ISSUE
13
May
2021

HORIBA Medical

QSP Monthly

NEWSLETTER OF THE QUALITY SLIDE PROGRAM

This issue

Last Month's Slides

April 2021 Slide Summaries

Side 1
Acute Myeloid Leukaemia (AML)

Slide 2
Acute Myeloid Leukaemia (AML)

Slide 3
Hyper-granulated PMN, thrombocytosis

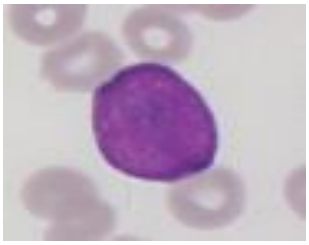
Slide 4
Nothing abnormal detected

Slide 5
Nothing abnormal detected

Slide 6
Nothing abnormal detected

Monthly Digital Case study

April - Slide 1



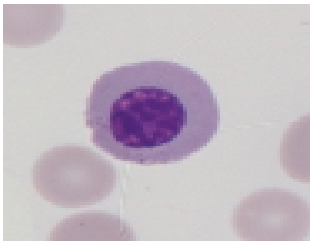
Blast

Presentation

Male, 74 years old

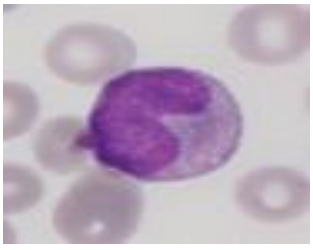
FBC Results

WBC	12.2 (10^3/mm3)
RBC	3.00* (10^6/mm3)
HGB	9.0* (g/dL)
HCT	25.1* (%)
MCV	84 (fL)
MCH	30 (pg)
MCMH	35.7* (g/dL)
PLT	10* (10^3/mm3)



Erythroblast

Neutrophils	46.5%
Lymphocytes	24.4%
Monocytes	10.5%
Eosinophils	0.0
Basophils	0,0
Abnormal Leucocytes	16.7%



Metamyelocyte

Slide review

Oncology consultation. Bicytopenia.
Blastosis. Thrombocytopenia. To be compared with oncological assessment. Expert comments: Aspect that should be investigated for AML. Probably secondary AML. Presence of promonocytes to be considered as blasts.

QSP Quality Slide Program 2.0

Blood cancer

The three main groups of blood cancer are:

- Leukaemia
- Multiple myeloma (see right)
- Malignant Lymphoma (cancer of the lymp nodes).

For patients diagnosed with one of these blood cancers, a blood stem cell donation given by a close matching donor offers the best chance of survival.

Key facts (2):

- Every 35 seconds someone is diagnosed with blood cancer
- 4 out of 10 people in need of a blood stem cell donation worldwide are still unable to find a matching donor
- Every year, over 80,000 people in need of a blood stem cell donation search globally for a matching donor outside of their family.

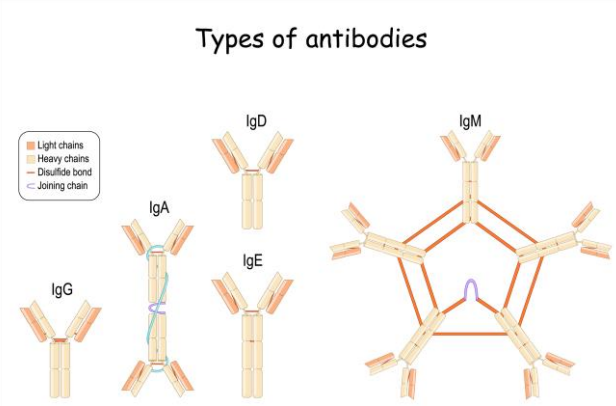
To find out more about the World Blood Cancer Day, see page 3.

WORLD BLOOD CANCER DAY MAY 28 DKMS

Multiple Myeloma

Multiple Myeloma or Myeloma is a cancer caused by the abnormal proliferation of Plasma Cells within the bone marrow. The term multiple is used as it affects multiple parts of the body. Myeloma is the 14th most common of all cancers. In 2020 there were approximately 176.000 new cases (1) and caused 120.000 deaths worldwide. Myeloma is more commonly diagnosed in the over 65s, however, it has been diagnosed in younger patients, it is more common in males than females and is twice as common among individuals of African origin than Caucasian origin.

Prolonged exposure to petrochemicals, agricultural chemicals and radiation is known to be a risk factor. Abnormal plasma cells release large amounts of abnormal monoclonal immunoglobulin (Paraprotein), which can be detected in the blood and urine of myeloma patients. Immunoglobulins are the antibodies produced by the immune response to help fight infection. There are 5 main types of Immunoglobulin: IgG, IgA, IgE, IgM, IgD and all contain two identical heavy chains and two identical light chains. The antigen binding site is the variable region on the heavy and light chain.

