CLINICAL IMPORTANT OF RED CELL INDICES IN HAEMATOLOGY

A SEMINAR PRESENTED

BY

OGBA, CHUKWUMA JOSHUA

REG: ASCOHT/0/16/5/041

TO THE

DEPARTMENT OF MEDICAL LABORATORY TECHNOLOGY

ANAMBRA STATE COLLEGE OF HEALTH TECHNOLOGY OBOSI

(ASCOHT)

SEP. 14TH, 2018

SUMMARY

Red cell indices are blood test that provide information about the Hg content and size of red blood cells which was introduced by wintrobe. Red cell indices **MCV MCHC MCH, RDW** which when increase will lead to some type of anaemia such as folate deficiency anaemia aplastic anaemia an increase in MCV can lead to iron deficiency thallasemia folate deficiency. Most people don't know they have anaemia until they have a CBC count blood cell which is a routine blood test the MCV MCHC and MCH are parts of red cell indices that reflects the size and haemoglobin content of red cells that have traditionally been used to aid in the differential diagnosis anaemia

CLINICAL IMPORTANT OF RED CELL INDICES IN HEMATOLOGY

Red cell indices was introduced by wintrobe in 1929. The red blood cell indices measures the size, shape and physical characteristics of the red blood cell. Red cell indices are blood test that provides information about Hg content and size of red cell. Abnormal values indicates the size of anaemia and which type of anaemia it is. They are either directly measured or automatically calculated by specialised instrument or machine.

Red cell indices includes:

MCV: MEAN CELL VOLUME which can be referred to as the average size of RBC the unit is in FEMTOLITER one fl $=10^{-15}$ the reference interval for it is 80- 100 and is calculated by PCV/RBC

MCH: MEAN CELL HEMOGLOBIN it is the average weight of Hb and is calc by HB/RBC The reference interval is 27-32pg one pictogram = 10^{-12}

MCV: MEAN CELL VOLUME which can be referred to as the average size of RBC the unit is in FEMTOLITER one fl $=10^{-15}$ the reference interval for it is 80- 100 and is calculated by PCV/RBC

RDW : Red cell distribution width is a quantitative measure of anisocytosis

MCHC : MEAN CELL HEMOGLOBIN CONCENTRATION It is the average concentration of Hg per unit vol. of red blood cell it is calculated by Hb/PCV the reference range is 32-36 gram per dl

Red cell indices is carried out in hematology lab to help in the diagnosis of anemia Anaemia can be defined as a type of red blood cell disorder that occurs when the concentration of Hg in a person age gender and environment resulting in an increase in the oxygen carrying capacity to be reduced

If your found to have anemia the red blood cell indices can help to determine what’s causing your anemia

SIGNIFICANCE OF RED CELL INDICES

They help to check the size and haemoglobin contents of red cells that have been used

to help in the differential diagnosis of anemia

High RDW and low MCV shows iron deficiency or microcytic anaemia

It also indicates a lack of vitamin B12 or Folate. It can sugesst macrocytic anaemia or

chronic liver diseases

HIGH MCV

High mcv indicates macrocytic anaemia (large red blood cell)

Macrocytic anaemia can be caused by

Vitamin b12 deficiency

Folate deficiency

LOW MCV

Low mcv indicates microcytic anaemia (low red blood cell)

Microcytic anaemia is caused by

Iron deficiency

Thallasaemia

Chronic diseases

NORMAL MCV

You can have normal mcv and still be anemic if there are 2 few rbc or if other red blood cell are abnormal. This is called normocytic anaemia

HIGH MCHC

If it is high it means that the Hg concentration per red blood cell is Hg and it can be elevated diseases such as hereditary spherocytosis, sickle cell diseases

LOW MCHC

It means that the relative Hg conc per red blood cell is low . It can be caused by

Iron deficiency

chronic diseases

LOW MCH LEVEL : it can be due to malnutrition or nutritional deficiencies

WHAT TO DO THE RESULYS MEAN

The red blood cell indices can help your doctor determine the cause if your doctor thinks you have anaemia. The mcv is the most useful value in the red blood cell indices to help determine the type of anemia you may have

REFERENCES

- ANYIJI., E., .P (2019): "Hematology for medical laboratory technicians in training".*Ahijoe press Nigerian;* Pg 83.
- Blood test results – Normal ranges blood bank .com (2009):
- Medline plus medical encyclopedia RBC indices (2011):
- Stanley., L, MD. Stephen., A.,and Landaw., M.,D. (2011): "mean corpuscular volume"