ISSUE
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2022

QSP Monthly

HORIBA Medical

NEWSLETTER OF THE QUALITY SLIDE PROGRAM

This issue

Last Month's Slides

Slide 1
Patient hospitalised in clinical haematology. Follow-up of a myeloproliferative syndrome Hyperleukocytosis. Myelemia. Basocytosis. Erythroblastosis. Anaemia. Thrombocytopenia. To be compared with the rest of the clinical assessment. Expert's comment: Aspect of MPS (Myelofibrosis?)

Slide 2
Control of white blood cell differential. Anisocytosis (++) RDWsd (62fL). Dacryocytes (+). Discrete myelemia. Discrete basocytosis. Thrombocytopenia. Presence of macroplatelets.

Slide 3
See Case Study on the right

Slide 4
Some Granular Lymphocytes

Slide 5
Population of lymphocytes with often irregular nuclei and sometimes granular cytoplasm

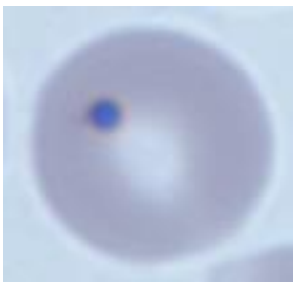
Slide 6
Nothing abnormal detected

Monthly Digital Case Study
May 2022 Slide 3
Presentation

59-year-old Female

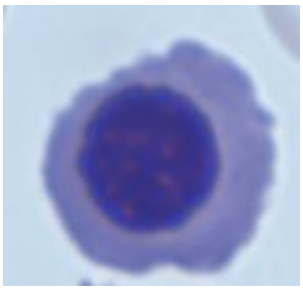
FBC Results

WBC	2.0* (10^3/mm3)
RBC	2.31*(10^6/mm3)
HGB	6.5*(g/dL)
HCT	20.8* (%)
MCV	90(fL)
MCH	28.1 (pg)
MCHC	31.1(g/dL)
PLT	160 *10^3/mm3)

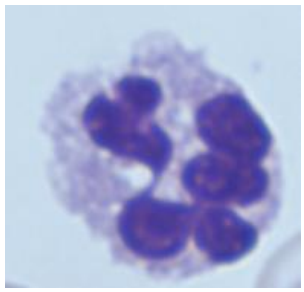


RBC with Howell-Jolly Body

Target Cell



Erythroblast



Abnormal Neutrophil

Slide review

Leukopenia with erythroblastosis. Result of white blood cells with a flag by the analyser
++ Hypochromasia
+++ RBC Target Cells
+ Howell Jolly Bodies
27% Erythroblasts
Corrected WBC = 1.5 (10^3/mm3)
Abnormal Neutrophils

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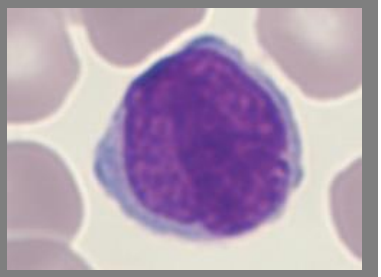
Cell Quiz:

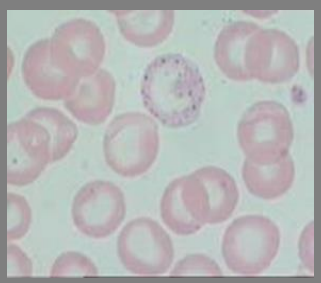
An elderly patient presents with extensive red rash (erythroderma), enlarged spleen and lymph nodes. Blood film shows numbers of abnormal lymphocytes like the one above. What condition may be present?



a) Glandular Fever
b) Sezary Syndrome
c) Allergic reaction

Last Month's Cell Quiz:

What can be seen in the red cell?



Answer:

The cell image shows Basophilic Stippling

Malaria - Part 2

Testing for Malaria

The diagnosis of malaria is confirmed by blood tests which are either *microscopic* or *non-microscopic* tests.

