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Last Month's Slides

Side 1

Presence of a blastoid cell population, Immature chromatin, High nuclear-cytoplasmic ratio. Discretely nucleolated nuclei, Basophilic cytoplasm rarely with a few vacuoles.

Immunophenotyping of blasts requested.

Expert comment: Dysplastic PMNs. Appearance in favour of an AML.

Slide 2

Hyperlymphocytosis associated with "smudge" cells.

Atypical lymphoid population identified with a cleaved nucleus.

Phenotyping of circulating lymphocytes requested.

Expert comment: Leukaemia phase of small cell NHL.

Slide 3

See Slide Review

Slide 4

16% eosinophils (0.77 G / L). Rare target RBCs (+).

Slide 5

Anemia. Patient in intensive care unit. Anisocytosis (+).

Reticulocytes: $190 \times 10^9 / L$. Regenerative anemia.

Slide 6

Anemia. Anisocytosis (++)

Hypochromasia (++)



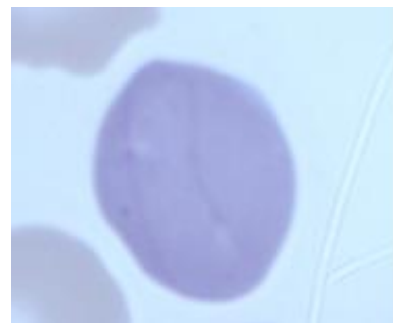
Monthly Digital Case study October 2021 Slide 3

Presentation

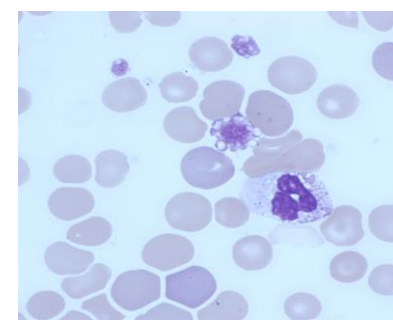
Male (77 years old)

FBC Results

WBC	51.0 ($10^3/mm^3$)
RBC	2.35 ($10^6/mm^3$)
HGB	8.6 (g/dL)
HCT	24.4 (%)
MCV	104 (fL)
MCH	36.4 (pg)
MCMH	35.1 (g/dL)
PLT	166 ($10^3/mm^3$)
Neutrophils	76.3 %
Lymphocytes	9.0 %
Monocytes	3.4 %
Eosinophils	0.0 %
Basophils	0.0 %



Cabot ring



Large Platelet

Slide review

Leukocytosis. Myelemia (9%) + erythroblastosis (17%).

Anemia. Anisocytosis ++ (RDWsd at 95 fL).

Target RBCs (++)

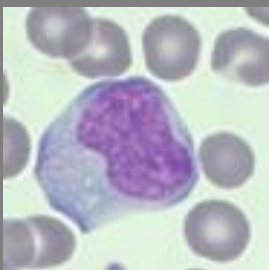
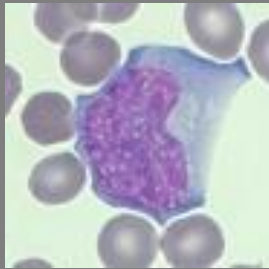
Presence of Howell-Jolly bodies (++) .A Cabot's ring is visible on the RBC wall (picture n° 13). Expert comment: Platelet abnormalities, inclusions in erythroblasts.

Rare Pelger PMN.

Medullary study is desirable. Platelet anisocytosis (MPV at 37).

Cell Quiz

What test would you perform if you saw a number of these cells in a young adult presenting with swollen lymph nodes, tiredness, sore throat:



- A) Ham's test
- B) Infectious Mononucleosis test (Monospot)
- C) Malarial parasites
- D) COVID-19 Lateral Flow test

Last Month's 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) Thalassemia

Answer:

- C) Thalassemia

Monocytes

Monocytes are the largest normal peripheral blood cells with a diameter of between 12 – 20 μm with a Nuclear to Cytoplasm (N:C) ratio of approximately 3:1. The monocyte nucleus is irregular and often lobulated, cytoplasm is abundant with a blue-gray colouration containing many fine lilac granules which often give the cytoplasm a "ground glass" appearance, vacuoles may be present.

Note the difference in size of the monocyte, the lobulated nucleus, and the cytoplasmic vacuolation (Fig. 1 monocyte alongside a neutrophil).

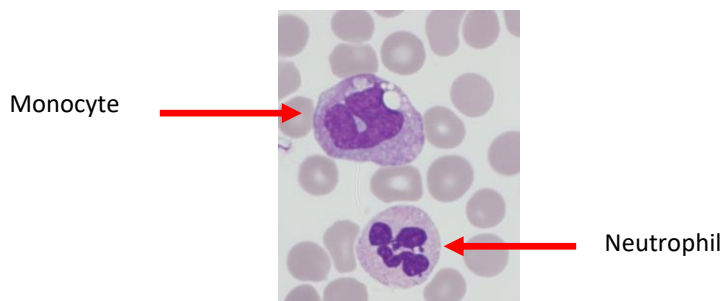


Figure 1

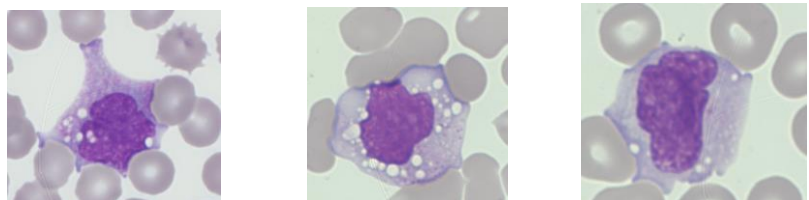


Figure 2: Figures above showing normal monocytes

The normal range for the monocyte count is $0.2 - 0.6 \times 10^9/\text{L}$. Monocyte counts are usually slightly higher in males than females.

