

Subject : Anatomy-IV

Submitted by: Dr. Arooba.

DPT 4th Semester

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Total marks 20.

Attempt the following questions. Add diagrams where needed.

Each question carries 10 marks.

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1. Write a comprehensive note on the blood supply of brain.

Ans: Brain blood supply:

The human blood circulatory System is a complex mechanism consisting of four muscular pump chambers I'm a lot of channels. The vessels that provide the organs with blood are called arteries. These include the common carotid artery that carries blood from the heart to the brain.

BLOOD SUPPLY:

Normal functioning of the brain and the whole body is impossible without affecting blood circulation, as it transmits essential elements and oxygen. The brain supply functions through two pairs of arteries that originate from the chest pass through the neck and reach the brain. These are the two internal carotid artery that feed the front of the brain and 2 vertebral arteries that feed the back of the brain.

Carotid Artery:

These are located on both sides of the neck and are the most important source of blood circulation.

Vertebral Artery:

Through their branches the vertebral arteries and basilar artery supply the blood to the enlarged brain, the cerebellum and the back of the cerebellum.

7 vertebral Artery:

- Spinal branches
- Meningeal branches
- Muscular branches
- Anterior spinal artery
- Medullary branches
- Posterior inferior cerebellar artery

2. Which type of stroke is common? Write a complete note on ischemic stroke.

Ans: Common Stroke Type:

A stroke is a medical emergency. There are two types of strokes

1. Ischemic
2. Hemorrhage

Ischemic Stroke:

Ischemic stroke is the Most common type. It is usually caused by the blood clot that block or plugs a blood vessel in the brain. It keeps blood from flowing to the brain. Within minutes, brain cells begin to die.

Causes:

There are two main causes of stroke;

- A blocked artery
- Leaking or bursting of a blood vessel

Some people may have only temporary disruption of blood flow of the brain, know as a transient ischemic attack, that doesn't cause lasting symptoms.

Symptoms:

- Trouble speaking and understanding what others are saying.
- Paralysis or numbness of the face, arm or leg.
- Problems seeing in one or both eyes.
- Headache.
- Trouble walking.

Treatment:

To treat an ischemic stroke doctor must quickly restore blood flow to brain these may be done with;

- Emergency IV medication.
- Emergency endovascular procedures.

3. What do you know about the thalamic nuclei of brain?

Ans: Thalamic Nuclei:

The thalamus serves as the main relay station for the brain. The thalamus can divide into approximately 60 regions called nuclei. Each Nucleolus has unique pathway as input and various projections as output, most of which send information to the cerebral cortex.

Function: Thalamic Nuclei perform relaying sensory and motor signals to the cerebral cortex, consciousness, sleep, alertness.

Anterior Nuclear Group;

- Anteroventral nucleus
- Anterodorsal nucleus
- Anteromedial nucleus
- Superficial

Medial Nuclear Group;

- Parvocellular part
- Magnocellular part

Midline Nuclear Group;

- Paratenial nucleus
- Paraventricular nucleus of thalamus
- HoReuniens nucleus
- Rhomboidal nucleus

Intralaminar Nuclear Group;

Anterior group;

- Paracentral nucleus
- Central lateral nucleus
- Central medial nucleus

Posterior Intralaminar Group;

- Centromedian nucleus
- Parafascicular nucleus

Lateral Nuclear Group;

- Lateral_dorsal; Part of limbic system Hippocampus consulate gurus.
- Lateral posterior; Sensory association cortex of parietal lobe.
- Pulvinar; sensory association cortices of parietal, Temporal and occipital lobe.

Ventral tier

- Ventral anterior
- Ventral lateral
- Ventral posterior
- Lateral geniculate
- Medial geniculate

4. Write a note on the descending tracts of spinal cord.

Ans: Descending Tracts:

The descending tracks are the party by which motor signals are sent from the brain to lower motor neurons. The lower motor neurons then directly innervate muscles to produce movement.

Corticospinal Tract:

- It arises from the pyramidal cells of cerebral cortex

Fibers travel through

- Corona radiata

- Posterior limb of the internal capsule
- Cerebral peduncle
- Pons
- Medulla oblongata passes through the pyramidal

Eventually fibres Cross the midline of terminate on LMN all interior Gray column of spinal cord segment.

Rubrospinal Tract:

- Nerve cells in red nucleus (tegmentum of midbrain at the level of superior colliculus)
- Nerve axons
Cross the mid line
Descend as Rubrospinal Tract (through pons and medulla oblongata)
- Terminate anterior gray column of spinal cord (facilitate the activity of flexor muscle)

Tectospinal Tract:

- Nerve cells in superior colliculus of the midbrain
- Nerve axons
Cross the midline
Descend close to medial longitudinal fasciculus
- Terminate in the anterior gray column of upper cervical segments of spinal cord.

Vestibulospinal Tract:

- Nerve Cells in vestibular nucleus in pons and medulla oblongata
Received afferents from inner ear and cerebellum.
- Axons descend uncrossed
Through medulla and through the length of spinal cord.
- Synapse with neuron in the anterior gray column of the spinal cord.

Reticulospinal tract:

- Nerve cells in reticular formation
- Fibres pass through
Midbrain, pons, and medulla oblongata
- End at the anterior gray column of spinal cord
Control activity of motor neurons.

5. Write a note on the autonomic system. Differentiate between sympathetic and parasympathetic nervous system.

Ans: Autonomic System:

The autonomic system is the part of peripheral nervous system that is responsible for regulating involuntary body functions , such as heartbeat , Blood flow , breathing, and digestion.

Structure Of Autonomic System:

This system is further divided into three branches;

- the sympathetic system
- the parasympathetic system
- and the enteric nervous system

Function Of Autonomic System:

The automatic system Controls are variety of internal processes including;

- Digestion
- Blood pressure
- Heart rate
- Pupillary response
- Metabolism
- Body temperature
- Electrolyte balance
- Urination and defecation
- Sexual response
- Emotional responses
- Reduction of body fluids but I will including sweat and saliva
- Breathing rate

Problem With Autonomic System:

When the Parasympathetic and sympathetic compounds of the autonomic nervous system become out of sense people can experience an automatic disorder also called dysautonomia.

Difference Between Sympathetic And Parasympathetic Nervous System:

Sympathomimetic System:

- Involved in the fight or flight response
- The sympathetic system prepares the body for any potential danger
- sympathetic system has shorter neuron pathway hence a faster response time
- Increase heartbeat, muscles tense up
- The pupil dilate to late in normal light
- Saliva secretion is inhibited
- On fight and flight situations, adrenaline is released by the adrenal glands; more glycogen is converted to glucose.

Parasympathetic System:

- It involved in maintaining homeostasis and also permits the rest and digest response.
- The parasympathetic system Aims to bring the body to a state of calm
- It has comparatively longer neuron pathways, hence slower response time.
- Reduces heartbeat, muscles relaxes.
- The pupil contracts.
- Saliva secretion increases, digestion increases.
- No such functions exist in fight or flight situation.