



Hypoparathyroidism



Sanad Wanes
Haneen Anwar
Salsabel Ghazal

2nd Year PharmD students

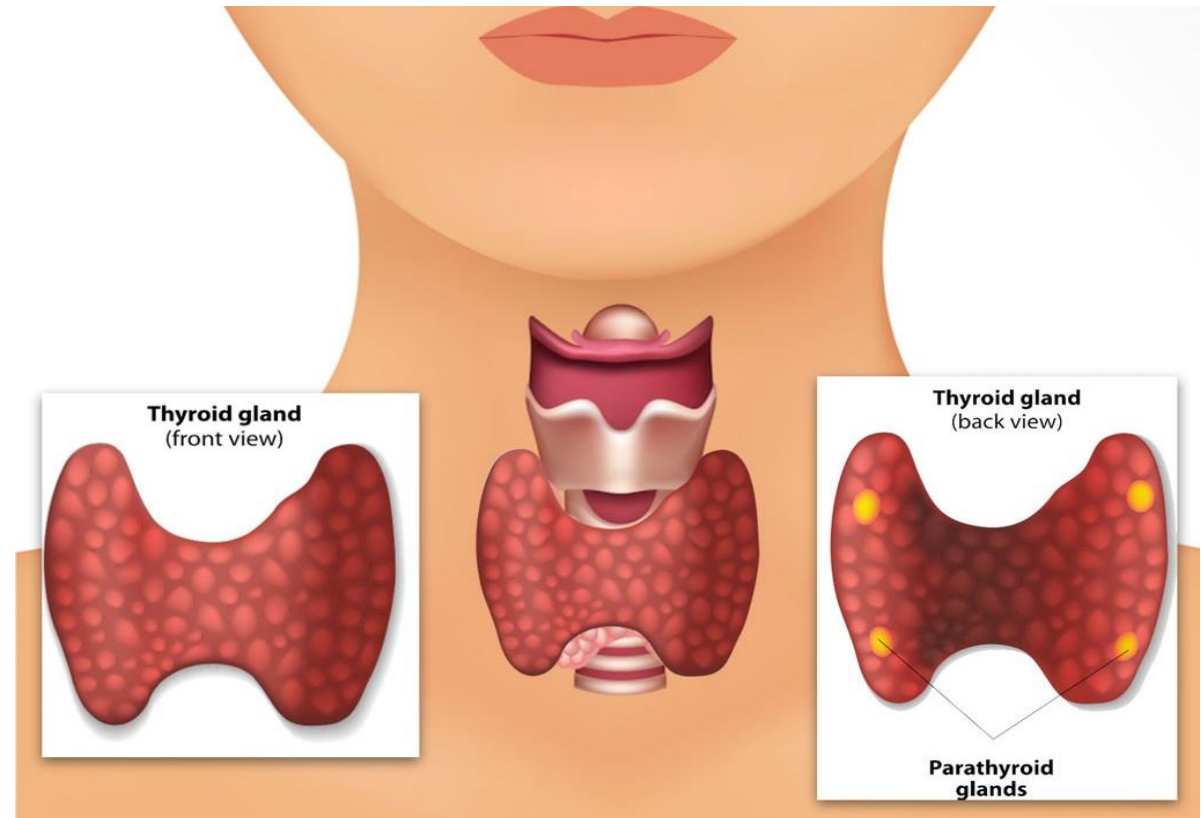
OBJECTIVES :

- 1- Define Hypoparathyroidism
- 2- Explain the most common causes of Hypoparathyroidism
- 3- List signs and symptoms of Hypoparathyroidism
- 4- Compare iatrogenic and idiopathic Hypoparathyroidism
- 5- Is Hypoparathyroidism congenital or inherited
- 6- Illustrate complication of Hypoparathyroidism
- 7- Determine diagnosis of Hypoparathyroidism
- 8- Discuss treatment of Hypoparathyroidism
- 9- Pseudohypoparathyroidism



INTRODUCTION:

- Everyone has four parathyroid glands located behind the thyroid gland.
- Each gland is the size of a grain of rice. The major function of PTH is to regulate the level of calcium in your body. It also controls the level of phosphorus and has a role in the production of the active form of vitamin D. All of these activities are required to maintain calcium balance.



