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Q 1:Discuss developmental stage of erythropoiesis .

Answer :- ERYTHROPOIESIS

- . In normal state ,the balance of production and destruction is maintained at remarkable **constant rate**
- Both endocrine and exocrine hormone make important contribution to this dynamic well balanced mechanism
- The earliest recognizable erythroid precursor in the bone marrow is large basophilic staining cell,**15-20 um**
- Contain a single large well defined, rounded nucleus, ribosomes, mitochondria and golgi apparatus.
- **As the early precursor cell matures.** Its nucleus increase in size. As maturation goes on cell become small and more eosinophilic indicating hemoglobin.
- **During intermediate stage of maturation,** cytoplasm become polychromatic Hemoglobin.
- **Further maturation,** hemoglobin synthesis continue and cytoplasm became entirely eosinophilic.
- **Late stages of maturation,** hemoglobin is abundant. Few mitochondria and ribosome are present .nucleus is small dense and well circumscribed.
- Q 2 Enlist common causes of poor blood film (blood smear).
- Answer:- 1 Drop of blood to large or too small .

2 spreader slide pushed across the slide in a jerky manner

3 failure in keep the entire edge of the spreader slide against the slide

4 Failure in keep the spreader slide at a 30° angle with the slide.

5 Failure to push the spreader slide completely across the slide

6 Irregular spread with ridges and long tail: edges of spreader dirty or chipped; dusty slide.

7 Holes in film -slide contaminated with fat or grease and air bubble.

8 cellular degenerative change: delay in fixing inadequate fixing time or methanol contaminated with water.

Q 3 Briefly explain granulopoiesis in detail.

Answer :- **GRANULUPOIESIS**

The formation of granulocytes typically in the bone marrow is called GRANULUPOIESIS.

It is the part of hematopoiesis that lead to the production of granulocytes. Granulocytes are basically white blood cell (wBCs) which contain.

Neutrophil: are white blood cell which playing a very important role in our innate immune system. They circular around the our body in blood stream and when they sense the single that an infection is present, they are the first cell to migrate to the site of the infection to begin killing the invading microbes.

Eosinophils: participating in immediate allergic reaction. Movement to inflamed areas, trapping substance anti-parasitic and bacterial active.

Basophils: it contain anti-coagulant heparin which prevent blood from clotting to quickly they also contain the vasodilator histamine, which promotes blood flow in tissue.

TYPE OF GRANULUPOIESIS

There are two type of granulopoiesis which are given below:

1 : Steady state GRANULUPOIESIS:

Presistent Granulopoeisis is a term use to discribe the normal daily production of granules. Life time granulocytes are 6-8 hours with high cell turnover. The number of granulated cell produced daily varies between 5 and 10×10^9 .

2 Emergency GRANULUPOEISIS :

Stable granulopoeisis has reached a program called Emergency granulopoeisis after severe damage to the body , usually a bacterial infection. The shift in the plan is due to the transition from C/EBP beta increase of cell cycle myelosensor there by generating a sufficient number of granules to fight stroke.

- Q 4 what is iron deficiency anemia ?Also discus its causes.

Answer: Iron deficiency of anemia is a common type of anemia -a condition in which blood lacks adequate healthy red blood cells. Red blood cells carry oxygen to the body s tissue .

As the name implies ,iron deficiency anemia is due to insufficient iron. Without enough iron, your body cant produce enough of a substance in red blood cells that enables them to carry oxygen (hemoglobin) . as a result iron deficiency anemia may leave you tired and short of breath.

Causes

Iron deficiency anemia occurs when your body doesn't have enough iron to produce hemoglobin. Hemoglobin is the part of red blood cells that gives blood its red color and enables the red blood cells to carry oxygenated blood throughout your body.

If you aren't consuming enough iron, or if you're losing too much iron, your body can't produce enough hemoglobin and iron deficiency anemia will eventually develop.

Causes of iron deficiency anemia include.

- **Blood loss.** Blood contains iron within red blood cells. So if you lose blood, you lose some iron. Women with heavy periods are at risk of iron deficiency anemia because they lose blood during menstruation. Such as from a peptic ulcer, a hiatal hernia, a colon polyp or colorectal cancer – can cause iron deficiency anemia. Gastrointestinal bleeding can result from regular use of some over-the-counter pain relievers especially aspirin.
- **A lack of iron in your diet.** Your body regularly gets iron from the food you eat. If you consume little iron, over time your body becomes iron deficient.
- **An inability to absorb iron.** Iron from food is absorbed into your bloodstream in your small intestine.
- **Pregnancy.** Without iron supplementation iron deficiency anemia occurs in many pregnant women because their iron stores need to serve their own increased blood volume as well as be a source of hemoglobin for the growing fetus.

Q 5 classify anemia on the basis of morphology with example.

Answer:- **Classification of anemia on the basis of morphology :**

Anemia is classified in the following. On the basis of morphology and regarded with red cell indices.

1 : **MYCROCYTIC HYPOCHROMIC ANEMIA:-**

In this type of anemia the RBCs are smaller in size than normal and contain a subnormal amount of hemoglobin. All absolute values (MCV, MCH and MCHC) are below normal.

For Example

- Iron deficiency
- Sideroblastic anemia
- Thalassemia
- Anemia of chronic disorder.

2 : **NORMOCYTIC NORMOCHROMIC ANEMIA:**

A type of anemia in which hemoglobin concentration is reduced and the red blood cell and the RBC appear normal and the absolute values are also within normal limits.

For example

- Chronic renal failure

- Loss of blood
- Leukemia
- Bone marrow Infiltration
- Chronic disorders (infection)

3 :**MACROCYTIC ANEMIA :**

The individual are large than normal in this type of anemia. But the amount of hemoglobin in each cell is usually below normal.

Absolute values show increase MCV with usually normal MCH/MCHC .

- FOR EXAMPIE

- Aplastic anemia
- Haemolytic anemia
- Liver disease
- Pregnancy
- Alcoholism
- Hypopituitarism
- Myxoedema
- Megaloblastic anemia

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