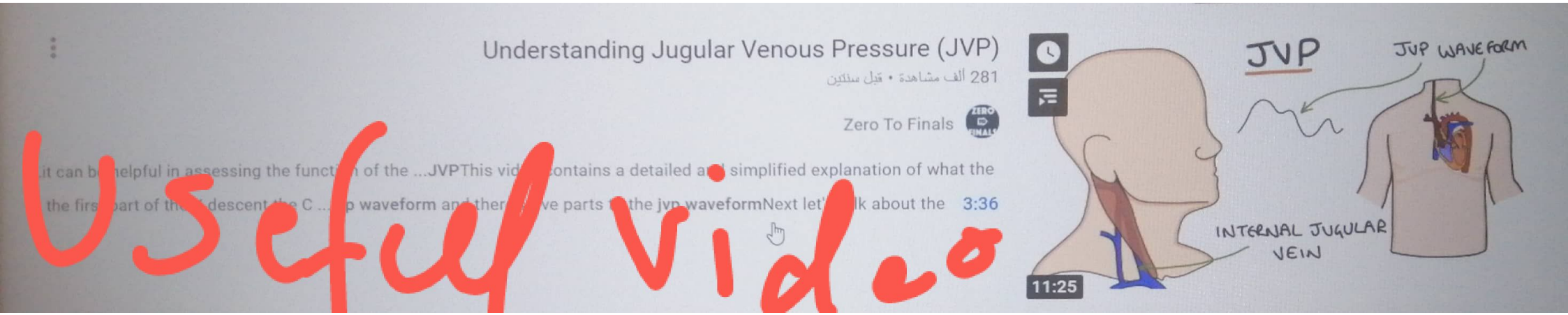
Elevated JVP

Elevated JVP :

- -Fluid overload
  The single most important sign of fluid overload
- -In HF, rt ventricular dilatation (acute PE & COPD
- -SVC obstruction : nonpalsatile & it no longer reflects rt atrial pressure , abdominojugular reflex : negative