An increase in the monocyte can be caused by various chronic inflammatory processes or infection e.g tuberculosis, Subacute Bacterial Endocarditis (SBE), Systemic Lupus Erythematosus (SLE), rheumatoid arthritis, temporal arteritis, or as part of a malignant neoplasm (CMML, MDS, M5 leukaemia).

Monocytes originate in the bone marrow from pluripotent stem cells which develop into monoblasts, promonocyte and then finally the mature monocyte. Mature monocyte only remain in the bone marrow for about a day before they are released into the circulation where then either enter a circulating or a marginating pool (approx. 50:50 split). Monocytes and their tissue specific mature counterparts, macrophages are key components in the mononuclear phagocyte system involved in ingestion of microorganisms and foreign material in various tissues

Monocytes contribute to the innate immune response as well as the adaptive immune response through phagocytosis, antigen presentation and cytokine production. Due to the phagocytic nature of monocytes, they are occasionally found to have ingested red cell, cryoglobulin, micro organisms and malarial pigment. Monocytes usually develop into macrophages in the blood but occasionally macrophages may be found on a blood film, they may be slightly larger than a monocyte or may be very large and multinucleated with the cytoplasm containing cellular or amorphous debris.

Phagocytosis occurs when the cell is attracted to an area of high concentration of foreign particle/cells or molecules (chemotaxis).

The macrophage then binds to the surface of the particle via its surface receptors e.g Toll-Like receptors (bacteria, fungi, viruses) Antibodies, Opsonin receptors (molecules that possess immunoglobulin G. The type of receptor binding influences the appropriate response by the phagocyte.

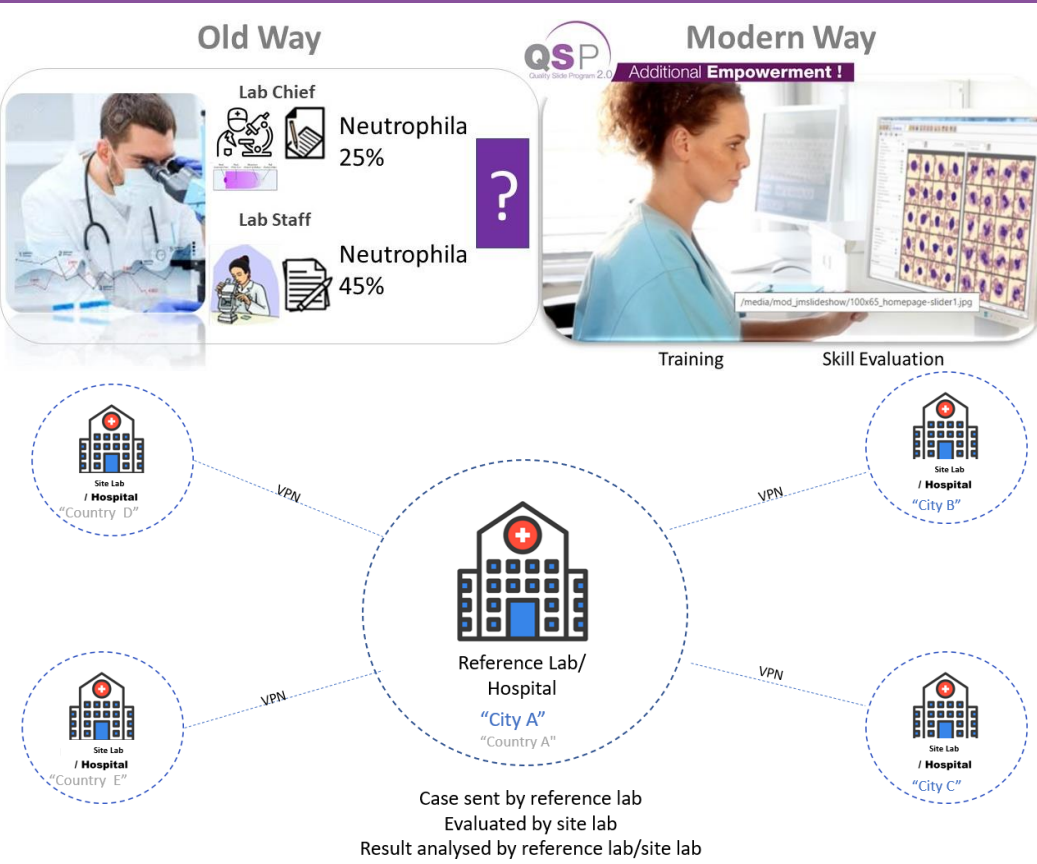
The phagocyte starts expanding as it surrounds the molecule. A vacuole, or vesicle is subsequently formed around the molecule as it is completely ingested.

Enzymes in the vacuole/vesicle break down the molecule into simpler components which can either be used or removed from the cell.

Virtual International Symposium on Haematology 2021

HORIBA Medical sponsors the **Virtual International Symposium of Haematology 2021**, hosted on 16th of December by University Hospital of Nimes and University of Montpellier in France. [Register here.](#)

QSP 2.0 : Affordable digital morphology skill evaluation tool



Bibliography

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