Define Hypoparathyroidism:



- **Hypoparathyroidism** is an uncommon condition in which your body secretes abnormally low levels of parathyroid hormone (**PTH**).
- **PTH** is key to regulating and maintaining a balance of your body's levels of two minerals — calcium and phosphorus.
- **Hypoparathyroidism** causes hypocalcaemia and increased level of phosphate in the blood

“ *Most common causes of Hypoparathyroidism*”

Causes of **Hypoparathyroidism** :



Hypoparathyroidism is most commonly caused by accidental injury to the parathyroid glands during head and neck surgery.

1- Post-surgical Hypoparathyroidism

2- Autoimmune disease

3- Hereditary Hypoparathyroidism

4- Extensive cancer radiation treatment of your face or neck

5- Low levels of magnesium in your blood

Post-surgical Hypoparathyroidism



- This most common cause of Hypoparathyroidism develops after accidental damage to or removal of the parathyroid glands during surgery. This surgery might be a treatment for diseases of the thyroid gland, or for throat or neck cancer.

Autoimmune disease.



- Your immune system creates antibodies against the parathyroid tissues, trying to reject them as if they were foreign bodies. In the process, the parathyroid glands stop manufacturing their hormone.



Hereditary Hypoparathyroidism.



- In this form, either you're born without parathyroid glands or they don't work properly.



Extensive cancer radiation treatment of your face or neck



- Radiation can result in destruction of your parathyroid glands, as can radioactive iodine treatment for **hyperthyroidism**, occasionally.



Low levels of magnesium in your blood

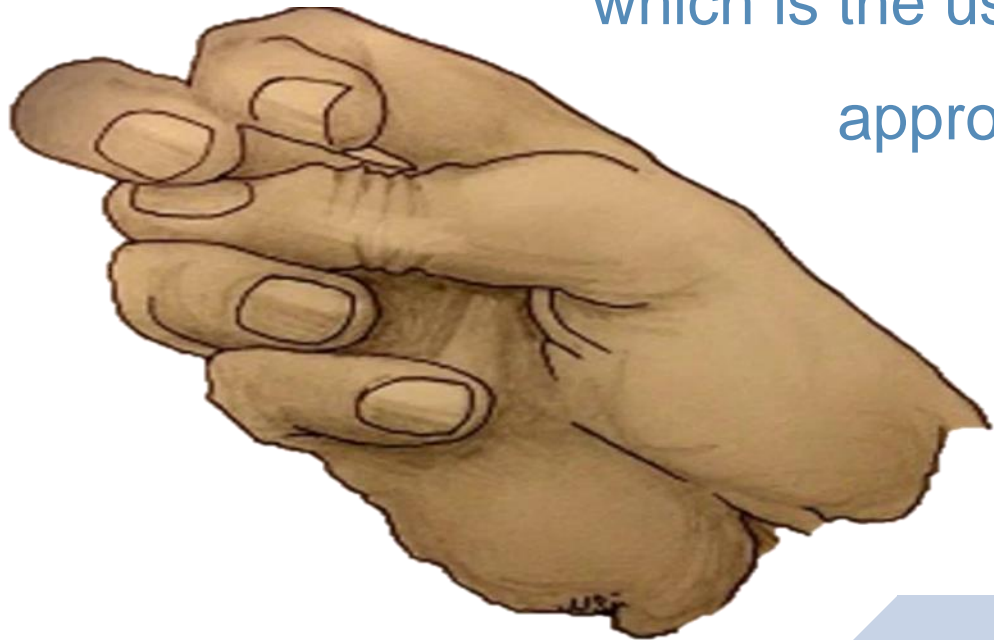


Mg

- Which can affect the function of your **parathyroid glands**.
- Normal magnesium levels are required for optimum secretion of parathyroid hormone.

Symptoms of Hypoparathyroidism

When this low calcium level is reached, the usual signs of tetany develop. Among the muscles of the body especially sensitive to tetanic spasm are the laryngeal muscles. Spasm of these muscles obstructs respiration, which is the usual cause of death in tetany unless appropriate treatment is applied.