SVC obstruction



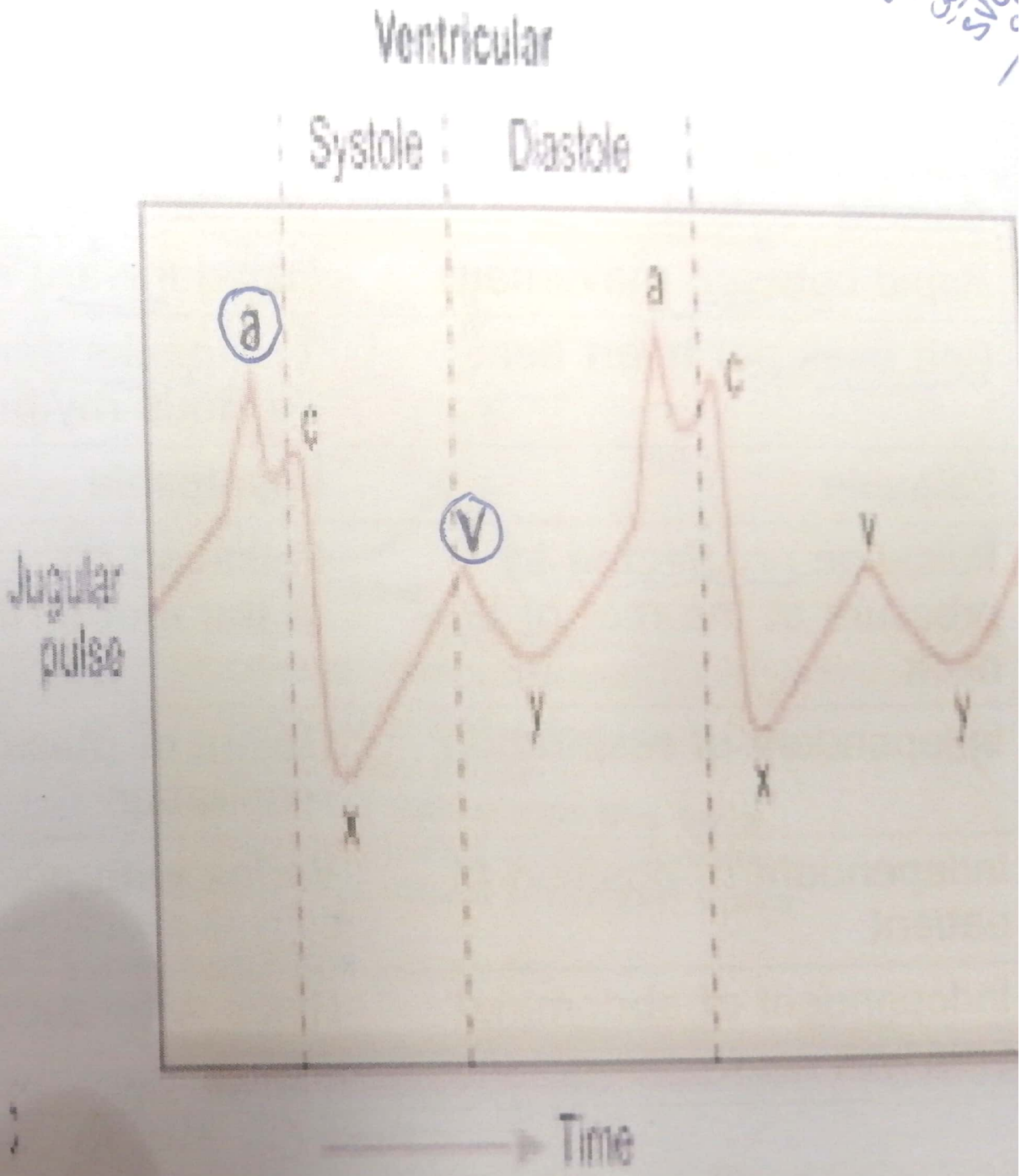


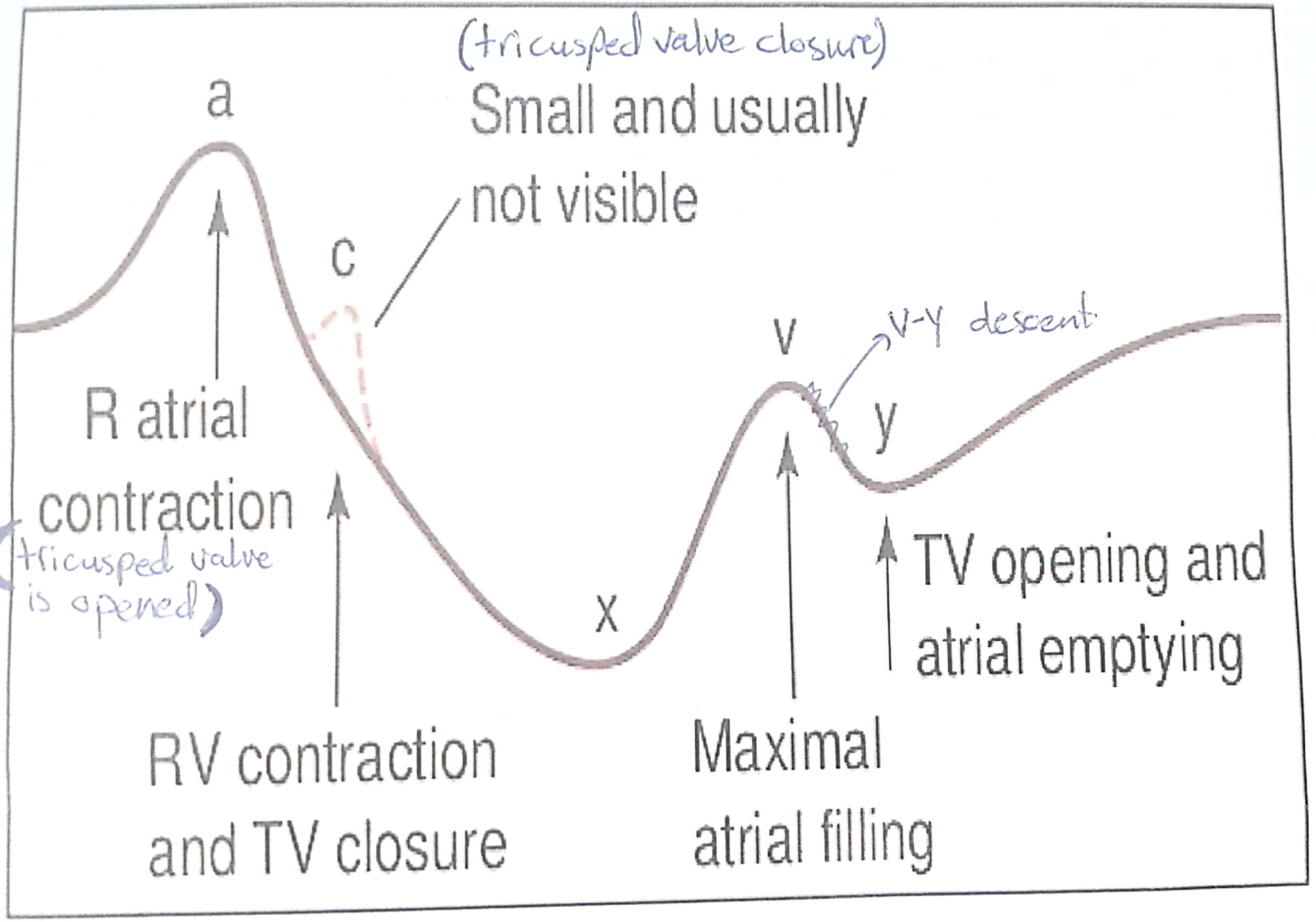
* JVP waveform

Two peaks per cycle

JVP waveform

- **'a' wave**: Rt atrial contraction, just before s1
- **'v' wave**: atrial filling during ventricular systole (tricuspid valve is closed)= peak pressure in rt atrium immediately before opening of tricuspid .
- 'c' wave: rare 3rd peak :closure of the tricuspd valve
- A-x descent: downward displacement of the tricuspid ring during systole
- V-y descent at commencement of ventricular filling



