

Name

Wagdy Ahmad

ID

14753

Department

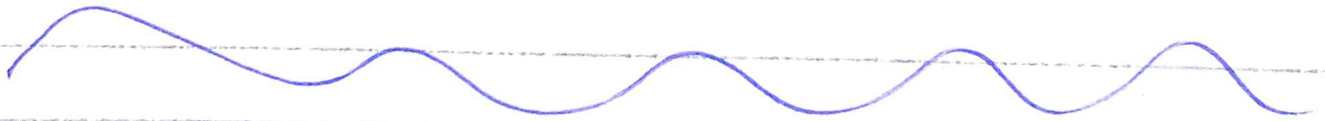
BS (MLT)

Paper

C. Pathology

Instructor

Mr. Adnan



(1)

Q1: Thyroid Hormones:-

Ans:- Thyroid is the gland of endocrine gland which located at the root of neck ~~and~~ on the ~~other~~ side of the trachea.

⇒ The thyroid gland which secretes the hormones e.g T<sub>3</sub> (9%) and T<sub>4</sub> (90%) and also calcitonin.

⇒ The potency of T<sub>4</sub> is four time less than that of T<sub>3</sub>.

⇒ For the <sup>secretory</sup> activity of thyroid gland TSH is more necessary.

⇒ The thyroid hormones degradation which is occurs in liver, kidney and muscles etc.

So the rate of secretion

D-T-O

2  
of the thyroid hormones are as  
under

⇒ Thyroxine = 80 to 90  $\mu\text{g}/\text{day}$

⇒ Tri-iodothyronine = 4 to 5  $\mu\text{g}/\text{day}$

Plasma level are as under

⇒ Total  $T_3$  = 0.12  $\text{ig}/\text{dL}$

⇒ Total  $T_4$  = 8  $\text{ig}/\text{dL}$

Function :-

⇒ Growthness stimulation

⇒ basal metabolic rate increasing.

⇒ They do action on body weight.

⇒ Action on system of  
cardiovascular.

⇒ Action on fat metabolism.

⇒ They can action on protein  
metabolism.



(3)

So there are two types of thyroid hormones.

i) Hyperthyroidism

ii) Hypothyroidism

i) Hyperthyroidism means

→ Hyper means increase.

thyroidism means infection in thyroid gland.

So it means increase in the infection of thyroid glands.

→ They are caused by the disease their names are as

under

(i) Grave's disease

(ii) thyroid adenoma.

(4)

Symptoms:-

- ⇒ Polycythemia.
- ⇒ Decreasing in body weight.
- ⇒ Weakness in muscles.
- ⇒ more sweating.
- ⇒ Toxic goiter  
etc.

(ii) Hypothyroidism means

- ⇒ Hypo means decreasing.
- ⇒ thyroidism means infection in thyroid gland.
- ⇒ So it means the decreasing in infection.
- ⇒ They both are the harmful disease.
- ⇒ They can be caused by the  
D-T-G

(5)

diseases named are as under

i) Hashimoto's thyroiditis in early stage

ii) Pituitary abnormality.

iii) Hashimoto's thyroiditis also in large stage.  
etc.

They both are having Test.

are as under in the table

v) Hyperthyroidism

Causes	Test			
	TSH	T <sub>3</sub> T <sub>4</sub>	TSI	Radioactive iodine uptake test
Graves disease	↓		+	↑
Thyroiditis	↓	↑	-	↓
Thyroid nodule	↓	↑	-	↑ or Normal

vi) Hypothyroidism

Causes	TSH	T <sub>3</sub> /T <sub>4</sub>	Ant thyroid Antibody
Hashimoto's thyroiditis (early stage)	↑	↓ or normal	+



(6)

Cause

Pituitary abnormality	→	TSH	T <sub>3</sub> /T <sub>4</sub>	Antibody
		↓	↓	—

etc.

## Q2: Adrenocortical Hormones :-

Ans: ⇒ The adrenocortical hormones is secreted by adrenal glands.

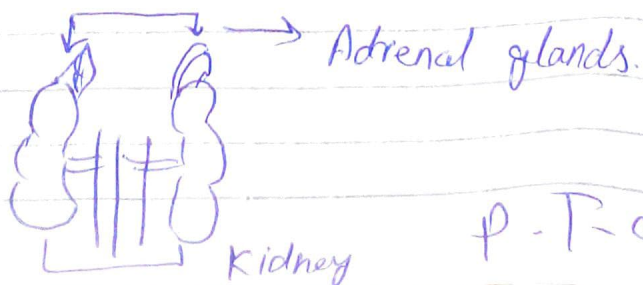
⇒ So there are two in number adrenal glands.