Tingling or burning (paresthesia) in your fingertips, toes and lips

Muscle aches or cramps in your legs, feet, abdomen or face

Twitching or spasms of your muscles, particularly around your mouth, but also in your hands, arms and throat

Fatigue or weakness

Painful menstruation

Patchy hair loss

Brittle nails



“*Compare iatrogenic and idiopathic Hypoparathyroidism*”

iatrogenic

accidental removal of parathyroid or damage to the vascular supply of the glands during neck - surgery

idiopathic

due to atrophy of the glands because there is abnormal antibodies directed against parathyroid gland

“*Congenital or Inherited
Hypoparathyroidism*”

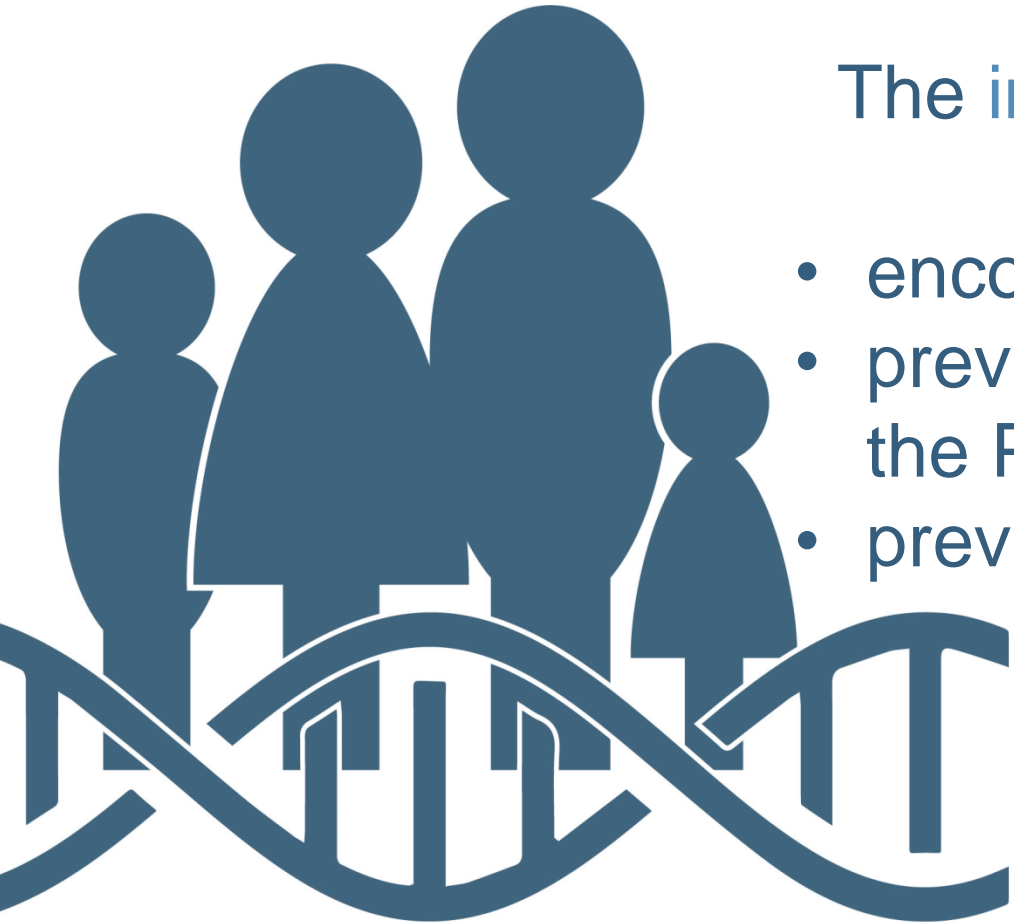
Congenital Hypoparathyroidism



DiGeorge's syndrome

The parathyroid glands do not develop properly while the baby is growing in the womb

Inherited Hypoparathyroidism



The inherited forms tend to arise from abnormal genes that may:

- encode abnormal forms of PTH or its receptor
- prevent normal conduction of cell signals from the PTH receptor to the nucleus
- prevent normal gland development before birth.

