

## **I year Pharm D 1.1 H A P Theory, Human Anatomy and Physiology**

### **Central Nervous system:**

Pineal gland; It is called as the third eye;  
Location; Deep in the centre of brain!  
Connected to light!  
Metaphysically connects the physical body with spiritual world

### **PONS:**

Portion of brain stem;  
Location; Above the medulla oblongata and below the mid brain  
Size ; 2.5 cm

### **Epithalamus:**

It is less important than thalamus and Hypothalamus

It is the dorsal part of the diencephalon! It helps to secrete melatonin from the pineal gland.

Function. Of Hypothalamus;

To induce sleep

1.Regulation of the;

a Certain metabolic processes

b.Autonomic nervous system

2 Synthesis and secrete NEURO Hormones, called as hypothalamic releasing factors

a. Normal body temperature

b.Hunger

c.Thirst

d.Fatigue

e.Sleep

f. Circadian rhythm ( day/ night)

g.Behaviour

h.sexual activities and Parenting Ok Students, coming to the last part;

Cranial nerves: 12 pairs

### **Functions:**

1. Some are sensory

2.Some are motor

Some have both

The disorders of C N S;

Infection of Meninges; MENINGITIS,

Encephalitis, brain fever,

Polio myelitis,

Epidural abscess; collection of fluid in the covering of skull and spinal cord,

Cervical Spondylitis; wear and tear of spinal disk, due to age; you might have seen elders wearing a neck hood,

Parkinson's disease,

Epilepsy---Fits,

Stroke-- due to blood flow blockade to brain.

Hemiplegia; one half of our body will not work, Half paralysis

Cerebral palsy ; complete paralysis,

Alzheimer's disease; Dementia, forgetfulness, due to damage of brain neurons

### **DIGESTIVE System;**

It includes mouth to anus

Mouth is first

Teeth, tongue and salivary glands along with amylase digests the food and makes it a bolus easy for swallowing

Esophagus has four layers; from inner most to outer;

- 1.Mucosa
- 2.Sub mucosa
- 3.Muscularis
4. Adventitia

**Stomach:**

Capacity; 1/2 l to 1 and 1/2l

Secretes acid and PEPSINOGEN

The semi digested food enters into the **Small Intestine** ,where food is further digested and absorbed by VILLI

The 3 parts of the S I are Duodenum, Jejunum and ileum ! It is the longest part!

The semi

digested food contents after absorption through villi, will pass from ileum to Ceacum !

**APPENDIX**

It is a small 4 inch long part located in the lower right side at the junction of S I and L I near ileocecal sphincter

!It is a LYMPHATIC Tissue, immune in functions! Called Vermiform appendix! Has bacterial flora ! The entire intestines are in bacterial flora !APPENDICITIS; Normally our appendix is a rich source of good bacteria!

Due to food poisoning or other reasons, there will be DIARRHOEA!

After the bout of diarrhoea, appendix will REBOOT ,the Intestinal system !

You might have got the experience with your computer ! When computer is not working suddenly! REBOOT ing will be done!

But when Appendix is blocked,due to infection or inflammation, it will ,swell, rupture and burst! It is a medical emergency ! it has to be attended immediately ! Pus and blood will ooze out !

It has to be removed by surgery !

Unlike other part ,a person can live

Last part of the GIT ;

**LARGE INTESTINE**

Location; Lower Abdominal cavity!

1.5 m long/ 5 feet

1/4 th of S I

The parts of L I ;

Ceacum,

Colon,

Rectum

and

Anus

Caecum;

Latin word; Blind

It is a pouch ( purse) within the PERITONEUM.

It is the connection between S I and L I.

In the right side and Appendix is joined with it

Superiorly the caecum continues with the ascending colon.

Main Functions of Caecum;

Lubricating the undigested food received from ileum,absorbing the water and salts, through the thick wall and preparing the undigested food to excrete.

Superiorly the caecum continues with ascending colon.COLON; The longest part of the L I

It includes, ascending colon, Transverse colon, descending colon and sigmoid colon

Main Functions of Caecum;

Lubricating the undigested food received from ileum,absorbing the water and salts, through the thick wall and preparing the undigested food to excrete.

Blood supply to LI ;

Superior Mesentric artery,ileocolic artery, ceacal artery appendicular artery etc

Nervous connection;

VAGUS NERVE,

Parasympathetic, Pelvic Splanchnic nerves; S2 to S4

Rectum ; About 12 cm long

Anus ; about 4cm long

Thus the feces or stool or the undigested food ,depends on one's diet,fluid, Medication and lifestyle!

