ISSUE
14
June
2021

QSP Monthly

HORIBA Medical

NEWSLETTER OF THE QUALITY SLIDE PROGRAM

This issue

Last Month's Slides

Side 1
See case study on right

Slide 2
Neutrophilia, monocytosis, presence of blasts. ?CMML/AML

Slide 3
Erythroblastosis, Basophilia, platelet anisocytosis.
? Myeloproliferative

Slide 4
Nothing abnormal noted

Slide 5
Nothing abnormal noted

Slide 6
Nothing abnormal noted

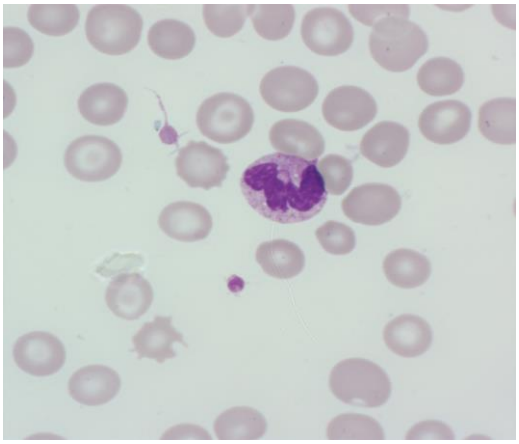
Monthly Digital Case study
May 2021

Presentation
Female (39 years old)

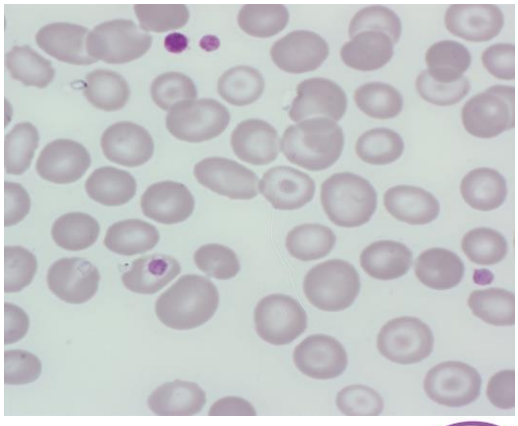
FBC Results

WBC	4.57 (10^3/mm3)
RBC	2.74* (10^6/mm3)
HGB	9.6* (g/dL)
HCT	26.8* (%)
MCV	98 (fL)
MCH	35 (pg)
MCMH	35.9 (g/dL)
PLT	196 (10^3/mm3)
Neutrophils	74.9
Lymphocytes	8.3
Monocytes	5.6
Eosinophils	1.9
Basophils	6.5

Anaemia assessment



Anisocytosis



Target Cells

Slide review
Lymphopenia.
Presence of target RBCs.
Expert comment:
There seems to be spherocytes (maybe an aspect of dimorphic red cell population).
Reticulocytes result ?

QSP Quality Slide Program 2.0

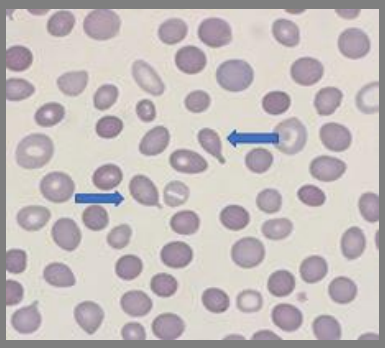
Webinar on morphology

Our recent webinar on **"An Introduction to Morphology"** which includes a demonstration on how to use QSP in training is now available on demand

Watch it here

Monthly Quiz

Look at the slide and choose the correct red cell from the multiple choice below:



A) Spur Cell

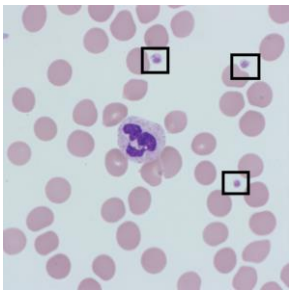
B) Target Cell RBC

C) Tear drop cell

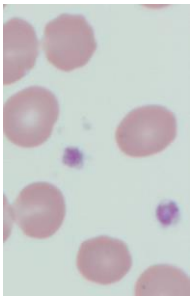
D) Sezary Cell

Platelets and counting methodology

Platelets are small (1.5 – 3 um in diameter) anucleate cells which can be seen in the spaces between the red cells. Platelets contain fine azurophilic granules. Down the microscope platelets can appear quite mundane and boring, but they are packed full of important granules that are essential for haemostasis and wound healing.