⇒ Each gland having mass as 4 grams of each.

⇒ They are located on the superior pole of 2 kidneys.

⇒ They are composed of 2 distinct parts of each glands.

are as under



(7)

(1) Adrenal Cortex

(2) Adrenal Medulla.

➔ Adrenal medulla:-

⇒ The gland central is 20% which are related to sympathetic nervous system.

⇒ They ~~are~~ secrete norepinephrine and also epinephrine.

Adrenal cortex:-

⇒ They are secreted the hormone as corticosteroids.

⇒ These all hormones which are all are synthesized from the steroid cholesterol and also all are having chemical formula



(8)

⇒ So the adrenal cortex secrete two major of adrenocortical hormones.  
e.g. mineralocorticoids and  
Glucocorticoids.

⇒ They having also secretes small amount of sex hormones  
e.g. Androgen hormones.

⇒ The adrenal cortex having three distinct layers -  
are as underd their names.

- (i) The zona glomerulosa.
- (ii) The zona fasciculata
- (iii) The zona reticularis.

⇒ The zona glomerulosa is thin layer of the cells which are

(9)

→ Due to the enzyme aldosterone synthase secrete Aldosterone hormones

⇒ The zona fasciculata is the middle and widely layers which are 75% of the cortex

⇒ They secrete the hormones as cortisol and corticosterone and also in small amount of adrenal androgens and estrogens hormones.

etc.

⇒ The zona reticularis is the deep layer of the cortex.

⇒ They also secrete the hormones by adrenal androgens.

e.g. dehydroepiandrosterone hormone and androstenedione hormone etc.

(10)

⇒ They are classified into three classes.

➔ Adrenocortical hormones are divided into three classes as by function.

(i) ~~Minerals~~ Mineralocorticoids.

(ii) ~~Mineraloc~~ Glucocorticoids.

and (iii) Androgens.

and so on.





(11)

Ans

Q 3) (1) Hyperthyroidism :-

→ The word hyperthyroidism is derived from two words hyper which means over or increase and thyroidism is a thyroid.

→ So when the thyroid gland produces in more amount of hormones thyroxine is called <sup>per</sup>Hyperthyroidism.

→ They can accelerate the body's metabolism.

→ They can cause weight loss and also a rapid or irregular heartbeat.

(12)

⇒ They are also caused by  
Graves disease and  
thyroid adenoma.  
etc.

Symptoms.

- ⇒ muscles weakness
- ⇒ Decreases body weight
- ⇒ Diarrhea.
- ⇒ Polycythemia.
- etc.

(2) Hypothyroidism :

A word which is  
derived from two words "hypo"  
which decrease or low and  
thyroidism means thyroid.

⇒ They leads in adults as  
P-T-G

myxedema and also leads in children as cretinism.

So Hypothyroidism means under active.

⇒ These condition in which there is no produce enough of certain crucial hormones. is called Hypothyroidism.

Symptoms:-

There are more symptoms. but here we have some symptoms are as under.

⇒ Anemia.

⇒ Fatigue.

⇒ Body weight increasing.

⇒ Constipation.

⇒ Hair growth depression.



(14)

## Function Test:

- ⇒ (i) Plasma level of  $T_3$  and  $T_4$  in measurement
  - ⇒ (ii) TRH and TSH measurement.
  - ⇒ (iii) Basal metabolic rate measurement.
- The first measurement for both is the most accurate diagnostic test which is the direct measurement of concentration of 'free' thyroid hormones in the plasma i.e.  $T_3$  and  $T_4$ .
- ⇒ The second measurement for these is almost in hyperthyroidism is totally absent of these two hormones.

P-T-G

(15)

but present or increase in hypothyroidism which is caused by negative feedback. increase thyroid hormones level.

The third measurement for in hyperthyroidism, increasing of basal metabolic rate from about 30% to 60%. And the rate of basal metabolic is decreased in hypothyroidism by 20% to 40% and so on.