The microscopic tests involve staining and direct visualisation of the parasite under the microscope. The direct microscopic visualisation of the parasite on the thick and/or thin blood smears has been the accepted method for the diagnosis of malaria in most settings, from the clinical laboratory to the field surveys, for over a hundred years. Careful examination of a well-prepared and well-stained blood film currently remains the "gold standard" for malaria diagnosis.

Microscopic Tests

High quality thick and thin films should be prepared and examined in every suspected case of malaria, regardless of the results of immunochromatographic rapid diagnostic tests (RDTs) for malarial antigen detection.

A thick film should be used to detect presence of malaria parasites and the thin film for identification of species. It is useful to prepare four thick films and four thin films so that two of each can be stained, leaving spare films to send to a reference centre and for further study if there is diagnostic difficulty. Films should be made as soon as possible to avoid morphological alteration of parasites which occurs with storage of K_2EDTA-anticoagulated blood. After collection of the blood sample, the film is stained with Romanowski stains to examine the intracellular appearance of the red cells.

Thin Film

Thin smears allow one to identify malaria species (including the diagnosis of mixed infections), quantify parasitaemia, and assess for the presence of schizonts, gametocytes, and malarial pigment in neutrophils and monocytes. Thin blood films stained by Giemsa's or Leishman's stain are useful for specification of parasites and for the stippling of infected red cells. The optimal pH of the stain is 7.2.

Thick Film

The thick smear of correct thickness is the one through which newsprint is barely visible. It is dried for 30 minutes and not fixed with methanol. This allows the red blood cells to be haemolysed and leukocytes and any malaria parasites present will be the only detectable elements. However, due to the haemolysis and slow drying, the plasmodia morphology can get distorted, making differentiation of species difficult. Thick smears are therefore used to detect infection, and to estimate parasite concentration.

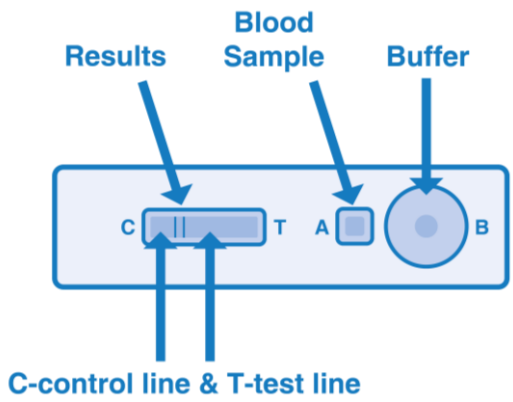
Differential of Malaria Parasites

Thick films are usually stained by the rapid Field's technique or Giemsa's stain for screening of parasites. The sensitivity of a thick blood film is 5-10 parasites/µl.

Rapid Testing Kits (RTD's)

Malaria rapid diagnostic tests (RDTs) supplement the diagnosis of malaria by providing evidence of the presence of malaria parasites in blood. RDTs are a used in addition to microscopy, particularly where good quality microscopy experience is not available. The test works by detecting specific antigens (proteins) produced by malaria parasites in the blood of infected individuals.

It is a lateral flow immuno-chromatographic antigen-detection tests, which works by capturing dye-labelled antibodies to produce a visible band on a strip of nitro-cellulose in a cassette casing. With malaria RDTs, the dye-labelled antibody first binds to a parasite antigen, and the resultant complex is captured on the strip by a band of bound antibody, forming a visible line (T - test line) in the results window. A control line (C- control line) gives information on the integrity of the antibody-dye conjugate, but does not confirm the ability to detect parasite antigen. Some kits can only detect one species (Plasmodium falciparum or P. vivax) while others detect multiple species (P. falciparum, P. vivax, P. malariae and P. ovale).



Other Tests

Some laboratories use quantitative buffy coat (QBC) on positive samples, however this is an expensive method.

PCR is another method, which is very sensitive and reliable when determining the species of malaria in a mixed infection. This is mainly used in reference labs.

For all positive cases of malaria, it is required to send 1 EDTA blood sample on which the film was made, together with 2-3 blood films from the same sample, to a Malaria Reference laboratory.

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