Blood film preparation

A blood film or peripheral blood smear is a thin layer of blood smeared on a microscope slide and then stained in such a way to allow the various blood cells to be examined microscopically. Example of properly prepared thick and thin film blood smears

Aim of blood film

• Blood films are usually examined to investigate hematological problems (disorders of the blood) and, occasionally, to look for parasites within the blood such as malaria and filaria.

• Examination of thin blood films is important in the investigation and management of anemia, infections, and other conditions which produce changes in the appearance of blood cells and differential white cell count.

• A blood film report can provide rapidly and at low cost, useful information about a patient's condition.

Types of blood film are:

1. Thin blood film

2. Thick blood film

1) THIN BLOOD FILM

Thin PBF can be prepared from anti-coagulated blood obtained by venipuncture or from free flowing finger prick blood by any of the following three techniques :

1. Slide method

2. Cover glass method

3. Spin method

- **Slide Method Procedure**
  - Place a drop of blood in the center of a clean glass slide 1 to 2 cm from one end.
  - Place another slide (spreader) with smooth edge at an angle of 30-45º near the drop of blood.

- Move the spreader backward so that it makes contact with drop of blood.
- Then move the spreader forward rapidly over the slide.
- A thin peripheral blood film is thus prepared, Dry it and stain it.

2)THICK BLOOD FILM

This is prepared for detecting blood parasites such as malaria and microfilaria. Procedure:

- Place a large drop of blood in the center of a clean glass slide.
- Spread it in a circular area of 1.5 cm with the help of a stick or end of another glass slide, Dry it and Staining.

Qualities of a Good Blood Film

- It should not cover the entire surface of slide.
- It should have smooth and even appearance.
- It should be free from waves and holes.
- It should not have irregular tail.

The thickness of the spread when pulling the smear is determined by :

1. The angle of the spreader slide. (the greater the angle, the thicker and shorter the smear).

2. Size of the blood drop.

3. Speed of spreading.

Common cause of a poor blood smear:

1. Drop of blood too large or too small

2. Spreader slide pushed across the slide in a jerky manner

3. Failure in keep the entire edge of the spreader slide against the slide while making the smear

4. Failure in keep the spreader slide at a 30º angle with the slide

5. Failure to push the spreader slide completely across the slide

6. Irregular spread with ridges and long tail: edges of spreader dirty or chipped ; dusty slide

7. Holes in film – slide contaminated with fat or grease and air bubbles

8. Cellular degenerative changes: delay in fixing inadequate fixing time or methanol contaminated with water.

Biologic causes of a poor smear :

1. Cold agglutinin - RBCs will clump together. Warm the blood at 37° C for 5 minutes, and then remake the smear.

2. Lipedema - holes will appear in the smear. There is nothing you can do to correct this.

3. Rouleaux - RBC's will form into stacks resembling coins. There is nothing you can do to correct this.