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**SUBJECT: PHYSIOLOGY**

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**DEPARTMENT: DPT 2nd SEMESTER [SECTION B]**

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**QUESTION NO :1**

**ANSWER:**

 **PITUITARY GLAND**

The pituitary gland also called the Hypophysis .pituitary gland is a small gland about 1cm in diameter and 0.5 to 1 gram in weight.It lies in the sella turcica, a bony cavity at the base of the brain,and is connected to the hypothalamusby the pituitary stalk.Pituitary gland has divided into two parts the posterior pituitary gland and the anterior pituitary gland.

 The origion of the anterior pituitary from the pharyngeal epithelium explains the epithelioid nature of its cells,and the origion of the posterior pituitary from neural tissue explains the presence of large number of glial- type cells in gland.

 Six major peptide hormones plus several other hormones of lesser importance are secreted by the anterior pituitary , and two important peptide hormones are secreted by the posterior pituitary.The hormones of the anterior pituitary play major roles in the control of metabolic functions throughout the body.

  **HORMONES AND ABNOMILITIES**

GROWTH HORMONE:

 Growth hormone promotes growth of the entire body by affecting protein formation, cell multiplication and cell differentiation.

ABNORMILITES OF GROWTH HORMONE

 It may be congenital or occur slowly at time during life due to any tumor that destroys the pituitary gland.

Dwarfism is due to deficiency of ant pituitary hormone during childhood

All the physical parts of the body develop in an inappropriate to one another.

Gigantism when large quantities of growth hormones are produced, tissue grow rapidly ,including the bones.Height increases so that a person may become 8 feet tall.

ADRENOCORTICOTROPIN

 Controls the secretion of some of the adrenocortical hormones, which effect metabolism of glucose, protein, and fats.

THYROID-STIMULATING HORMONE

Controls the secretion rate of thyroxine and triiodothyronine by the thyroid gland , and these hormones control the rates of most intracellular chemical reaction in the body.

PROLACTIN

Promotes mammary gland development and milk production.

STIMULATING HORMONE AND LUTEINIZING HORMONE

 Controls growth of ovaries and testes , as well as their hormonal and reproductive activities.

ANTIDIURETIC

 Controls the rate of water excretion into the urine, thus helping to control the concentration of water in the body fluids.

OXYTOCIN

 Helps express milk from the glands of the breast to the nipples during ducking and helps in the delivery of the baby at the end of gestation.

 **QUESTION NO 2**

 **ANSWER:**

 **ERYTHROCYTE**

A type of blood cell that is made in the bone marrow and found in the blood.

Erthrocyte contain a protein called hemoglobin , which carries oxygen from the lungs to all parts of the body.Red blood cells or erthrocytes are the most abundant type of blood cell ,approximately 2.4 million new erthrocytes are produced per second.

 **RBCs FUNCTION**

1. The hemoglobin is excellent acid base buffe**r.**
2. Maintain acid base balance.
3. Blood group determination.

  **ERYTHROPOIESIS**

Erythropoiesis is derived from two Greek words “erythro” and “poiesis”, erythro means “red”and poiesis means “to make”,so erythropoiesis is the process which produces red blood cells , which is the development from erythopoietic stem cell to mature red blood cell.

Erythropoiesis take place in the bone marrow , where hemopoietic stem cells differentiate and eventually shed their nuclei to become reticulocytes.

  **ERYTHROCYTOSIS**

The process by which the production of red blood cell increase is known as Erythrocytosis.An erythrocytosis aruses when the red cell mass is increased.This can be due to primary intribsic defect in the erythroid progenitor cells or secondary erythropoietin production from some source.

  **ERYTHROPENIA**

The deficiency of red blood cells in the body is known as erythropenia.

It caused by mutation in genes that control how many RBCs your bone marrow makes. When one of these genes is mutated , our bone marrow will produce extra RBCs, even when our body doesn’t need them.

**QUESTION NO 3**

 **ANSWER:**

 **PLATELETS**

Platelets also called thrombocytes are component of blood vessel is to react to bleeding from blood vessel injury by clumping, thereby initiating a blood clot.