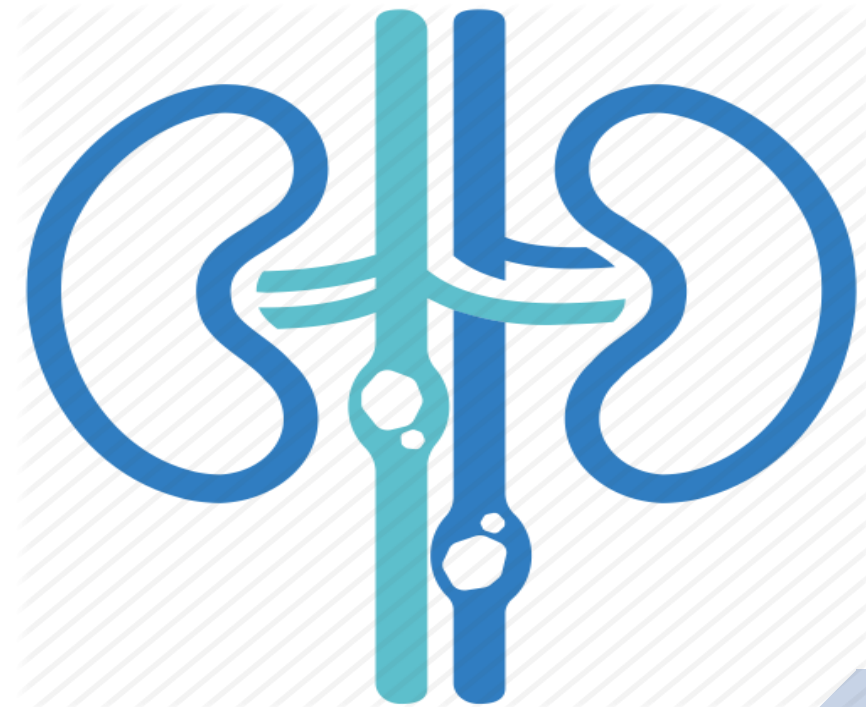
“*Complication of Hypoparathyroidism*”

Complication of Hypoparathyroidism



Long term complications of Hypoparathyroidism includes:

- Extraskkeletal calcification .
 - Cataracts.
 - Calcification of the basal ganglia
- . Renal complications
 - Hypercalciuria.
 - Nephrocalcinosis or kidney stones. -
 - Renal failure.



Complication of **Hypoparathyroidism**

- Brain fog and neurocognitive complaints.
- Reduced quality of life.
- Low skeletal metabolism.
- Increased incidence of psychiatric disorders and infections.

