ISSUE
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HORIBA Medical

QSP Monthly

NEWSLETTER OF THE QUALITY SLIDE PROGRAM

This issue

Last Month's Slides

Slide 1
Neutrophilia. Discrete myelemia. Anaemia. Microcytic anisocytosis (+). Spherocytes (+). Hypochromia (+). Target RBCs(+). Echinocyte.

Slide 2
See Slide Review on Right

Slide 3
Oncology department. Neutrophilia (often vacuolated neutrophils). Anaemia. Thrombocytopenia. Myelemia. Monocytosis. Expert comments: Very atypical neutrophils: abnormal nuclei.

Slide 4
Presence of blasts- immature chromatin. ALL

Slide 5
Neutrophilia

Slide 6
Normal for neonatal case

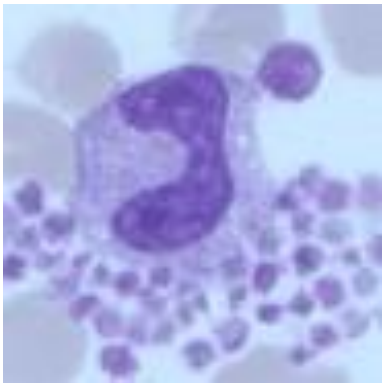
Monthly Digital Case study
September 2021

Presentation
Male, 69 years old

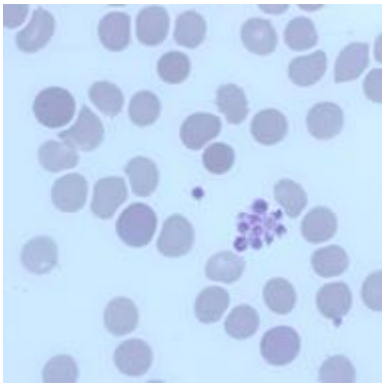
FBC Results

WBC 15.1 (10^3/mm3)
RBC 2.85 (10^6/mm3)
HGB 9.0 (g/dL)
HCT 25.7 (%)
MCV 90.0 (fL)
MCH 31.6 (pg)
MCMH 35.0 (g/dL)
PLT 41.0 (10^3/mm3)

Neutrophils 76.1%
Lymphocytes 7.1%
Monocytes 5.1%
Eosinophils 0.0%
Basophils 0.0%



Platelet clumping

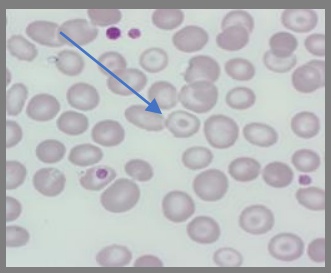


Slide review
Neutrophilia. Anaemia. False thrombocytopenia due to aggregation of platelets (+++). Platelet control to be requested on citrate sample. Expert comment: Need to check leukocyte results of the analyser (interference possible with platelet aggregates).

QSP Quality Slide Program 2.0

Cell Quiz

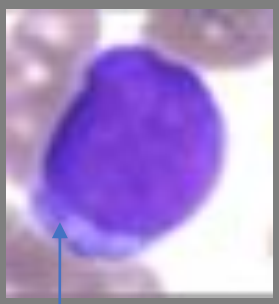
Look at the slide below, can you name the cell? What possible clinical details would this patient likely have?



Choose from the below options:
A) Glandular fever
B) Nothing Abnormal
C) Thalassaemia

Last Month's Cell Quiz

Can you name the structure seen in the slide below? CLUE: Often found in Myeloid Blast Cells during acute myeloid leukaemia.



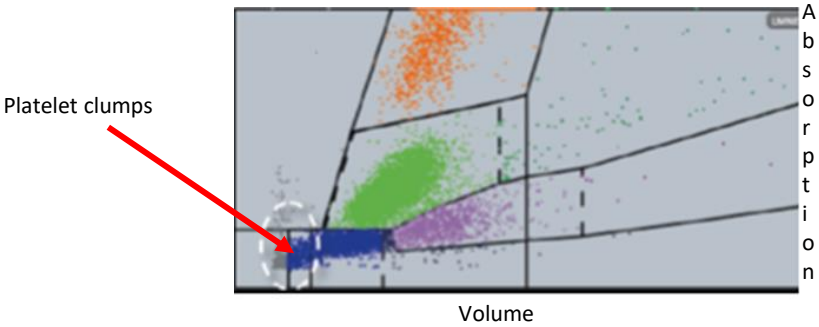
Auer rods

Answer: Auer rods.

Auer rods azurophilic, needle shaped cytoplasmic inclusions. They are made up of fused lysosomes and are rich in lysosomal enzymes.
Auer rods are found in myeloid blast cells of some cases of acute AML, high grade myelodysplastic syndromes and myeloproliferative disorders.

