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Summer Subject: Human physiology

What is pituitary gland? Explain different lobes and hormones release from form it.

Ans:-Pituitary gland.

It is located in the brain under the hypothalamus. It is called master gland because it secretes numerous hormones many of which regulate the activity of other endocrine gland

It has 2 portions.

1. Anterior.

2. Posterior.

These two portions secrete different

1. Hormones of anterior pituitary:

A. Growth hormones (Somatotrophic hormones)

It is protein nature. Its secretion is under the control of a secretion from hypothalamus called SRF Somatotrophic releasing factor.

B) Thyroid stimulating hormones (TSH)

TSH effects the growth of Thyroid gland. Synthesis of thyroxine its secretions.

C) Diabetogenic hormones.

It influences the secretion of glucagon from pancreas secretion of diabetics hormones is influence by blood sugar level.

D) Adrenocorticotrophic hormones (ACTH)

ACTH effects the growth and secretory functions of cortex region of adrenal gland

E) Gonadotrophic hormones.

These are under the control of hypothalamus this hormones is of two types

1. Follicle stimulating hormones FSH
2. Luteinizing hormones LH

F) Prolactin.

This hormones control the development of mammary gland and milk productions.

2.Hormones of posterior pituitary:

The have two hormones.

- 1.Antidiuretic hormones. It effects reabsorption of water
- 2.oxytocin. It effect milk secretion.

Q2: Write a difference between Appendicular and Axial skeleton.

Ans:-*Difference between Appendicular and Axial skeleton:-*

Axial skeleton:-

1. Part of the skeleton that consists of the bone of the head and trunk of a vertebrate.
2. Central axis of the human skeleton.
3. composed of skull osciles of the middle ear vertebral column consisting of total of 80 bone Rib cage and sternum.
4. made of the bones
5. support of the upper right portion and protect the internal organs.

Appendicular skeleton:

- 1.portion of The Skeleton of vertebrate consists of the bones that support the appendage
- 2.Consist of append is connected to the axial skeleton
3. composed of the pectoral girdles arms forearms. Hand pelvis Legs and ankles.
4. made up of 126 bones
5. Aid in the movement of the body.

What is Muscular tissue? Explain different Types of muscles.

Ans:- Muscle Tissue

Muscle tissue is a specialized tissue found in animals which functions by contracting, thereby applying forces to different parts of the body. Muscle tissue consists of fibers of muscle cells connected together in sheets and fibers. Together these sheets and fibers are known as muscles, and control the movements of an organism as well as many other contractile functions. There are three

different types of muscle found in animals, depending on their use. While these muscles differ slightly, they function in a similar way.

Types of Muscle Tissue

Skeletal Muscle Tissue:

Skeletal muscle tissue is a type of striated muscle, meaning clear bands can be seen in it under a microscope. This can be seen in image (a) below. These tiny light and dark bands are sarcomeres, highly organized bundles of actin, myosin, and associated proteins. These organized bundles allow striated muscle to contract quickly and release quickly. Muscle tissue is attached to the bones through tendons, which are highly elastic portions of connective tissue. Many muscles may seem to control a single appendage, but in reality each one only controls one small aspect of movement.

Skeletal muscle tissue can be controlled voluntarily, by the somatic nervous system. The other types of muscle are controlled mainly by the involuntary or autonomous nervous system.

Cardiac Muscle Tissue:-

While the striations in skeletal muscle tissue are even and parallel, complex and branching striations are seen in cardiac muscle tissue.

Smooth muscle:

Unlike cardiac and skeletal muscle tissue, smooth muscle tissue has no striations. The fibers of myosin and actin in smooth muscle fiber is not nearly as organized as in the other types of muscle tissue. In smooth muscle, the contractions are not quick and rapid but rather smooth and continuous. Smooth muscle is found surrounding many organs, blood vessels, and other vessels used for transporting fluids. The smooth muscle can contract to apply a force on organ. This can be used to move blood or food throughout their respective systems.

Q4:write a note on cycle of breathing. BREATHING CYCLE

- The Breathing Cycle is a description of the changes in pressure, lung volume, and airflow that occur during a single cycle of breathing. The major pressure gradient which controls expansion and contraction of the lung

during the breathing cycle is that between the alveolar air and the intrapleural space; consequently, we will be focusing on this gradient. The breathing cycle can be divided into three basic stages including rest, inspiration, and expiration which are discussed separately below.

❖ Rest

- During rest there is no net movement of air into or out of the lungs and the lung volume is equivalent to the Functional Residual Capacity. Given that there is no net movement of air it is clear that the air pressure in the alveoli is equivalent to that of atmospheric pressure. However, the intrapleural pressure in a resting lung is roughly -5 cm H₂O, that is five centimeters of water, below that of atmospheric pressure at rest. The negative intrapleural pressure is a result of the opposing forces of the lung and chest wall

❖ INSPIRATION

- During inspiration there is a net movement of air into the lungs and the volume of the lungs expands by the tidal volume above that of the Functional Residual Capacity (FRC). Given the inward movement of air, it is clear that the alveolar pressure must be slightly negative, thus dipping below that of atmospheric pressure and in

consequence actuating inward airflow. During inspiration, the intrapleural pressure decreases also, dipping to -7 or -8 cm H₂O below atmospheric pressure. This more negative intrapleural pressure is the result of the increasing recoiling force exerted by the lung as it expands.

❖ EXPIRATION

- During expiration there is a net movement of air out of the expanded lungs and the volume of the lungs declines by the tidal volume back to the FRC. Given the outward movement of air, it is clear that the alveolar pressure must be slightly positive, thus increasing above that of atmospheric pressure and in consequence actuating outward airflow. During expiration, the elastic recoil of the lung declines as it contracts; consequently, the intrapleural pressure returns to its previous value of -5 cm H₂O, thus reestablishing the original FRC lung volume.

Q5 : write a detail note on function of integumentary system.

The skin and accessory structures perform a variety of essential functions, such as protecting the body from

invasion by microorganisms, chemicals, and other environmental factors; preventing dehydration; acting as a sensory organ; modulating body temperature and electrolyte balance; and synthesizing vitamin D. The underlying hypodermis has important roles in storing fats, forming a “cushion” over underlying structures, and providing insulation from cold temperatures.

Protection:

The skin protects the rest of the body from the basic elements of nature such as wind, water, and UV sunlight. It acts as a protective barrier against water loss, due to the presence of layers of keratin and glycolipids in the stratum corneum. It also is the first line of defense against abrasive activity due to contact with grit, microbes, or harmful chemicals. Sweat excreted from sweat glands deters microbes from over-colonizing the skin surface by generating dermicidin, which has antibiotic properties.

Sensory Function:

The skin acts as a sense organ because the epidermis, dermis, and the hypodermis contain specialized sensory nerve structures that detect touch, surface temperature, and pain.

Thermoregulation:

The integumentary system helps regulate body temperature through its tight association with the sympathetic nervous system, the division of the nervous system involved in our fight-or-flight responses.

Vitamin D Synthesis:

The epidermal layer of human skin synthesizes vitamin D when exposed to UV radiation. In the presence of sunlight, a form of vitamin D₃ called cholecalciferol is synthesized from a derivative of the steroid cholesterol in the skin.