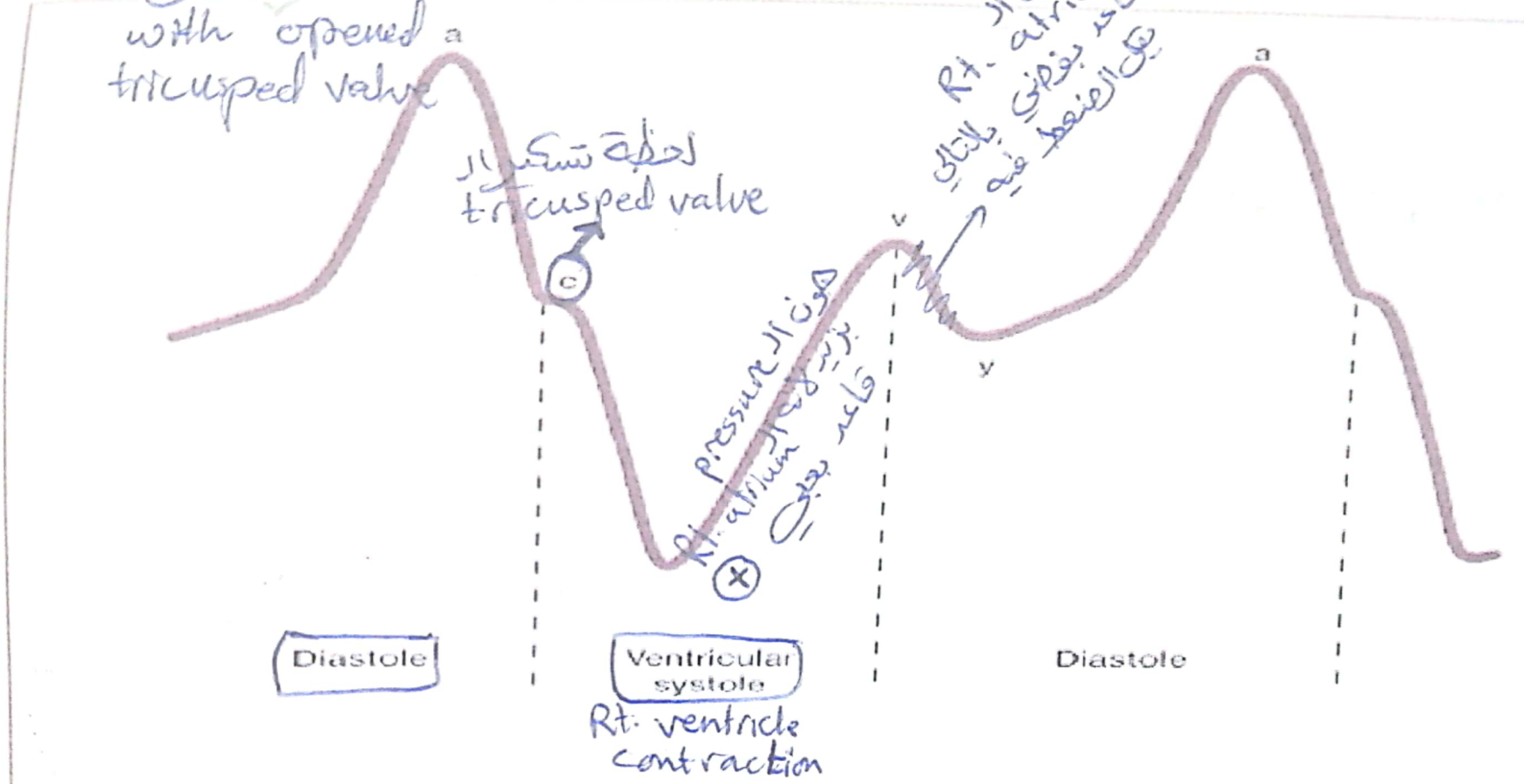


@→ atrial contraction with opened tricusped valve

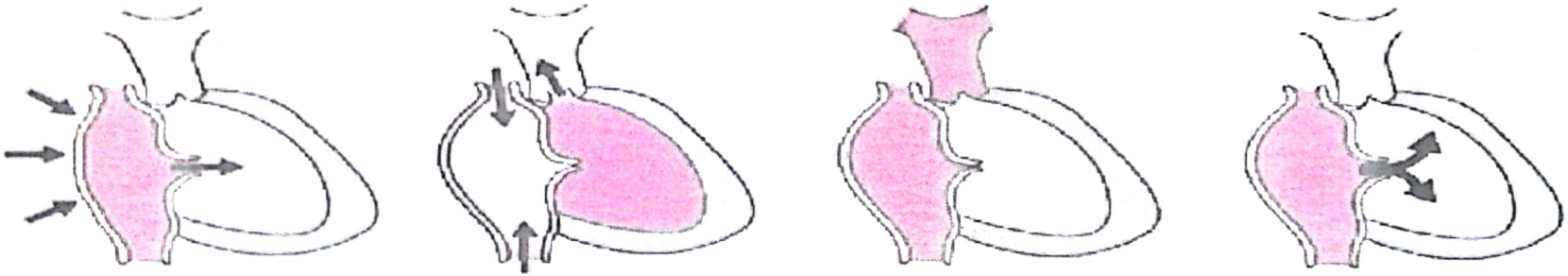
لحظة تسكير ال tricusped valve

صوت ال Rt. atrium واحد بتوقفي بالتالي بقل الضغط فيه

pressure صوت ال Rt. atrium بزيد وبتكرر قاعد بجيبي



Rt. ventricle contraction



a wave
Atrium contracting tricuspid valve open

x descent
Atrium relaxing then filling, tricuspid closed

v wave
Atrium tense, full; tricuspid closed

y descent
Atrium emptying, tricuspid open

The JVP and its waveform are affected by certain arrhythmias and cardiac conditions

Abnormalities of the jugular venous pulse

Condition	Abnormalities
Heart failure	Elevation, sustained abdominojugular reflux more than 10 seconds (BCs there is fluid overload)
Pulmonary embolism	Elevation * In PE there is Rt. ventricular dilation ⇒ ∴ ↑ pressure in the Rt. atrium ↳ ∴ ↑JVP
Pericardial effusion	Elevation → You will see flattened Y
Pericardial constriction	Elevation, Küssmaul's sign
Superior vena caval obstruction	Elevation, loss of pulsation ↳ بالتالي ال JVP مارح يقدر يعطيني فكرة عن ال central venous pressure.
Atrial fibrillation	Absent 'a' waves
Tricuspid stenosis	(huge) Giant 'a' waves ⇒ * لانه ال atrium رح يزود ال contraction تبعه against stenosed valve
Tricuspid regurgitation	Giant 'v' waves aka cv wave — الشرح اسفل
Complete heart block	Irregular Cannon' a waves

(*) Pericardial effusion: Pressure around the pericardium cause impaired filling ∴ ↑JVP

(*) Atrial fibrillation: المشكلة هون انو ال atrium ما بكون بعمل effective contraction بالتالي الاشي رح اختفى ال (a) wave

