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MATRIC NUMBER: 18/MHS02/195

DEPARTMENT: NURSING SCIENCE

COURSE: ANA 210

COURSE CODE: GROSS ANATOMY

ANSWERS

1. Vasculature can be defined as the arrangement of blood vessels in the body, or within an organ.

IMPORTANCE OF VASCULATURE TO THE IMMUNE SYSTEM AND OUTBREAK OF PANDEMIC COVID-19 ON THE HUMAN BODY

Immune system can be referred to as organs and processes of the body that provide resistance to infections and toxins. It can also be referred to as a set of tissues which work together to resist infections. The immune system can detect a difference between the body’s own healthy cells or tissues, and foreign cells. The human body is lined with epithelial cells which makes it difficult to penetrate through. They make antimicrobial compounds that are quite hostile. If any pathogen or foreign body is able to break the barrier, it will meet with the Erythrocytes (white blood cells) which are the immunity cells first. If the immune system is weak, the pathogens and foreign bodies would be able to attack the white blood cells and get through their defence making the host susceptible to disease or any illness.

The blood is an important fluid in the body and it is carried by the blood vessels .When the blood vessels expand, the blood flows more slowly causing heat to be lost, but when blood vessels constrict, blood flows quickly and little heat is lost. If the blood vessels are damaged, blood will be lost and this will cause the white blood cells which are meant for immunity and protection to be lost.

White blood cells play an important role in immunity. The different blood cells have different functions, while some fight foreign bodies such as virus, bacteria, fungi, others produce antibodies which specially fight foreign germs like covid-19.

2. SUBSARTORIAL CANAL AS AN IMPORTANT AREA IN LOWER LIMB

The subsartorial canal also known as the Hunter’s canal or adductor canal is a narrow conical tunnel located in the thigh. It is also said to be an aponeurotic tunnel in the middle third of the thigh, extending from the apex of the femoral triangle to the opening in the adductor magnus, the adductor hiatus.

The importance of subsartorial canal serves as a passageway for structures moving between the anterior thigh and posterior leg. It transmits the femoral artery, femoral vein (posterior to the artery), nerve to the vastus medialis and the saphenous nerve (the largest cutaneous branch of the femoral nerve). As the femoral artery and vein exit the canal, they are called the popliteal artery and popliteal vein.

One of the clinical importance of this area is that in a case where there is adductor canal block, local anaesthetic can be 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 Sartorius and femoral artery are used as anatomical landmarks to locate the saphenous nerve.

3. EXTRAOCULAR AND INTRAOCULAR MUSCLES WITH THEIR NERVE SUPPLY

The extraocular muscles are the muscles that control the movement of the eye while the intraocular muscles are the muscles which are responsible for pupil accommodation and reaction to light; and the protractor and retractors of the eyelids.

The extraocular muscles are seven in number. Six muscles are responsible for the movement of the eyes while the last muscle is responsible for the control of eyelid elevation (levator palpebrae). The actions of the six muscles responsible for eye movement depend on the position of the eye at the time of muscle contraction. Four of the extraocular muscles (the four rectus muscles i.e i.superior rectus muscle, ii. inferior rectus muscle, iii.medial rectus muscle, and iv. inferior rectus muscle) have their origin in the back of the orbit in a fibrous ring called the annulus of zinn. The four rectus muscles attach directly to the front half of the eye (anterior to the eye’s equator) and are named after their straight paths. The superior oblique muscle (one of the extraocular muscles) originates at the back of the orbit (a little closer to the medial rectus, though medial to it, getting rounder as it courses forward to a rigid, cartilaginous pulley, called trochlea, on the upper, nasal wall of the orbit. The superior oblique travels posteriorl , due to its unique path, when activated pulls the eye downward and laterally. The sixth muscle is the inferior oblique originates at the lower front of the nasal orbital wall, and passes under the LR to insert in the lateral, posterior part of the globe. Thus, the inferior oblique pulls the eye upward and laterally.

The nerve supply of the extraocular muscles are as follows

MUSCLE INNERVATION

- medial rectus oculomotor nerve (inferior branch)

-lateral rectus abducens nerve

-Superior rectus oculomotor nerve (inferior branch)

-inferior rectus oculomotor nerve (inferior branch)

-superior oblique trochlear nerve

-inferior oblique oculomotor nerve (inferior branch)

-levator palpebrae superioris oculomotor nerve

The intraocular muscles include the ciliary muscle, the sphincter pupillae, and the dilator pupillae. The ciliary muscle is a smooth muscle ring that controls accommodation by altering the shape of the lens, as well as controlling the flow of aqueous humor into the Schlemm’s canal. The sphincter pupillae and dilator are composed of smooth muscles. The sphincter pupillae encircles the pupil and is responsible for constriction of its diameter. It is located in the posterior part of the iris, near the pupil. While dilator pupillae muscle is arranged radially and increases the pupillary diameter. The ciliary muscles receives parasympathetic fibers from the short ciliary nerves that arise from ciliary ganglion. The sympathetic postganglionic fibers are part of the cranial nerve v1 (nasociliary nerve of the trigeminal) while presynaptic parasympathetic fibers to the ciliary ganglia are from the oculomotor nerve. The sphincter pupillae is supplied by parasympathetic fibers by way of the short cilary nerves. The dilator muscle is innervated more specifically by postganglionic sympathetic nerves arising from the superior cervical ganglion as the sympathetic root of ciliary ganglion.