Platelets (denoted by box)



2 Platelets greater magnification

Platelet are formed in the cytoplasm of Megakaryocytes in the bone marrow through a complex process including endomitotic development of the Megakaryocyte until finally proplatelets are formed which extend into sinusoidal blood vessel where platelets bud off and enter the blood stream.

The normal adult range for platelet is 150 - 400 x10^9/L with a low platelet count being a cause for concern due to the increased likelihood of excessive bruising and or blood loss.

Platelets are essential in primary haemostasis and rapidly form a loose platelet plug to stop blood loss at the site of blood vessel injury. Exposure of the subendothelial tissue causes the adhesion of platelets to the damage due to the lack of production of platelet function inhibitors. Platelet activation then occurs causing the platelets to release potent activation factors such as ADP which leads to further recruitment and activation of platelets. Activated platelets bind fibrinogen which acts as bridge between platelets causing platelet aggregation. Exposure of tissue endothelium initiates the plasma coagulation cascade which together with the aggregated platelets forms a firm clot.

The normal Mean Platelet Volume (MPV) is 7.4 – 12 fL with immature platelets having a higher MPV. Platelets and red cells are counted using aperture impedance technology with Platelets and red cells separated by a moving threshold based on the volume of the cell. Microcytic red cells or red cell fragments may interfere with the platelet count as they may share the same volume range of platelets and in such cases the analysers detects their presence around the threshold area.

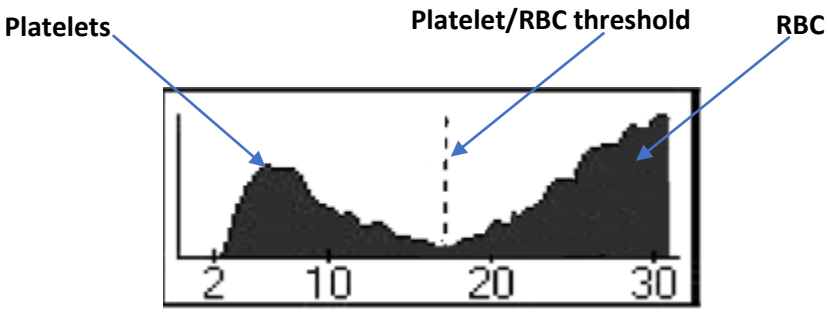
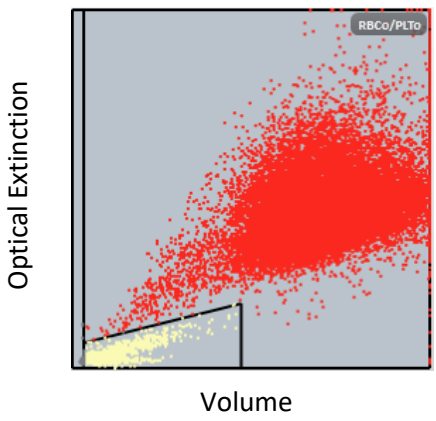


Diagram to show RBC interference in the area of the Platelet/RBC threshold

If such instances occur on a Yumizen H2500 analyser, an optical platelet count will be automatically reflexed and reported alongside the aperture impedance count.

In the optical platelet count method the cell is passed through the same flow cell as used in the LMNE channel for the WBC differential. Since an optical light source is used, rather than a laser, it is possible to measure the optical extinction which includes both conventional light absorption and light scatter. The optical extinction enables a better understanding of the internal components of the cell and allows discrimination of the type of cell with the same volume.

The optical extinction is plotted against the volume of each cell and a moving threshold separates the red cells from the platelets (yellow).



An additional red cell count is performed in the RBC/Plt chamber using aperture impedance. The optical platelet count is calculated using the ratio of Plts/RBC from the optical platelet count multiplied by the RBC from the aperture impedance.

Biomedical Science Day 2021

The **Biomedical Science Day 2021** was celebrated on 24th June. A day to say a big THANK YOU to the Biomedical Scientists, Clinical Scientists and laboratory staff out there who are in the heart of healthcare, by performing vital analyses and are involved in over 70 per cent of diagnoses.

QSP 2.0

Available as a single use license and a site license which allows up to **50** concurrent users. To find out more, contact us

Bibliography

Medical Laboratory Haematology

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