(*) بال tricuspid regurgitation:
بصير عنا الدم يرجع من ال Rt. ventricle لل Rt. atrium
خلال ال ventricular systole (ventricular contraction) ⇐ بالتالي رح يزيد
الضغط بال Rt. atrium ⇐ اذا رح تضخم ال (v) wave

* In complete heart block we have a-v dissociation
↓
يعني ال atria بتعمل contractions
↳ Not in synchrony with the ventricles.
(ممكن مثلا ال Rt atrium يعمل contraction
↳ against a closed tricusped valve)
هاد الحكي بعطي عالرسم Cannon (a) wave
يعني زي هيك

من الانترنت

↳ cannon (a) wave
This cannon a wave is regular (in) Junctional rythems
& irregular (in) complete heart block

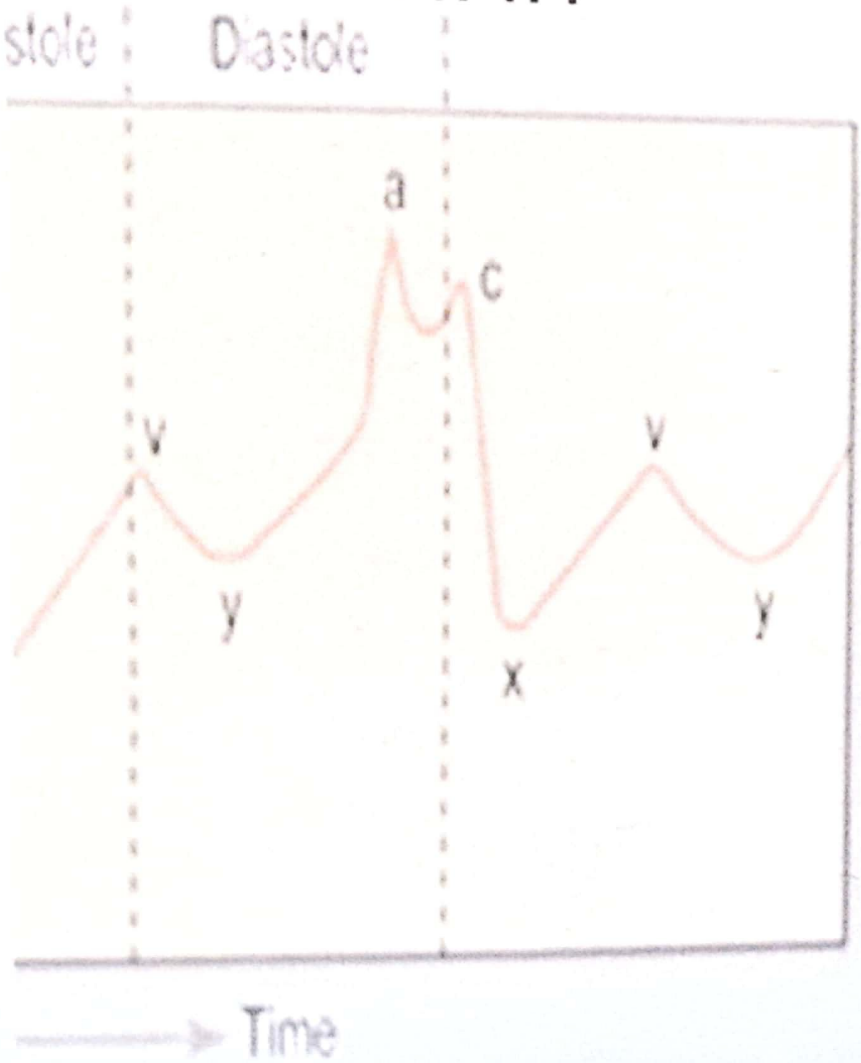
* المفروض بال inspiration تقل ال JVP
لكن بال Kussmaul sign ع الاشي ارتفع . وهاد بصير بسبب حدوث
change in the pressure around the chambers.