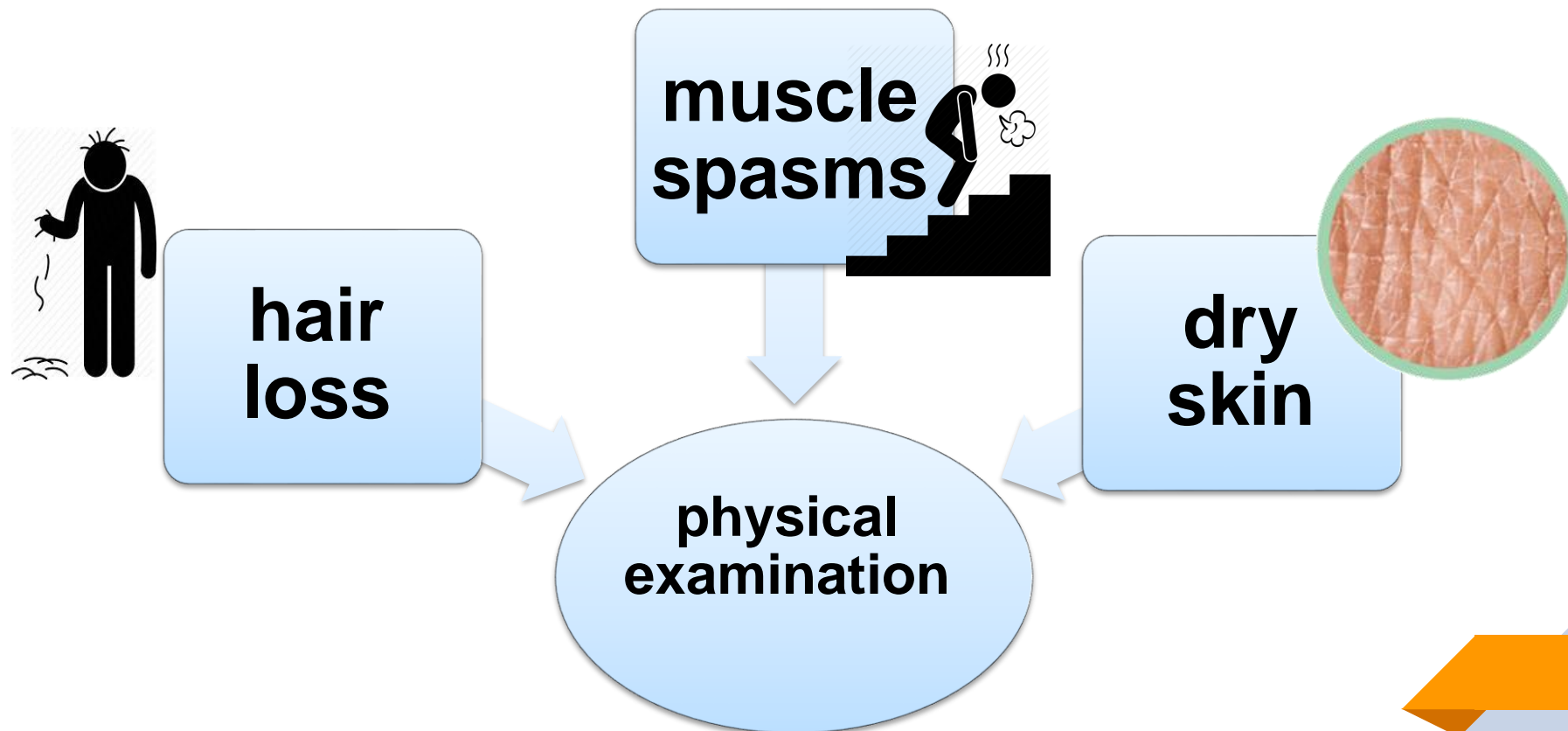


“*Diagnosis of Hypoparathyroidism*”

