This is the Bachelors of Science

Third Year program. Subject is Zoology for semester 5, paper

code is ZOC 105.

And the title of the paper is

Endocrinology. The title of this unit is Hypophysis , and

the name of the module is ‘Hypophysis blood supply’. It's module

No. 17 and I'm Doctor Manoj Borker.

Associate Professor Zoology at Carmel College for women. Nuvem, Goa.
The outline of this module is to familiarize the

learner with angioarchitecture,which means in simple words the

vascular supply or the blood supply of the hypophysis

And the hypophyseal portal system and the significance

thereof. There's something very interesting and unique that we

shall see in course of this presentation. The learning

outcomes are, to be able to describe and explain the

efficiency of angio-architecture or vascular design for optimized

and speedy hypothalamo-hypophyseal communication. What

exactly this means? We shall see in course of this module.

Now to start with, let's be very clear. The word angio
-architecture signifies the specific arrangement of

vasculature or blood vessels within the pituitary tissue.

And in so far as the adenohypophyseal angio-architecture is

Concerned, the four important constitutions are the superior

hypophyseal artery, which brings in the blood to the

adenohypophysis or the anterior pituitary. The primary Plexus

of capillaries or primary capillary Plexus. The secondary

capillary plexus, which is a fine network of capillaries .

Which are arborized, the reason we shall see in due

course of this presentation, and of

course, the whole adenohypophysis is eventually

drained by the anterior hypophyseal vein.

The blood supply to theAdenohypophysis is illustrated

in this sketch. You kindly understand that the hypothalamo

Hypophyseal Complex is what is sought to be indicated here or in

this. What is extremely important is the hypophyseal

portal system which starts with this superior hyper facial

artery indicated by the red arrow that brings in the blood

through the primary Plexus, it is shunted through the hypophyseal

 veins into the secondary plexus which is again yet

another fine network or arborized network of capillaries to

be eventually drained.

out by the anterior hypophyseal vein , which is indicated by the

dark blue arrow. So let's quickly understand that the

blood supply to the pituitary starts or arrives through the

superior hypophyseal artery, makes it into the primary

capillary plexuses, which is drained by the hypophyseal

portal veins, into the secondary capillary plexus, and out it goes

through the anterior hypophyseal veins. Now this is very,very important and a strategic

arrangement of vasculature in the part of the pituitary known as

adenohypophysis, whereas the blood supply or angio-

architecture of the neurohypophysis is slightly

different in that it does not have any hypophyseal portal

system. The two important elements of blood supply to the

neurohypophysis include the inferior hypophyseal artery and

the hypophyseal artery. As you can see very clearly here.

this part is what is pertaining to angio-architecture indicated

by the red, Inferior hypophyseal artery, a small.

Plexus is of capillaries, which of course is not a portal system.

It's a normal capillary arborization and the hypophyseal

vein together. This constitutes in the adenohypophysis the

Hypothalamo-hypophyseal portal system, which I repeat comprises

of these superior hypophyseal artery, which breaks up into a

primary plexus of capillaries to be drained by the long portal

Hypophyseal Portal veins, which again arborises or

break up into the secondary capillary plexus of the

hypervisor portal system.. So the Hypophyseal Portal system has

got a primary plexus of capillaries and a secondary Plexus of capillaries between the two, you find the long portal veins. The

Whole thing eventually drains through a venous drainage from

both the lobes. The neurohypophysis and the adenohypophysis eventually drain into the dural sinuses. so this

is on the whole, the hypothalamus high professional.

Portal system, which largely restricts itself to the

adenohypophysis. I've already explained this part to you that

the Neurohypophysis is supplied by inferior hyper facial artery.

Then you have a capillary plexus which is drained by the venous

system into the dural sinuses.

The entire strategic arrangement of this Angio-architecture is

to bypass the systemic circulation and communicate

straight, allow communication between the hypothalamus and the

Hypophysis. To be more precise,the adenohypophysis. So the

bypassing of these Messenger molecules, which arrived from

the hypothalamic nuclei to be delivered straight into the

secretory part of the adenohypophysis, will effectively

lessen the time over which this substance can reach here.

Anna had it to be emptied into the systemic circulation it

would have taken a little longer for this Messenger molecules to arrive at this critical part of the adenohypophysis , where it stimulates certain targets,secretory cells. So the purpose of the hypothalamo- hypophyseal-Portal system is to ensure speedy delivery of this Messenger molecules from the hypothalamus straight into the pars distalis, where they will stimulate or inhibit the secretory activity of. the adenohypophyseal pars distalis , so the whole idea of the hypothalamo-hypophyseal- portal system is to bypass the systemic circulation which if had to be the case, would have taken much longer for this messenger molecules to reach the target cells in the adenohypophyseal pars distalis. The references for these modules are, as you can see on your slides. Thank you.