- **kussmaul sign** :
paradoxical rise of jvp on inspiration. constrictive (1) pericarditis, (2) tamponade, (3) severe rv failure , (4) restrictive cardiomyopathy

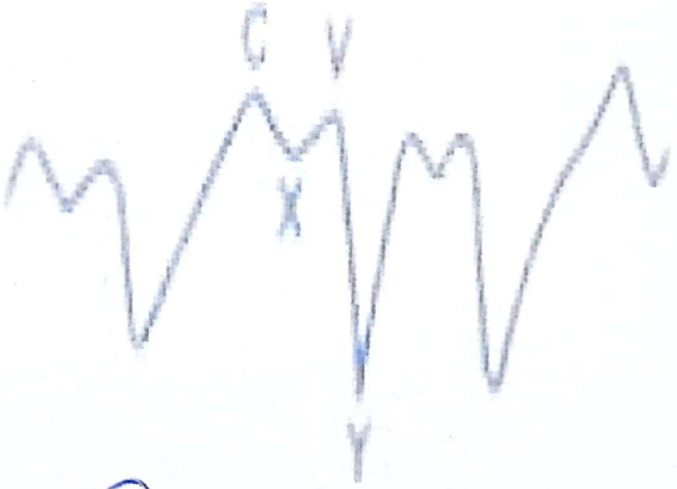
متى يحدث

- canon waves : regular (junctional rhythm , some ventricular & supraventricular tachycardias), irregular : complete heart block).

