DENTAL SEC B PHYSIOLOGY, 2ND SEMESTER

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Attempt all questions. Every question carry 10 marks.

Q1. Write the functions and composition of blood?

Ans: Blood is a type of liquid connectine tissue.

The major function of blood is transfort.

Blood composition:

Blood consist of Blood cells and plasma:

1. Blood cells :

Blood cells are composed :

Red blood cells, Biconcave in shape

Diameter = 7.8 micrometer

Thickness = 2.5 micrometer

White blood cells,

6 types of WBC

Polymorphonuclear neutrophills 62%

Polymorphonuclear eosinophills 2.3%

Polumorphonuclear basophills 0.4%

Monocytes 5.3%

Lymphocytes 30%

Platelets, 300,000 per microliter of blood

1. Plasma :

Plasma consist of 92% of water and remaning 8% consist of glucose, amini acid, Faty acid, Protein, Oxygen, Hormone enzyme etc.

Q2. What is erythrocyte, erythropoiesis, erythrocytosis and erythropenia?

Ans: Erythrocyte:

* Since RBCs have a elastic membrane, they are able to change their shape when they pass through the capillaries.
* The cells develop in the bone marrow and circulate for about 100-120 days in the body before their components are recycled by macrophages.
* Human red blood cells take on average 20 sec, to complete one cycle of circulation.

Erythropoiesis:

* Erythropoiesis is the process by which red blood cells (erythrosytes) are produced.
* It is stimulated by decreased O2 in circulation , which is detected by the kidneys, which then secrete the hormone erythropoietin.
* The whole process least about 7 days. Through this process erythrocytes are continiusly produced in the red bones, at a rate of about 2 million per second in a healthy adult.

Erythrocytosis:

* If the erythrocyte count in move than normal , such state is called erythrocytosis.

Physiological:

* Absolute.(in high altitude.)
* Relative .(Exercises)

Phathological:

* Primary.( Bone marrow disorder)
* Secondry.( Due to any CV or respiratory disease)

Erythropenia :

Erythropenia a decrease in the number of erythrocytes .associated with anemia.

Physiological:

* Absolute.(Deficiency of production)
* Relative.(Pregnency RBCs dissolves in fluid)

Phathological:

* Primary. (Bone marrow disorder)
* Secondry. (Due to any kidney disease).

Q3. What is platelets and write about clotting mechanism and its all steps?

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

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

circulating unactivated platelets are biconvex discoid (lens-shaped) structures 2–3 µm in diameter.

Life Spam:10 days.

Function:

* Stop bleeding
* Maintain hemostasis
* Clotting mechanism

Clotting mechanisum and all steps:

1. Adhesion
2. Activation
3. and aggregation of platelets
4. deposition and maturation of fibrin

Adhesion:

1. Injury to the blood vessel
2. Endothelium lining the vessel damaged
3. Blood comes into space under endothelium
4. Underlying collagen exposed to circulating platelets
5. Platelets binds with surface receptors of collagen and adhere tightly
6. This is adhesion

Activattion:

1. platelets change shape
2. .turn on receptors and secrete chemical messengers to activate and invite additional platelets
3. .Activated platelets adhere tightly at injury site.

Aggregation:

1. Platelets connect to each other through receptor bridges
2. Platelet plug formed at injury site unless the interruption is physically too large.

Fibrin:

1. Formation of platelet plug will ensure primary hemostasis.
2. Now fibrin deposition start and thus started secondary hemostasis.
3. Thus fibrin clot formed.
4. Now clot retraction and platelet inhibition.

Q4. Write a note on ABO system?

Ans: A blood type (also called a blood group) is a classification of blood based on the presence or absence of inherited antigenic substances(proteins) on the surface of red blood cells (RBCs)

Blood types are inherited and represent contributions from both parents

The two most important ones are ABO and the Rh antigen system, they determine someone's blood type (A, B, AB and O, with +, − or Null denoting RhD status. Rhesus (Rh) factor is an inherited protein found on the surface of red blood cells. If your blood has the protein, you're Rh positive. If your blood lacks the protein, you're Rh negative.

ABO System:

O 47%

A 41%

B 9%

AB 3%

Agglutinogens and agglutinins:

Agglutinogens on surface of RBC

Agglutinins in blood plasma

Can cause blood transfusion reactions.

|  |  |  |  |
| --- | --- | --- | --- |
| \*Not if the patient's serum contains anti-A1 (antibody to common type A red cell in subgroup A patients). | | | |
| \*\*Not if the patient is a female less than 45 years old (childbearing possible), unless life-threatening hemorrhage is present and transfusion of Rh-positive blood is lifesaving. | | | |
| \*\*\*Not if the patient's serum contains anti-D (antibody to positive red cells), except under unusual medical circumstances. | | | |
| **ABO** | A | A\* or O | A or AB |
| **ABO** | B | B or O | B or AB |
| **ABO** | O | O only | O, A, B, or AB |
| **ABO** | AB | AB\*, A\*, B, or O | AB |
| **Rh** | positive | positive or negative | positive or negative |
| **Rh** | negative | negative or positive\*\*, \*\*\* | negative or positive\* |

Q5.(i) A person fell down from a tree and become unconscious, with bleeding from head, what will you do as a first aid?

Ans: are they responsive? • Not responsive – are they breathing? • They are breathing. Look closely how they have fallen and carefully put them into the recovery position to keep their airway clear • They are not breathing: start CPR immediately and act according to your organisation’s emergency policy. Request a defibrillator immediately if there is one available. • If the person is responsive • Talk to them. Try and ascertain how the accident happened and if there could be any medical cause such as a fit or stroke – do not stress them if they are confused • Try and work out where it hurts most and look at them closely to see if there is any obvious bleeding, bruising or contorted limbs indicating a particular injury. • If they are conscious and you think they may have fallen from a height or could have injured their neck or spine – Do not move them. Try and keep them as still as possible and discourage them from twisting. Phone an ambulance and calmly keep reassuring them until paramedics arrive. • If you are aware of any bleeding apply firm pressure with a clean pad whilst awaiting the First Aid kit. • If they start to show signs of clinical shock – lie them back and raise their legs and get medical help • If there is no obvious injury or medical cause for the fall • Carefully and very slowly help them into a sitting position – watch them carefully for any signs of pain, discomfort or dizziness • With help, carefully assist them into a chair, or back to bed. • Very carefully and reassuringly check them over completely to ensure that there is no unseen injury – this is particularly important with diabetics when they may not feel where they have hurt themselves. • Monitor them carefully for the next 24 hours, inform their next of kin and fill in an accident form

(ii) you have to meet with your friend and you came to know he is covid positive, what precautionary measures will you take

ANS:  close contact with one another (within about 6 feet).

• close contact with one another (within about 6 feet). • Through respiratory droplets produced when an infected person coughs, sneezes or talks • Wash your hands often • Avoid close contact • Cover your mouth and nose with a cloth face cover • Cover coughs and sneezes • Monitor Your Health.

**Thank you!**