Diagnosis of Hypoparathyroidism



First the medical history is reviewed

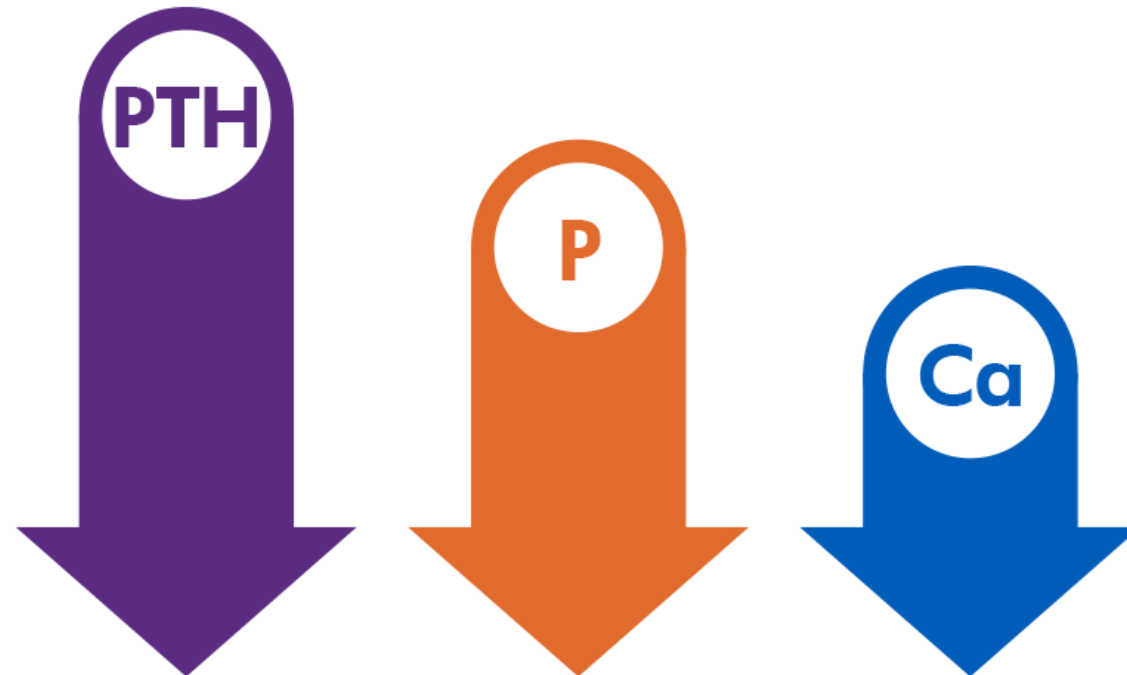


Diagnosis of **Hypoparathyroidism**



Blood tests is required to check the levels of the following in your blood

- ❖ Calcium
- ❖ Phosphorus
- ❖ Magnesium
- ❖ PTH



Additional tests include the following



Calcium levels in the urine is tested to determine if excess levels of Calcium are being secreted in the urine

the An electrocardiogram (**ECG**) measures the electrical activity in your heart information from this test can tell your doctor if you have an abnormal heart rhythm, which can be caused by Calcium deficiency



Additional tests include the following



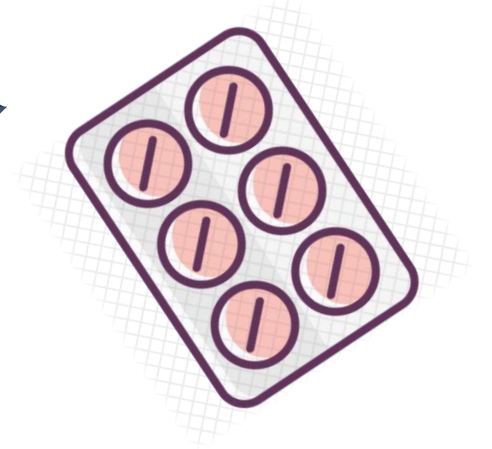
X-rays and bone density tests can help your doctor determine if low calcium levels have affected your bones.

The doctor will also check for abnormal tooth development and delayed milestones to diagnose this condition in children.



“ Treatment of *Hypoparathyroidism*”

Treatment of Hypoparathyroidism



1- With Vitamin D.

In most patients with Hypoparathyroidism, the administration of extremely large quantities of vitamin D, to as high as 100,000 units per day it might be necessary to administer 1,25-dihydroxycholecalciferol instead of the non activated form of vitamin D because of its much more potent and much more rapid action.

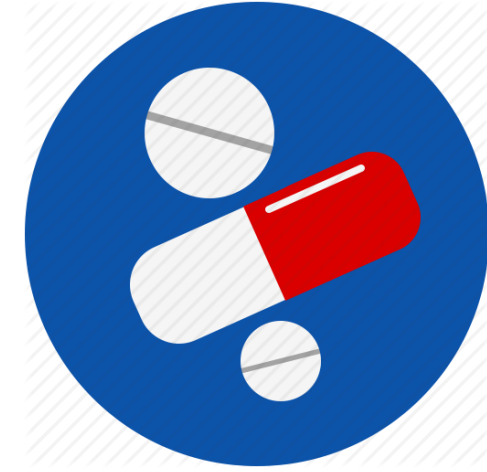
Treatment of Hypoparathyroidism



-2- With Para thyroid hormone (PTH)

Is occasionally used for treating Hypoparathyroidism. However, because of the expense of this hormone, because its effect lasts for a few hours at most, and because the tendency of the body to develop antibodies against it makes it progressively less effective, Hypoparathyroidism is usually not treated with PTH administration.

Treatment of Hypoparathyroidism



Oral Calcium Carbonate tablets³

Oral calcium supplements can increase Calcium levels in your blood. However, at high doses, Calcium supplements can cause gastrointestinal side effects, such as constipation, in some people.



Pseudohypoparathyroidism (PHP)



In this condition the glands produce **parathyroid hormone** but the body is resistant to it. So although there are normal to high levels of PTH, the body cannot respond normally to it causing **low Calcium** levels.

Phosphate levels may be normal or high. People with **PHP** are usually short, with shortened bones in their feet and hands. They may also have diabetes and an underactive thyroid gland

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Summary

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