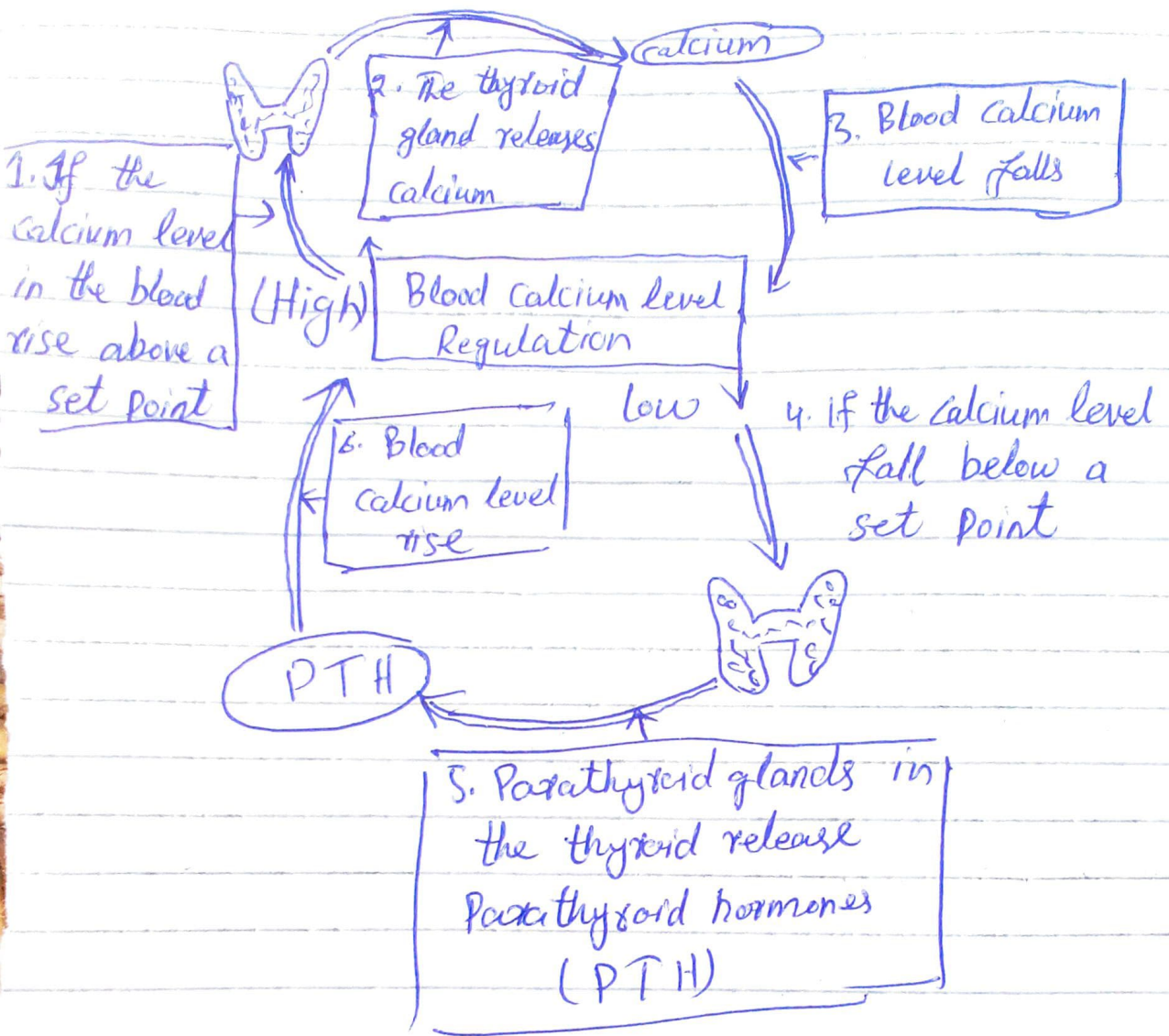
## Q4 Calcium regulation:-

- ⇒ Here we have Parathyroid glands which produces the parathyroid hormones (PTH).
- ⇒ So this parathyroid hormones regulates the level of calcium of blood.
- ⇒ PTH start releasing to give response when the level of blood calcium become low. by targetting the skeleton, kidneys and also the intestine.

The regulation of calcium is also in diagram are as under-

P-T-O





and so on,

Osteomalacia:-

It means that due to the Vitamin D deficiency often develops soft bones.

⇒ In children osteomalacia is called rickets. P-T-O

18

⇒ The deficiency of vitamin D which is the common cause of this disease called osteomalacia.

⇒ They are normally obtained from the sunlight and also from diet.

This is called osteomalacia.

~~Q5)~~ Q5) Sex hormones :-

⇒ Chemical substances which are synthesized in small amount by endocrine tissue and carried by blood stream to another tissue, where it acts as a messenger to regulate the function of the target tissue or organ. is called sex hormones.

⇒ These are the sex hormones which are play in essential role in sexual development and reproduction.

⇒ The main glands as adrenal glands and gonads which produce the sex hormones.

P T - O



So they also include ovaries in the female and testes in male.

⇒ The steroid hormones such as estrogen and testosterone which are produced by ovaries and testes or adrenal cortex which they can affect on growth of or function of the reproductive organs or secondary sex characteristics development.  
and so on.

⇒ So at last Progesterone, estrogen and small amount of testosterone are the main sex hormones which are found in female.