



Morphological Neutrophils is most and lymphocyte least commonly effected hematological cells on peripheral blood smear after long duration steroids therapy for patients

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Abstract

Aims & Objectives: Identify and exclude the misinterpretation of peripheral blood smears examination .Identify the steroid induced RBC & WBC morphological artifacts. Identify the steroids induced platelets related changes.

Material & Methods: Blood was collected in a sterile EDTA containing tube and processed following our established laboratory protocol .A complete blood counting including HB%,PCV, Red cell indices ,platelet count and total white cell count and differential was done by Automated blood cell counter and peripheral blood smear examination then a sterile EDTA containing blood sample tube stored at room temperature. The all cell count indices including RBC,WBC count with differential along with morphological storage artifacts and platelet count with storages artifacts , was further confirmed by manual oil immersion smear study method. Peripheral smears study was done with field A and B stain and leishman stain.

Conclusion: Steroid cause the various morphological changes in peripheral blood cells encountered on peripheral blood smear examination when smear prepared from prolong steroid therapy. Steroid cause WBC morphological and platelets related artifacts .These artifacts lead to various misinterpretation of peripheral blood smear examination so exclude them.

Keyword: RBC, steroid, Platelets aggregation.

Material & Methods

Study area and design- This present study was conducted at the advanced *institute of medical sciences and research Bhopal and associated referral hospital Bhopal mp*. The study was designed as a observational retrograde with prospective hospital based study over a period of time from 2014 to 2017.

Ethical consideration- Blood was collected in a sterile EDTA containing tube and processed following our established laboratory protocol then generates the report of each patient. Take informed consent was obtained from all study participant for use of your blood sample for medical research after doing physician request investigating and generate the report.

Patient’s selection criteria-The study target random selection of those patients who have taken steroid therapy from last long duration. We include both OPD and IPD patients with all age groups, male and female both gender for study. Sample size is 100 patients.

Laboratory investigations Blood was collected in a sterile EDTA containing tube and processed following our established laboratory protocol. A complete blood counting including HB%, PCV, Red cell indices, platelet count and total white cell count and differential was done by Automated blood cell counter and peripheral blood smear examination then a sterile EDTA containing blood sample tube stored at room temperature. The all cell count indices including RBC, WBC count with differential

along with morphological changes was further confirmed by manual oil immersion smear study method. Peripheral smears study was done with field A and B stain and leishman stain. Smear prepared from prolong stored sterile EDTA containing blood sample tube at room temperature.

Complete Blood Count (CBC) And Peripheral Smear.

Procedure:

1. Specimen is collected into EDTA (purple) vacutainer. (5 or 7ml volume)

Preparation of peripheral blood smear from prolong stored sterile EDTA containing blood sample tube at room temperature .

Step 1. A small drop of venous blood is placed on a glass microscope slide, using a glass capillary pipette.

Step 2. A spreader slide is positioned at 45° angle and slowly drawn toward the drop of blood.

Step 3. The spreader slide is brought in contact with the drop of blood and is being drawn away.

Step 4. The spreader slide is further pulled out, leaving a thin layer of blood behind.

Step 5. The blood smear is nearly complete.

Step 6. End result will be a glass slide with a well-formed blood film. After drying for about 10 minutes, the slide is fixed in methanol & stained with field A and B stain..

A well-made peripheral smear is thick at the frosted end and becomes progressively thinner toward the opposite end. The “zone of morphology” (area of optimal thickness for light microscopic examination) should be at least 2 cm in length. The smear should occupy the central area of the slide and be margin-free at the edges.

Hematological examination- Hematological examination including HB%, PCV, Red cell indices, platelet count and total white cell count with differential count should be done on peripheral smears stained with field A and B

stains.

Observation & Discussion Organophosphorus toxicity induced RBC changes.

RBC changes	Misinterpretation on peripheral blood smears examination	Total Cases (n=100)	
		No.	%
Acanthocytes	RBC crenations	60	60.00 %
Spherocytes with central pallor	Heredity Sherocytosis	40	40.00 %

WBC changes

WBC cells	WBC Changes	% (n=100)
Neutrophils	Detected nuclear fragment . Hypolobulation Degeneration	58.00 %
Monocytes	Nuclear under goes disintegration.	28.00 %
Eosinophils	Degeneration	08%
Lymphocyte	Mild changes	06%

The factorial ANOVA mode lwith Tukey's test was used for statistical analysis and an alpha error of 5% (p-value < 0.05) was considered acceptable. In relation to gender, significant differences were observed for Steroid induced morphological blood cells changes. In regards to age, there were significant differences in the values for Steroid induced morphological blood cells changes comparing the under 10-year-old age group to the other age groups except for the all age group

Conclusion: Steroid cause the various morphological changes in peripheral blood cells encountered on peripheral blood smear examination when smear prepared from prolong steroid therapy . Steroid cause WBC

morphological and platelets related artifacts .These artifacts lead to various misinterpretation of peripheral blood smear examination so exclude them.

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