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ASSIGNMENT

1. **Describe the importance of the vascular system in relation to immune system and the outbreak of the pandemic COVID 19 on the human body**

ANSWER

The vascular system is also called the circulatory system. It is a network of blood vessels connecting the heart with all other organs and tissues in the body. It is the connection of different vessels in the body, vessel that supply and transport blood within the body from one site to another site.

The **immune** system is a complex network of interacting cells, forming tissues that protect the body from pathogens and other foreign substances, destroys infected and malignant cells and remove cellular debris; the system includes the thymus, spleen, lymph nodes and lymphocytes ( B and T cell ), stem cell, white blood cells, antibodies and lymphokines.

**Importance of the vascular system in relation to the immune system**

The blood plays an important role in the defense of the body. The white blood cells are responsible for this function. Neutrophils and monocytes engulf the bacteria by phagocytosis. Lymphocytes are involved in development of immunity. Eosinophils are responsible for detoxification, disintegration and removal of foreign proteins

Cells of the blood and the constituents of the plasma interacts in complex ways to confirm immunity to infectious agents, to resist or destroy invading organisms to produce inflammatory response and destroy and remove foreign materials from dead cells. The leukocytes have a primary role in this reactions. Granulocytes and monocytes phagocytizes bacteria and other organisms migrate to sites of infections or inflammations and to areas containing dead tissues and participate in the enzymatic breakdown and removal of cellular debris. Lymphocytes are concerned with the development of immunity.

Cells and antibodies may cooperate in the destruction of invading bacteria, the antibodies may attach to the organism thereby rendering them susceptible to phagocytosis

**Impact of coronavirus on the vascular system**

Coronaviruses are single-stranded positive-sense RNA viruses, with the capacity for rapid mutation and recombination. Coronavirus is known to causes respiratory or intestinal infections in human. Acute respiratory infections include influenza, respiratory syncytial virus and bacterial pneumonias, hence it triggers cardiovascular disease. Since COVID 19 affects the respiratory system, due to rapid mutation of the disease, it moves to the heart after the first and second stages of the virus attacking the host; hence causing the heart to become dysfunctional.

**Impact of coronavirus on the immune system**

Immune response is essential to control and eliminate coronavirus infection, however, maladjusted immune response may result in immunopathology and impaired pulmonary gas exchange. COVID 19 goes through a series 3 stages; the first stage, the virus attacks the host. The virus enters a cell by latching onto a protein (ACE2 receptor). The most receptor are in the lungs and then the intestines. As the virus replicate itself, the human body’s immune system tries to stop it, responding with virus-specific antibodies and T cells. The second stage impacts about 20% of patient, when the virus replicate so fast the immune system can’t get it under control before it spreads to the lungs. They become inflamed causing breathing problems. Third stage is also called the hyperinflammatory phase, the body immune system begins to attack itself; at this stage the heart becomes dysfunctional and the kidney start to become dysfunctional.

**2. Subsartorial canal is an important area in the lower limbs. Discuss**

ANSWER

The subsartorial canal also called the adductor or Hunter’s canal. Is a narrow conical tunnel located in the thigh. It is approximately 15cm long, extending from the apex of the femoral triangle to the adductor hiatus of the adductor magnus. The canal serves as a passageway from structures moving between the anterior thigh and posterior leg.

**The subsartorial canal is an important area** of the lower limbs because in the adductor canal block, local anaesthetic is administered in the adductor canal to block the saphenous nerve in isolation, or together with the nerve to the vastus medialis. The block can be used to provide sensory anaesthesia for procedures involving the distal thigh and femur, knee and lower leg on the medial side. The adductor canal serves as a passage way for structures moving between the anterior thigh and posterior leg. It transmits the femoral artery, femoral vein and saphenous nerve.

1. **Describe the extraocular and intraocular muscles with their nerve supply**.

ANSWER

**The** **extraocular** **muscles**; Are located within the orbit, but are extrinsic and separate from the eyeball itself. They act to control the movements of the eyeball and the superior eyelid. There are seven extaocular muscles – the levator palpebrae superioris, superior rectus, inferior rectus, medial rectus, lateral rectus, inferior oblique and superior oblique. Functionally they are divided into ttwo groups;

1. Responsible for eye movement; Recti andOblique muscles
2. Responsible for superior eyelid movement; Levator palpebrae superioris.

* **Levator** **Palpebrae** Superior: it’s the only muscle involved in raising the superior eyelid. It is innervated by occulomotor nerve (CN III). The superior tarsal muscle is innervated by sympathetic nerve, originates from the lesser wing of the sphenoid bone and inserts into the superior tarsal plate of the upper eyelid
* **Superior** **Recti** muscle**;** It is innervated by (CN III). It originates from the superior part of the common tendinous ring and inserts into the superior and anterior aspect of the sclera.
* **Inferior recti muscle;** It is innervated by the oculomotor nerve (CNIII). It originates from the inferior part of the common tendinous ring and inserts to the inferior and anterior aspect of the sclera.
* **Medial recti muscle;** it is innervated by the oculomotor nerve (CN III). It originates from the medial part of the common tendinous ring and inserts to the anteriormedial aspect of the sclera.
* **Lateral rectus;** it is innervated by Abducens nerve (CN VI). It originates from lateral psrt of the common tendinous ring, and inserts into the anteriorlatera aspect of the sclera.
* **Superior oblique muscle;** it is innervated by Trochlear nerve (CN IV). It originates from the body of sphenoid bone and inserts into the sclera.
* **Inferior oblique;** it is innervated by the oculomotor nerve. It originates from the anterior aspect of the orbital floor and insertes to the sclera of the eye `

**Intraocular muscles;** Include cilliary, the sphincher pupilae, include the cilliary muscle, the sphincter pupillae, and the dilator papillae. The cilliary muscle is a smooth muscle ring that controls accommodation by alternating the shape of the lens, as well as controlling the flow of aqueous humor into the schlemm’s canal. The cilliary muscle is attached to the zonular fibers. The sphincher pupilae and the dilator pupilae are also composed of smooth muscle. The sphincher muscle encircles the pupil and is responsible for the constriction of it’s diameter, while the dilator muscle is arranged radially and increases the pupil diameter.

**Nerve** **supply**; 1. Cilliary muscle- it is innervated by parasympathetic postganhlionic myelinated nerve CN III).

2. Sphincher pupillae- it is innervated by parasympathetic fibers of short cilliary nerve.

3. Dilator pupillae- it is innervated by postganglonic sympathetic nerve; long cilliary nerves.