Physiology lab (3)

Arterial pulse

&

Blood pressure

Arterial pulse

Note: This sign (**) beside any statement means that: the note is from instructor

Another important Note: the anatomical position is not important

The arterial pulse:

Is a pressure wave distending the arterial wall starting from *aorta* toward *peripherally.*

#It reflects the **number of heartbeat / minute.**

Most Common Parts that we can measure Arterial pulse from:

1) *Radial artery (wrist)*

2) Brachial artery (Elbow)

3) Common carotid artery (Neck)

**** *Arterial pulse may be measured in different parts peripherally, such as: Axillary, subclavian, popliteal .But Mostly in the common parts.*

Arterial pulse characteristic:

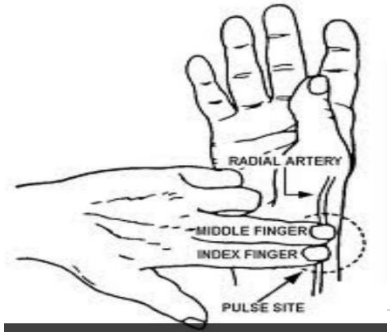
1) Heart Rate: beats/ minute.

2) Rhythm: regularity of interval .

3) Condition of artery: Soft or Hard.

4) Character of the pulse Wave.

"Radial Pulse"



To Measure:

1. **Place** the index and middle finger over the the wrist (Below the base of the thumb).

2**. Press** firmly with flat fingers until you feel radial artery.

#Usually, the radial pulse is used to assess:

1. *Heart Rate*: how many heart beat per second.
(One feels the beats at a pulse point like the inside of the wrist for 30 second and multiplies this number by two).

*** We multiply by 2 to make heart rate per minute and this is the smallest measuring unit.*

***Abnormal rate could be*: (important)**
☺Bradycardia: Below Normal (Below 60/minute)
☺Tachycardia: Above Normal (Above 100/minute)

2. *Rhythm:* (Regular or Irregular)

****We detect it depending on: The interval between each heart sound (dub/lub):*
-If it is fixed: The Rhythm is regular.
-If it is not (short, long, slow, fast): The Rhythm is irregular.

3. *Character of pulse*: weak or strong ☺

4. *Volume.*

*** 5. The condition of the artery.*

NOTE: these are an extra information from the Dr. they aren't included in the manual.

And she said don't memorize the anatomical position.

*** Brachial Artery:***

**it a branch of axillary artery medial to biceps tendon.

**How to detect it:

1. Ask patient to flex his/her arm.
2. The tendon of biceps muscle will appear.
3. Save the place of this tendon.
4. Ask the patient to relax his/her arm.
5. Put your index and middle fingers medially to the biceps tendon.

** *Common carotid artery* :

** It is a branch of subclavian artery.

**To measure:
1. Ask patient to rotate his/her face to against side.
2. Sternocleidomastoid muscle will appear.
3. Medial and anterior from this muscle you can detect common carotid artery.
**use 4 fingers to detect this artery.

Blood Pressure

****Blood pressure:** pressure exerted by blood among per unit of the area in the vessels wall.

#Measured in the peripheral artery of arm or leg.

#Usually measured in arm (in the brachial artery).
#An occluding pressure is applied to the surface of the limb through pneumatic cuff.

(Pneumatic cuff) = (sphygmomanometer) = (blood pressure cuff)
**** We *should put it in the arm above the cubital fossa (not cover the cubital fossa)*

Pneumatic cuff consist of:

1. Cuff: *rubber bag usually the* ***adult*** *size* ***(13 by 23 cm)***
***this number should be saved.*
2. Inflator: rubber bulb, consist of two valves to let the air move in one direction.
3. Pressure indicator: Hg manometer (we use it to know the level)

Types of pressure:

#***The systolic pressure***: **Maximum** pressure in artery during ventricular **contraction.**
#***The diastolic pressure***: **Minimum** pressure in artery during ventricular **relaxation.**

Blood pressure could be measured by:

☺*Palpatory Method* (systolic).
☺ *Auscultatory Method* (systolic & diastolic).
☺ *Observation* of maxim oscillation
(diastolic)

Palpatory Method (by sphygmomanometer):

1. Subject should relax for 5-10 minutes before having his blood pressure taken

2. Deflate the cuff and place it around the upper arm (it fits not too tightly).

3. If you are right handed >> you hold pump/bulb in your left hand (to inflate the cuff)

4. Hold it in the palm **so** your fingers can easily reach the valve at the top to open/close the outlet valve.

5. Observe palpate radial artery and inflate the cuff until radial pulsation no longer perceptible and take the manometer reading

6. Pressure is then reduced slowly until pulsation again appear

7. Manometer reading is taken as systolic pressure.

Auscultatory Method (blood pressure cuff & stethoscope).