It will be ranging from constipation

( difficulty in passing the stools) to normal passing of stools to urgency ( diarrhoea)

There are multiple disorders in G I T

The super speciality course is ; GASTROENTEROLOGY

There are two anal Sphincters

1. Internal ( Involuntary) circular smooth muscles
2. External ( voluntary)

One can control only the second! But for that he should be conscious

### **Accessory digestive system :**

Liver and Pancreas

Liver is a wonderful organ ! Often questions are asked! It is a DETOXIFICATION organ!

Every day,we consume, different types of food, may be hygienic or un hygienic ! We take different types of drugs ! All are simplified ,taken to the system,if necessary or else removed!

It is a store house of different enzymes !

Glycogen is stored

The gall bladder stores the secretion of liver called BILE ! It helps in digestion of fats

The liver produces about 500ml to 1 l of secretion ! The gall bladder concentrates the and stores about 50 to 70 ml as

B I L E

### **RESPIRATORY system: ( R S)**

Now the whole world is suffering because of the corona virus pandemic that affects our R S

Respiratory system is basically concerned for gaseous exchange!

Many deaths take place because the patient is not able to respire normally!

He needs VENTILATOR

R S works directly in connection with the CIRCULATORY system!

There are three types of respiration;

1. Pulmonary Respiration;  
Inhalation of Oxygen and exhalation of Carbon dioxide
2. External Respiration;  
Exchange of gases between Lungs and Blood Stream

3 Internal Respiration;

Exchange of gases between Blood Stream and Tissues

Respiratory system is basically divided into two types;

1. UPPER Respiratory tract

Located outside the chest cavity;

a. Nose

b. pharynx ( we have seen in G I T )

c. Larynx ( voice box) unique ( different) for everyone !

2. LOWER Respiratory tract;

a. Trachea

b. Bronchi

c Bronchioles

and

d Alveoli

Lungs are two spongy air filled organ!

If the lungs are stretched, it will be like a TENNIS COURT! Very big !

The Lower Respiratory tract is inside the chest cavity! TRACHEA ( Air tube) connects both the tracts, just like a bridge

The right lung has three lobes;

Superior,

Middle and inferior

Liver is located just below the right lung

It is broader

The left lung has;

Superior and inferior

The lobes are separated by fissures

Lungs are protected by covering called PLEURA.

Inside the pleura there is fluid called pleural fluid!

Inner layer with lungs called VICERAL pleura and outer layer with chest called PARIETAL pleura

The pleural fluid lubricate the lungs during Respiration, due to expansion and contraction

Pathway of air; Nasal cavity,

throat ( pharynx),

Voice box

(Larynx),

TRACHEA ( wind pipe) in front of oesophagus ( food pipe),

Bronchi,

Bronchioles

and

Alveoli

When a person is sick and if he can't respire through nose, mouth is the alternative!

In the case of Respiratory diseases like Diphtheria or during certain operations the surgeons will make a hole in the trachea and connect the tracheal cannula, which will be connected to a Respiratory instrument, which will push the air in and out

TRACHEA;

It is a cartilagenous, membranous tube, extending from C 6 to T 4/5.

10-- 11 cm ,long

1.7 cm wide

16 to 22 tracheal rings

Trachea ends at CARINA.

Then from carina it branches into right and left BRONCHI, into the Lungs

Bronchi is made of Cartilage ,which gives the stabilityThe bronchi ( bronchus -- Singular) then branches into BRONCHIOLES, just like a tree, main stem and big branches and the small branches

Bronchioles are further divided into secondary,, 4th, 5 th and 6 th order Bronchioles and then finally end in

ALVEOLI

ALVEOLI:

Tiny air sacs, that allows rapid air exchange!

There are about 600 millions of Alveoli !

The surface area of one alveoli : 70 Square metre

## **MECHANICS OF RESPIRATION:**

Two Phases.

1. INSPIRATION

and

2 EXPIRATION

Inspiration;

Inhaling air into the Lungs!

Principle; Difference in air Pressure

During inhaling, our diaphragm moves down, chest cavity will expand! Lung volume increases!

So inside air pressure is decreased, compared to the atmospheric air Therefore atmospheric air will enter rapidly into the lungs

On ward journey;

Thus oxygen then travels from alveoli to the blood through the blood capillaries.

From the blood to the tissues!

After nourishing the tissues,it will get back the carbon di oxide from tissues to the blood !

Return journey;

Carbon dioxide from Blood is exchanged in the alveoli and from there it goes to the atmospheric air in the reverse way

EXPIRATION is exactly opposite !