

Hematology

4- Blood film examination

Thin blood film examination use for describing RBCs

Thick blood film use to calculate wbcs types and for detection of malaria parasite and microfilaria.

- **Eosinophiles:** nucleus 2 lobes red-blue cytoplasm with course granules.
- **Neutrophile:** nucleus 2-5 lobes, orange cytoplasm with fine granules.
- **Basophile:** nucleus 2 lobes pink cytoplasm.
- **Monocyte:** big nucleus like hoarse shoe.
- **Lymphocyte:** oval or spherical nucleus.

Prepare blood film:

- 1- Warm for 10 min.
- 2- Fixation.
- 3- Stain with leishman stain (1-2 min).
- 4- 2 fold volume of acidic buffer (6.8) added to the slide 10 min.
- 5- Examine under h.p.f.

Leishman stain (0.15 leishman powder +100 ml methyl alcohol) -- warm (15min.) + regulatory shaking.

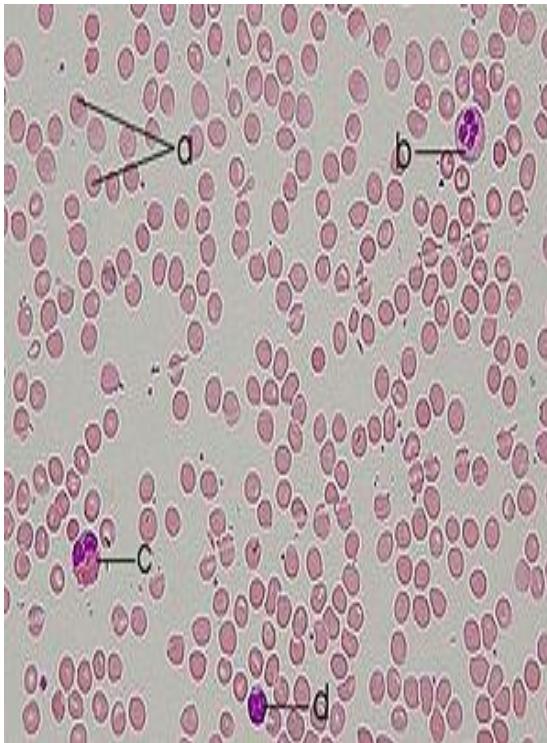


Figure (1): Human Blood smear:
a – Erythrocytes; b – Neutrophil;
c – Eosinophil; d – Lymphocyte

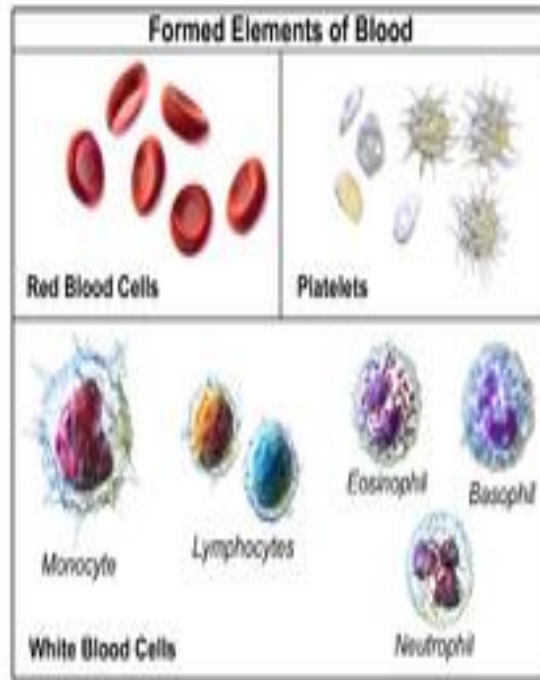


Figure (2): Elements of blood

- Blood count:

1- WBCs count:

The normal values:

Men: 4000 - 11000.

Women: 4000 - 11000.

Children: 4500 -25000.

Infant: 10000-25000.

Prepare WBCs count:

- 1- 0.02 ml of blood (from vein or from finger tip in red tube)
- 2- Add 0.4 ml WBCs material.
- 3- after 10 min ----- counting in specific chamber (count the number in 4 squares X50).

WBCs material: (1.5ml glacial acetic acid + 1 ml of gentian violet + 98 ml of DW).

2- RBCs count:

The normal values:

Men: 4500000- 6500000.

Women: 3900000- 5600000.

Children (10-12years): 4200000- 5200000.

Children (1year): 3600000- 5500000.

Infant: 4500000-5600000.

Prepare RBCs count:

- 1- 0.02 ml of blood (from finger tip in red tube).
- 2- Add 4 ml of RBCs material.
- 3- after 10 min ----- calculate number in 5 small squares x 10^4 .

RBC's material :(3gm sodium citrate + 1 ml formalin +100 ml DW).

3- Platelets count:

The normal values:

(140-400) x 1000.

Thrombocytopenia: (lowered platelet count) it may be as a result to drugs (Cortimoxazole), viral infection, leukemia, etc....

Thrombocytosis: (raised platelet count) it may be as a result to acute hemorrhage, etc.....

Prepare Platelets count:

- 1- 0.02 ml of blood (from vein (preferable) or from finger tip after putting a vasillan on the finger to prevent platelets destroying)
- 2- 1% ammonium oxalate-putting on slid chamber.
- 3- Calculate number in 5 squares x 1000.

- Bleeding time:

For determination the platelet functions and healing process of vascular wall.

- 1- Clean the ear lobe with alcohol.
- 2- Put slide behind ear to fix it during the puncture.
- 3- After puncture we will calculate the bleeding time.
- 4- Let the blood bleed on filter paper (drop beside drop).
- 5- Repeat this step every 30 seconds until the bleeding stop.

Normal: 6-10 min.

- In suspected cases of a bleeding disorder the bleeding may not be controlled easily from ear lobe hence finger tip puncture wounds are better.

- If bleeding persist for more than 15 min., it should be stopped by placing a dry gauge sponges over the site and applying finger pressure.

- Clotting time:

1- Blood from finger tip or ear lobe collecting on capillary tube with blue end (without heparin).

2- Warm the capillary tube and move it up and down.

3- Determine the time when blood movement will stop.

Normal: 1-3 min.**- Plasma fibrinogen:**

We use this test to diagnose if the embryo is still alive or died. Its very important test for the pregnant woman because it's very dangerous on her life

Procedure

1- Take two capillaries of blood (heparenised).

2- Put one of the two capillaries in haematokrit centrifuge for 5 min. at 3000 rpm.

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3. Take this capillary and put it in a water bath (56 c for 30 min.).
4. Take the capillary and put in the same hematokrit Centrifuge for 5 min.
5. Take the capillary to the compound microscope and make the calculations.