Platelet Aggregation continued

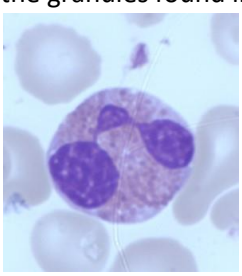
Platelet clumping may be caused by the activation of platelets during a traumatic venepuncture and EDTA antibodies reacting with platelet glycoprotein IIb/IIIa. Platelet clumps are made up of a combination of apparently intact platelets and degranulated, pale grey platelets (see images above fig 1 & 2).
A low platelet count should always be investigated. Primarily check the sample for the presence of a clot. In its absence, it is essential to examine a blood film carefully for the presence of platelet aggregates, or a true low platelet count.
The HORIBA Yumizen H1500/H2500 series of analysers can detect the presence of platelet aggregates and exclude them from the reported white cell count.
Fig. 1: typical Differential (LMNE) plot from a sample with platelet clumps

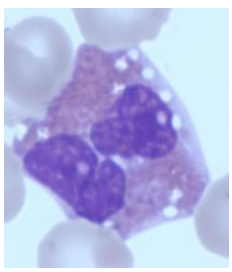


The platelet clumps are detected in the area to the left of the lymphocyte cloud which is also the area where Nucleated Red Blood Cells (NRBC) are enumerated. Platelet clumps may also be found in the noise area (cells in grey) any events in the noise area are excluded from the White Cell Count (WBC). The absorption of platelet clumps and NRBC are different and can therefore be discriminated, allowing the analyser to exclude the platelet clumps in this area, thereby giving a Total Nucleated Cell (TNC) which can be corrected for the presence of NRBC. Where platelet clumps are detected by the analyser, the sample will be flagged accordingly.

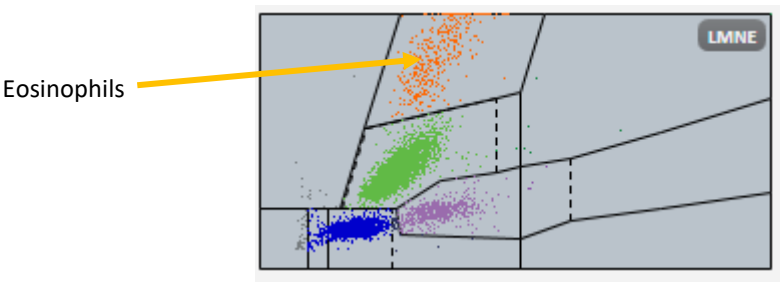
Eosinophils

Eosinophils were first described by Paul Ehrlich in 1879 due to their characteristic staining with acidophilic dyes and their increased presence in patients with asthma and helminth infection. The normal adult value for Eosinophils is 0.02 – 0.7 x 10^9/L (0.5 – 1%) . For approximately 100 years it has been known that Eosinophils are associated with allergic disease. At this time Eosinophils are known to be associated pathologically with asthma, atopic dermatitis, allergic rhinitis, eosinophilic gastroenteritis, and certain diseases of the eye.
Eosinophils are slightly larger than Neutrophils with a diameter of 12-17 um. The nucleus is usually bilobed, but sometimes the nucleus may be trilobed. Eosinophil granules are plentiful, pack the cytoplasm, spherical and a lot larger than the granules found in Neutrophils.





On the HORIBA Yumizen series of analysers Eosinophils are counted in the LMNE flow cell and characteristically occupy the upper part of the LMNE plot.



Eosinophils develop in the bone marrow and after about 8 days development they enter the blood circulation. The major contributing factor in Eosinophil development is Interleukin 5 (IL-5). Once in the blood stream, they transit to tissues such as the lungs.

Eosinophils are major effector cells in the immune system and play a pivotal role in the body's defence against nematode and other parasitic infections. Hover Eosinophils can also be damaging as part of the inflammatory response to allergic disease. Upon activation Eosinophils release highly toxic granule proteins and free radicals, which can kill invading micro organisms and parasite but can also cause significant tissue damage in allergic reactions. Activation of Eosinophils also causes the synthesis of chemical mediators e.g prostaglandins, leukotrienes and cytokines, thereby amplifying the inflammatory response by activating epithelial cells and recruiting more Eosinophils and leukocytes. Exposure to these activation products for an extended time period can damage the tissue/organ directly.

An increase in Eosinophils can be caused by the following:
Allergies and asthma, Drug Allergy, Infections (mostly parasitic), Autoimmune disorders, Endocrine Disorders.

Prolonged Eosinophilia may induce tissue damage and is termed as Hypereosinophilic Syndrome (HES), if the eosinophil count remains greater than 1.5 x 10^9/L for a period of 6 months. Any organ can be affected by HES the most commonly affected being the heart, central nervous system, skin and respiratory tract.

National Pathology Week 2021

From 1st to 7th of November we will celebrate the **National Pathology Week**. A celebration to highlight the tremendous contribution of pathologists to healthcare. This year's theme is "All Together Now".

At HORIBA we are proud to be supporting them with our broad range of haematology analysers that are used in patient diagnosis, monitoring and support other healthcare procedures and treatments.

QSP 2.0

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