STRUCTURE OF PLATELETS

Platelets have no cell nucleus, yhey are fragmentsof cytoplasm that are derived from the megakaryocytes of the bone marrow, which then enter the circulation.

Circulating unactivated platelets are bioconvex discoid structures 2-3 in diameter.

Activated platelets have cell membrane projections covering their surface.Platelets are found only in mammals whereas in other vertebrates.

LIFE SPAN AND FUNCTION OF PLATELETS

Life span of platelets are 10 days.

Functions platelets plays in are,

 Stop bleeding , Maintain Hemostasis , Clotting Mechanism

**CLOTTING MECHANISM**

Clotting means blood changes from liquid to gel.

Clotting mechanism initiated instantly after an injury to the blood vessel which has damaged the endothelium lining the vessels.Clotting mechanism stop bleedid from damaged vessels and maintain homeostasis.

**STEPS OF CLOTTING MECANISM**

Clotting involves four steps

1. Adhesion
2. Activation
3. Aggregation of platelets
4. Deposition and maturation of fibrin

**ADHESION**

Injury to blood vessel.Endothelium lining the vessel damaged.

Blood comes into space under endotheliun.Underlying collagen exposed to circulating platelets.Platelets bond with surface receptors of collagen and adhere tightly.

**ACTIVATION**

Platelets change shape.

Turn on receptors and secrete chemical messenger to activate and invite additional platelets.

Activated platelets adhere tightly at injury side.

**AGGREGATION**

Platelets connect to each other through receptor bridges.

Platelets plug formed at injury site unless the interruption is physically too large.

**FIBRIN DEPOSITION**

Formation of platelets plug will insure primary hemostasis.

Now fibrin deposition start and thus started secondary hemostasis.

Thus fibrin clot formed.Now clot retraction and platelet inhibition

**QUESTION NO 4**

**ANSWER:**

 **ABO BLOOD GROUP SYSTEM**

The classification of human blood group based on the inherited properties of red blood cells as determined by presence or absence of antigens A and B which are carried on the surface of the red cells.

Determination of ABO blood groups depends upon the immunological reaction between antigen and antibody.

Antigens are also called agglutinogens because of their capacity to cause agglutination of RBCs.

If an antigen is present on a patient red blood cells the correspondig antibody will not be present in the patient plasma,under normal conditions.

**ABO BASICS**

* Based on the presence or absence of antigen A and antigen B , blood is divided into four groups:

A, B, AB, and O group.

* Blood having antigen A belongs to A group. This blood has beta antibody in the serum.
* Blood with antigen B and alpha antibody to B group.
* If both the antigen are present , blood group called AB group and serum of this group does not contain any antibody.
* If both antigen are absent , blood group is called O group and both alpha and beta antibodies are present in the serum.

**ANTIGEN AND ANTIBODY PRESENT IN ABO BLOOD GROUP**

|  |  |  |  |
| --- | --- | --- | --- |
| **ABO** **GROUP** | **ANTIGEN****PRESENT** | **ANTIGEN****MISSING** | **ANTIBODY****PRESENT** |
|  **A** |  **A** |  **B** |  **Anti-B** |
|  **B** |  **B** |  **A** | **Anti-A** |
|  **O** | **None** |  **A and B** |  **Anti-A and B** |
|  **AB** |  **A and B** |  **None** |  **None** |

**QUESTION NO 5**

**ANSWER:**

[A]. A person fell down from a tree and become unconscious, with bleeding from head, and what first aid l will give him is:

 Firstly,l will check his condition rather he is seriously injured or not ,if his condition was serious so my first step will be stop his his bleeding and than l will immediately take him to hospital near by.And in second condition if is not in serious condition than, l will take the injured man to a suitable place and check his injury ,than according to the injury l will take my first step , firstly , I wash out the injured place with mild hot water and than I will put on some anticeptic liquid on the injured place with the help of cotton, after that l will fasten it with bandage.

That is what will l do as first aid.

1. If I have to meet my friend with covid positive.

Firstly l a sure all precautionary measure I will take

At first I will give her my blessing from six feet away.

l will put on face mask, gloves ,and will keep distance of six feet.

After meeting her I will wash out my hand with sanitizer and take shower.

**THE END**