Atrial fibrillation

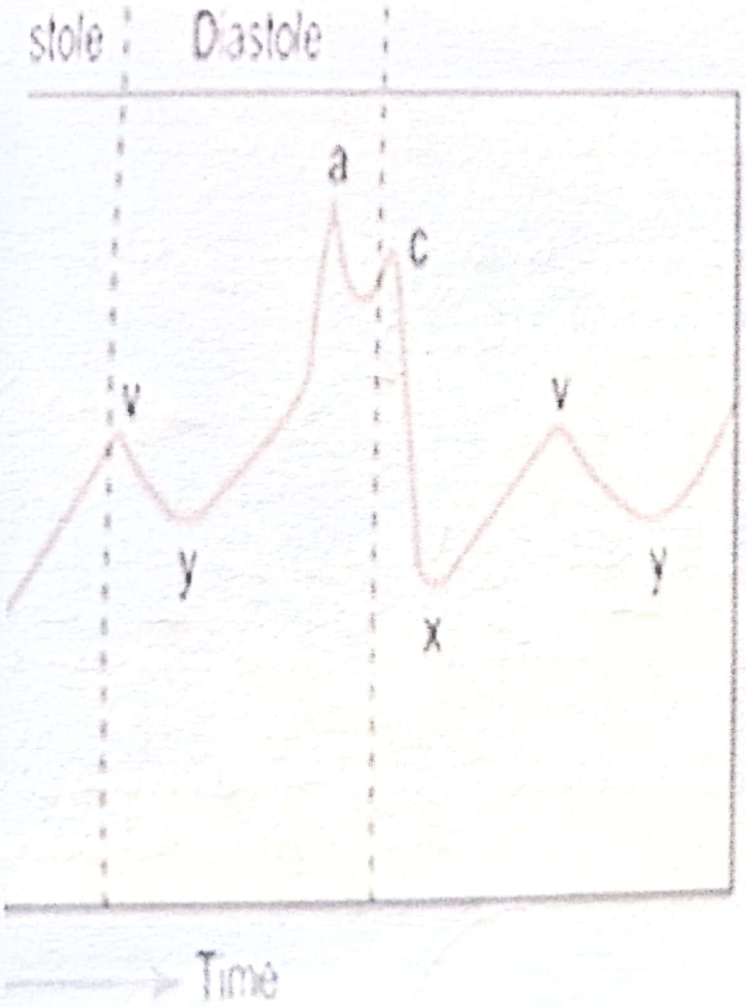


E. Atrial Fibrillation

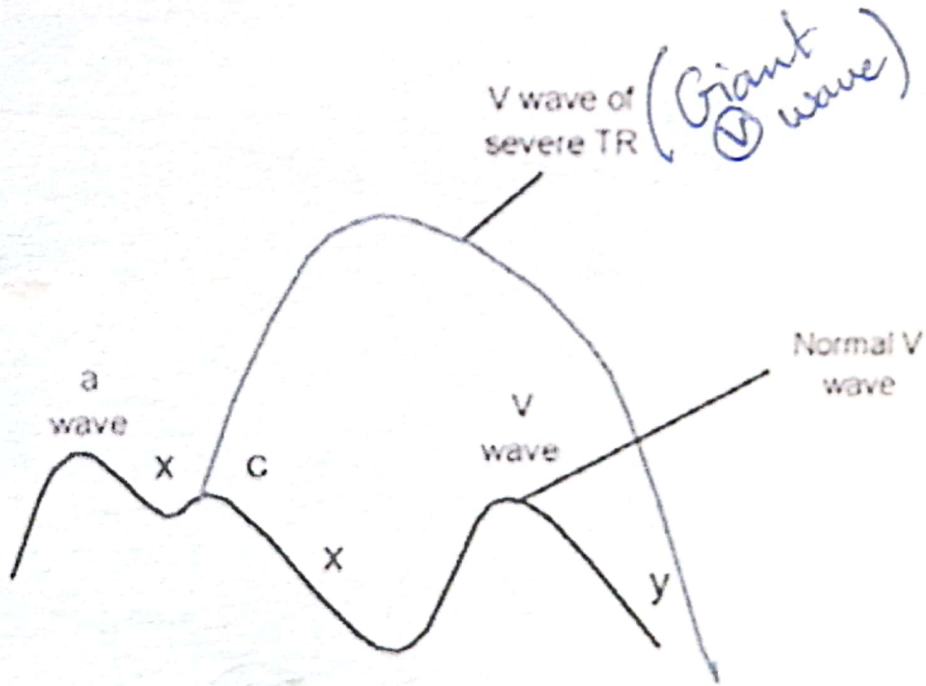


Loss of ⓐ wave.

Tricuspid regurgitation



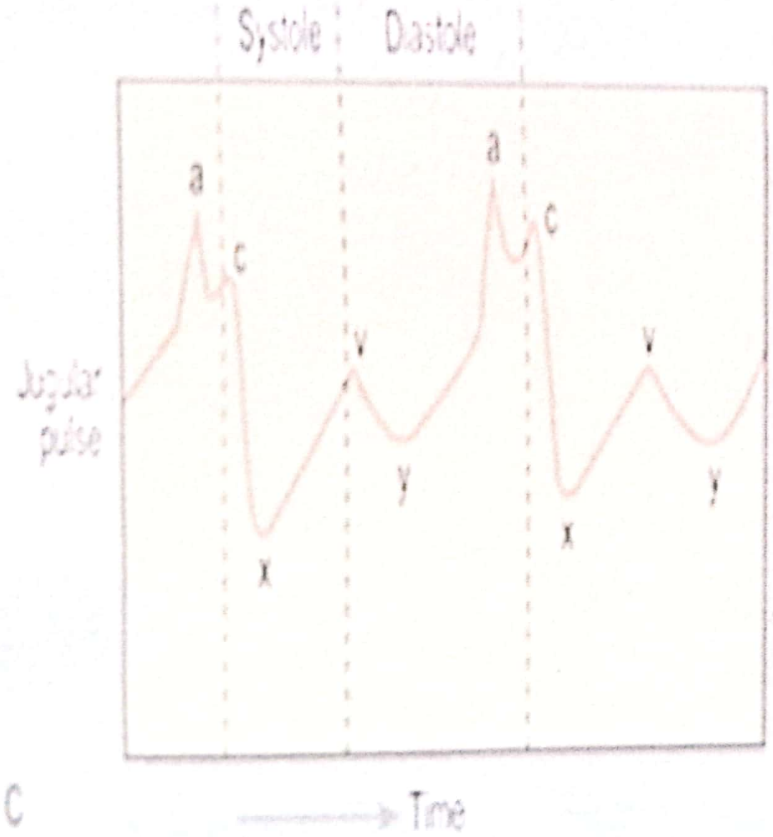
Giant v wave , aka cv wave , c &v fused resulting in a large systolic wave