Again::: subject should relax and rest for 5 to 10 minutes

1. Deflate the cuff and place it around the upper part of hand (not too tightly).

2. If you are right handed, you should hold the bulb/pump in your left hand to inflate the cuff.

3. Hold it in the palm so your fingers can easily reach the valve at the top to open/close the outlet valve.

4. Put the head of the stethoscope just under the edge of the cuff (above the crease of elbow).

5. Hold it firmly with your right hand.

6. Put the ear pieces of the stethoscope in your ears.

7. Inflate the cuff with brisk squeezes of the bulb

8. Watch the pressure manometer (for most **normal** adult people, you shouldn't need to go over 180mmHg).

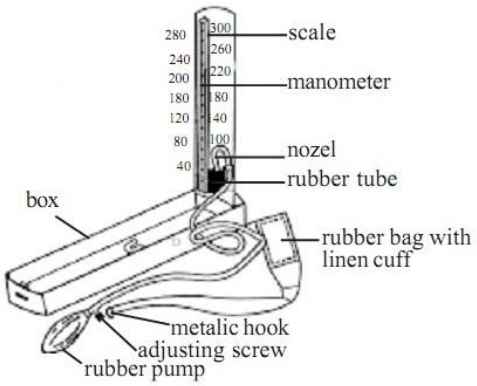
9. At 180mmHg, **<u>slightly</u>** open the valve on the air pump (it is important that you don't let the air out suddenly and not too slowly).

10. Pay attention to what you hear through stethoscope as the mercury column falls. The first time you hear the sound >> note the reading on the pressure manometer >> this value represent **systolic blood pressure**

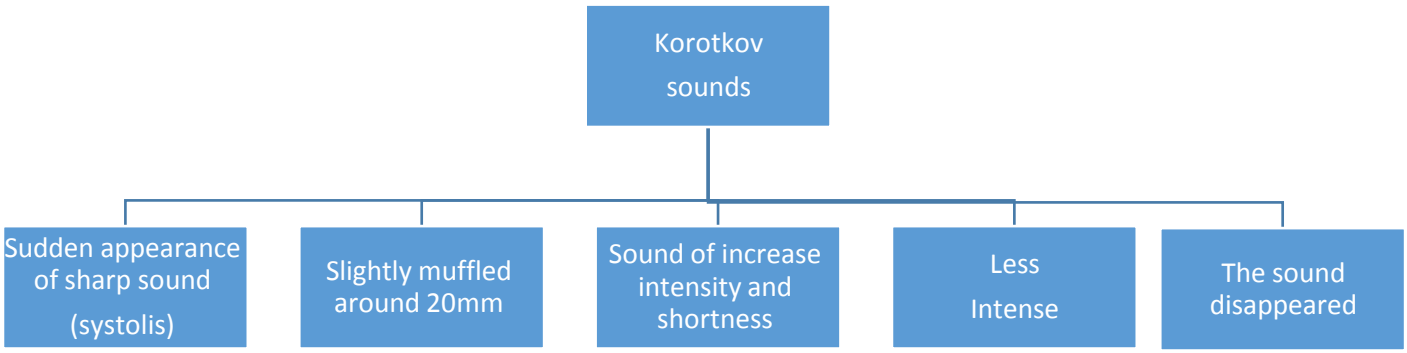
11. Sound will continue and become louder in intensity.

12. Note pressure reading when you hear the sound for the last time>>>this value represent **diastolic blood pressure.**

13. Open the air valve completely to release any remaining pressure.



Korotkov sound: The sound from the systolic until is disappeared is grouped into five phases.



Observation of maximum oscillation:

As pressure is let down from systolic level, oscillation in manometer gradually increase to maximum and the decline. Pressure in cuff at maximum oscillation said to coincide with diastolic pressure.

Good Luck

Don't wait for the perfect moment take the moment and make it perfect!