K M G G P G C

Assignment

M.Sc. Zoology
Semester-II

Title of Assignment: HAEMOPOEISIS AND FORMED ELEMENTS.

Student Name: ASTHA YADAV

Roll Number: 01

CONTENT:-

1 Introduction
1.1 Definition
2 Prenatal and Neonatal haemopo-iesis.
3. Functions of haemopoietic Organs and related tissue.
3-1 Bone marrow
3-2 Thymus
3-3 Lymph nodes
3-4 Spleen
3-5 Liver
3-6 Stomach and Intestine
3-7 kidneys
4. Postnatal haemopoiesis
5. Haemopoiesis in avian bone marrow.
6. Haemopoietic Stem cells.
7. Pleuripotential Stem Cells
8. Committed Hemopoietic cells.
9. Factors regulatic haemopoiesis.
10. Regulation of Committed progenitor cell
11. Lymphoid tissue.
12 Erythropoiesis
13 Blood supply to bone marrow.

INTRODUCTION:-

① Definition & Sites:-

Haematopoiesis & Haemopoiesis is the formation of blood cells. haemopoietic organs are bone marrow, thymus, lymph nodes, lymph follicles, spleen and liver.

* PRENATAL & NEONATAL HAEMOPOIESIS

→ Haemopoietic cells in mammalian and avian embryo first appears in yolk Sac wall.

→ Later the liver and Spleen are seeded.

→ Towards term and post-natally bone marrow become major

Site of haemopoiesis.

* Functions Of Haemopoietic Organ Are Related Tissues:-

→ ① **Bone Marrow:-** Produces erythrocytes, granulocytes, monocytes, platelets & B-lymphocytes.

→ Stores iron.

② **Thymus:-** Central lymphoid organ where bone marrow derived precursor cells differentiate into immunologically competent T-lymphocytes.

③ **Lymph Nodes:-** Produce lymphocytes and Plasma cells.

- Produce antibodies.

④ **Spleen:** Produces lymphocytes and plasma cells.
- Synthesizes antibodies.
- Degrades Hb.
- Stores iron.

⑤ **Liver:-** Stores vitamin B12 foliate and iron.
- Produce Coagulatin factors & like albulins and some globulins. Prothrombin & Fibrinogen
- Produces erythropoietin.
- Embryonic Potential of of haemo -pioesis.

⑥ **Stomach & Intestine:-**
- Produce HCl for release iron for complex organic molecule.

- Produce intrinsic factor to facilitate absorption of vitamin B12.
- Control the rate of iron absorption in relation to body needs.

④ Kidneys:- produce erythropoetic & thrombopoetin

→ Degrade excessive Hb to billibuvin for urinary excretion.

→ Store iron.

* POSTNATAL HAEMOPOIESIS:-

- **Bone marrow:-** In early postnatal life bones marrow of all bones perform homopoiesis
- Red homopoetically active marrow is replaced by resting yellow marrow.

- Adipocytes occupies space as haemopoiesis recedes and give up space as the demand for expansion of red marrow occures in response to Continuous blood loss of haemolytic anaemia.

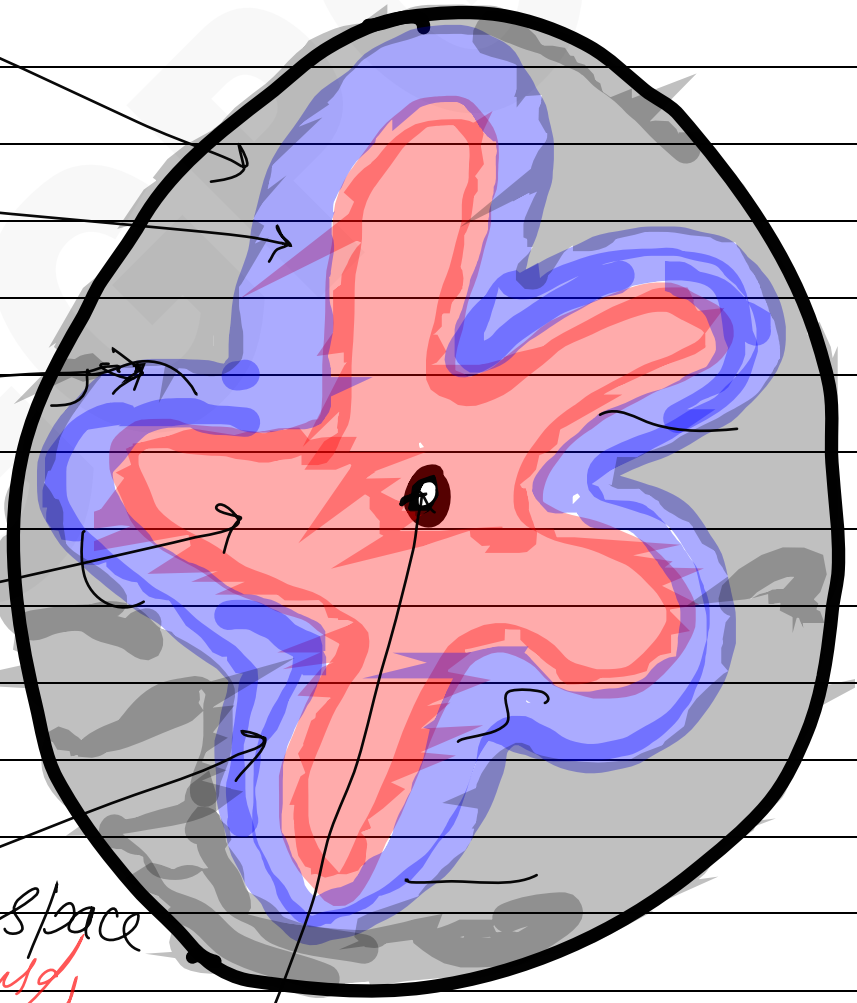

Fig: Bone marrow with Central Vein, Sinuses, haemopoietic space.

* Haemopoiesis In Avian Bone Marrow...

⇒ Erythropoiesis & thrombopoiesis occurs intravascularly in sinuses while granulopoiesis takes places extravascularly.

⇒ Developing granulocytes contain eosin coloured granules common in heterophils.

⇒ Sinus walls lined by cells lacking basement membrane.

⇒ Immature erythroid cells adhere to sinus walls.

⇒ Mature cells with Hb occur more in Centre of sinus.

* Hemopoietic Stem Cells :-

→ Stimulates of haemopoiesis.

→ Low erthyrocyk in number.

→ Inflammation

→ Increased destruction of Platelets.

→ Myeloid & lymphoid Stem cells in turn give rise to committed cells unit called colony forming unit (CFU) leading to specific series that produce mature cells.

* Pleuropotential Stem Cells :-

Myeloic Stem cells

Lymphoid Stem cells.

- **MYLEOID STEM CELLS:-**
  - → CFU-MEG
  - → CFU-E
  - → CFU-GM
  - → CFU-EOS
  - → CFU-BAS

- **LYMPHOID STEM CELLS:-**

T-cells → Lymphoblast → T-lymphocyte

B-cells → Lymphoblast → T-lymphocyte Plasma cell.