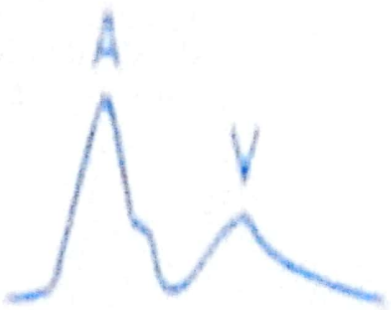
Tricuspid

stenosis

Ventricular

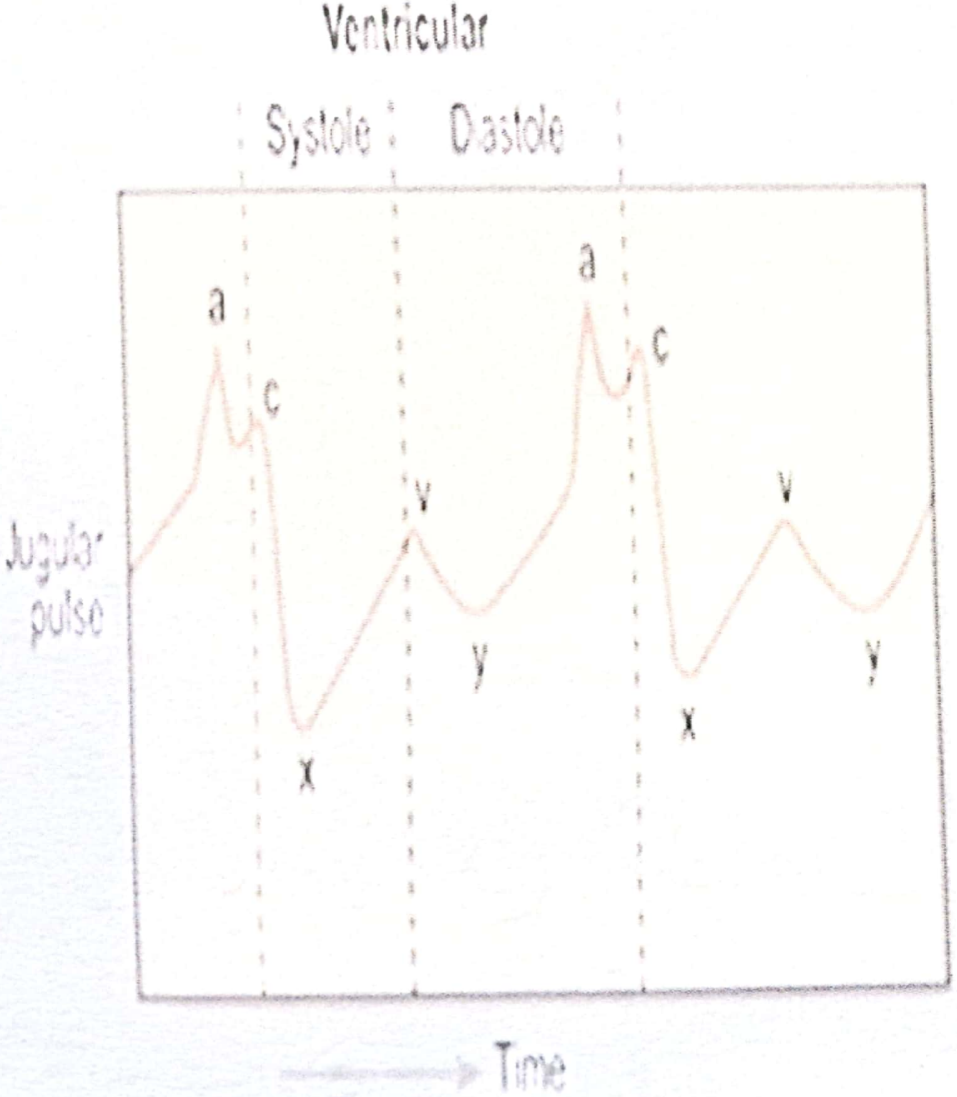


Tricuspid Stenosis

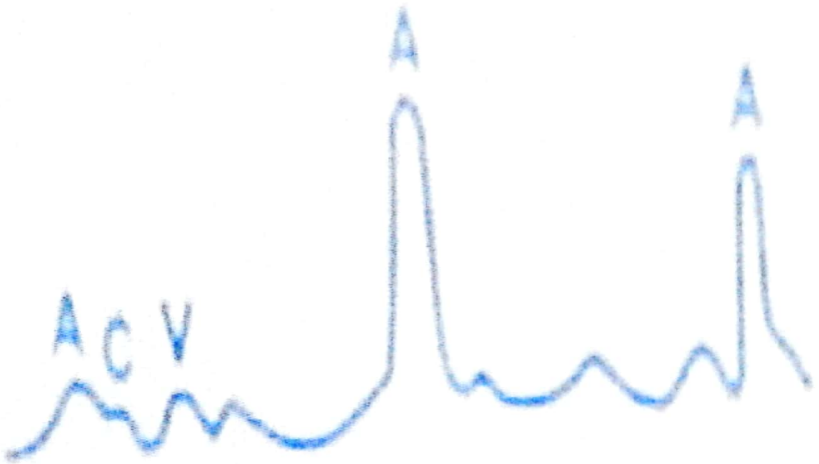


Giant @ wave

Complete heart block



G. Complete AV Block



Cannon @ wave.