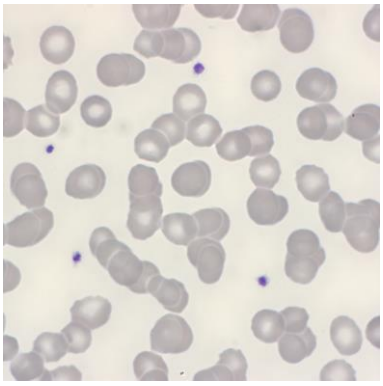


Myeloma can best be classified according to the type of abnormal Immunoglobulin (Antibody) produced (IgG, IgA, IgD, IgM, IgE) which can be further subdivided by the type of light chain (kappa or lambda). IgG kappa is the most common type of Myeloma. IgA myeloma can sometimes be associated with extramedullary plasmacytoma – myeloma deposits outside of the bone marrow. IgD myeloma is associated with Plasma Cell leukaemia (>20% Plasma Cells). In approximately 20% of myeloma patients only light chains (not the full Immunoglobulin) are produced and are known as free light chains or Bence Jones Proteins. As the plasma cells increase in numbers they crowd out the normal haematopoietic tissue in the marrow causing anaemia, excessive bleeding and reduced inability to fight infection. Myeloma causes structural bone changes, leading to bone pain and potential fractures.

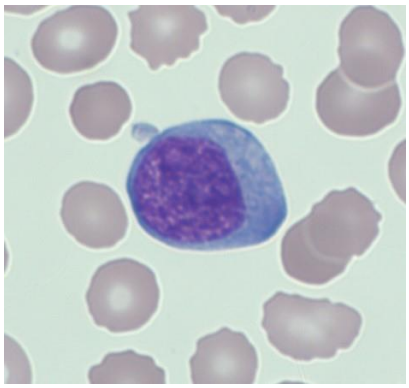
Symptoms of Myeloma: Bone pain, especially in spine or chest, nausea, constipation, loss of appetite, fatigue, frequent infections and weight loss.

Laboratory findings in Myeloma patients:
FBC
Low Hb, Platelets, WBC, raised ESR

Blood film: The blood film may show RBC rouleaux formation where the red cells appear to stack together like a stack of coins, caused by the increase in plasma proteins.



Rouleaux formation



Plasma Cell

The space between the cells may show a blue background stain due again to the increased concentration of plasma proteins.

Plasma cells may be seen and are characterised by their dark blue cytoplasm and the nucleus being on one side of the cell.

Bone Marrow: Bone marrow aspirate and biopsy are essential in evaluating, if abnormal cells are present and if present, evaluating the degree of bone marrow involvement. Genetic analysis can also be performed, as genetic subtypes have important prognostic value.

Other blood tests: Protein electrophoresis and immunofixation to detect and identify the amount and type of monoclonal immunoglobulin (paraprotein) present, Serum free light chains assay is performed to measure the kappa - lambda ratio. Other tests include Creatinine, Albumin, Calcium, Total Protein to assess kidney and liver function.

Beta 2 Microglobulin (B2M): this protein is increased in myeloma patients and is one of the most important indicators of both the amount and activity of myeloma. The B2M level is used in the staging of patients.

Treatment: If treatment is deemed necessary, then combination therapy using 3 anti-myeloma drugs which usually consist of a chemotherapy drug, a steroid (dexamethasone, prednisolone) and another drug, such as thalidomide, bortezomib and lenalidomide. Intensive therapy may also be given e.g. high dose therapy and stem cell transplantation (3).

WORLD BLOOD CANCER DAY

28th May marks the World Blood Cancer Day, which was established in 2014 to raise awareness about blood cancer.

HORIBA joins people around the world showing their support for people with blood cancer and remains committed to raise awareness of these complex diseases and increase the understanding of the different types of blood cancer, their symptoms, and types of diagnosis and treatment available.

QSP 2.0

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

Bibliography

(1) International agency for research on Cancer (WHO)

(2) World Blood Cancer Day

(3) Myeloma UK

Editorial Team

Kelly Duffy
Andrew Fisher

About us

HORIBA UK Limited
Kyoto Close
Moulton Park
Northampton, UK
NN3 6FL

HORIBA Medical
Parc Euromédecine,
390 Rue du Caducée,
34790, France

www.horiba.com/medical

QSP Quality Slide Program 2.0