

Welcome, in today's

Session we will be discussing about the hypothalamo

hypophyseal portal system Part 2 module number 6 of the endocrine

hypothalamus. I'm pretty Pereira from Carmel College of Arts,

Science and Commerce for women.No way KOA.

Into the session we will be discussing about the

overview of anatomy of the hypophysis, which is

actually the pituitary gland, the hypothalamus,

hypophyseal portal system and the significance of

this portal system.

At the end of this session,the student should be able

to describe the anatomy of the hypothesis, explain the

hypothalamic hypophyseal portal system, and identify

the significance of the hotel system.

Now the pituitary gland, also known as the hypophysis, is a

bean sized organ. It's a very small organ which is lying just

below the hypothalamus and it is connected to the hypothalamus by

the stock or stem, called as infundibulum or infundibular

stalk or the pituitary stalk.

Now, this particular organ,the pituitary gland, sits

within the sphenoid bone.

And this depression is called as the sella turcica, which refers to the Turkish type of Saddle.

Now. The anatomically the hypophysis or the pituitary gland is split into two lobes. The larger lobe is known as the adenohypophysis or the anterior lobe and the smaller lobe, or the smaller lobe is known as the posterior or neurohypophysis.

you can see in this image here the hypothalamus is connected to the

Pituitary through this

infundibular stalk. Right, This is the larger portion

that is the adenohypophysis and the

smaller one is the neurohypophysis, also

known as the posterior lobe of the pituitary.

Now the anterior hypophysis or the anterior lobe of the

pituitary is split into three regions. That is, the pars

distalis the majority of it is named as pars distalis.

Pars Intermedia is a thin layer of epithelium, a thin epithelial

layer which separates the pars distalis from the posterior part

of the pituitary and pars tuberalis

is a small strip of the pars distalis which extends and

winds around the infundibulum, so these are the three regions

of the hypophysis that is the pars Distalis Pars Intermedia, and pars tuberalis. Remember that the pars intermedia is a thin epithelial layer which separates the pars distalis from the posterior pituitary.

Now what is the portal system we have? We have spoken about the hypothalamus pituitary complex, which is actually the command center. This is a major part of the endocrine regulation.

And the hypothalamus pituitary complex is the connecting link between the nervous system and the endocrine system. It has both the neural functions and the endocrine functions. So the hypothalamus access the neural function and the endocrine function is carried out by the pituitary complex.

The portal system regulates the synthesis and secretion of hormones of other glands. What happens here is that hypothalamus produces certain hormones, and these hormones act on the anterior pituitary to synthesize even more hormones, which will then go and target the other gland.

In the case of the posterior pituitary, it acts as the storage of hormones which are produced by the hypothalamus.

Now the portal system comprises of certain parts or I would say steps. So these are the superior-hypophyseal artery. The primary

capillary plexus, the anterior lobe of the pituitary gland, secondary capillary plexus, and then it goes into the systemic circulation. So how this is taking place here.

So the superior hypophyseal artery brings the blood supply into the hypothalamus. Here you can see this represents the hypothalamus which is connected to the pituitary by the pituitary stalk. Here the larger portion is the adenohypophysis and the smaller portion stands for your neurohypophysis. This is a diagrammatic representation of how the portal system works now. Why is it called the portal system? Portal systems are known to start and end with capillaries.

Here, this portion is a network of capillaries, so there are two capillaries here which refer to as the primary capillary plexus and the secondary capillary plexus. So these two capillaries and this small strip of the drains of the vein between them.

They make up the hypothalamo-hypophyseal portal system. It is referred to as the hypothalamo hypophyseal portal system as it starts in the hypothalamus and it ends in the hypophysis.

So the superior hypophyseal artery brings the blood into the hypothalamus and it splits into a network of capillaries. Now

this network of capillary is first within the hypothalamus and that's why it's referred to as the primary capillary plexus, or primary Plexus. Is these blood then drains into single vein into the anterior lobe of the pituitary or the adenohypophysis? Now here it forms another capillary network.

Which is referred to as the secondary capillary plexus or the secondary plexus.

Once the hormones have been diffused once the hormones have been sent to from the hypothalamus to the pituitary, they are then released into the.

Systemic circulation through the hypophyseal vein. So the steps here are the blood comes through the hypophyseal artery. It splits into a network of capillaries in the hypothalamus, where the hormones of the hypothalamus diffused into these capillaries. These hormones are then carried to the adenohypophysis, where again there there is a set of capillaries where the adenohypophyseal hormones enter into this capillaries and then it is released into the systemic circulation through the hypophyseal vein.

And it is referred to as the portal system because it this

the entire strip here starts and ends with capillaries. Now there is only one other portal system in the human body and it is between the liver and the gastrointestinal tract. Now, this particular portal system is referred to as the hepatic portal system, because it starts with capillaries and ends with capillaries. Now here is an example of how this hormonal regulation is taking place through this portal system.

So the hypothalamus here is responsible for releasing hormones and one of the hormones is TRH, which stands for Thyrotropin releasing hormone. Now the Thyrotropin releasing hormones produced by the hypothalamus. It enters through the portal system. Here it travels through these portal veins and it enters into the adenohypophysis or the anterior lobe of the pituitary. Now it stimulates the adenohypophysis to produce TSH, which is the.

Thyroid stimulating hormone. The name itself tells us that this hormone goes and acts on the thyroid gland.

So the thyroid stimulating hormone acts on the thyroid gland, Now the thyroid gland. We all know is a butterfly shaped gland which is present in the

neck. So the thyroid gland releases or is triggered to produce the hormones T3 and T4. T3 stands for triiodothyronine and T4 is the thyroxine hormones. These are the thyroid hormones which are responsible for the proper metabolic activity of the body.

These are my references.

Thank you.