

CALCIUM & PARATHYROID DISORDERS

CALCIUM PHYSIOLOGY

Calcium is an essential element that serves an important role in skeletal mineralization, muscle contraction, nerve conduction, hormone release, blood coagulation and other metabolic processes.

HYPERCALCEMIA

Nonspecific symptoms including nausea, vomiting, altered mental status, abdominal or flank pain, constipation, depression, polyuria, polydipsia, and nocturia. Severe cases can cause coma.

HYPOCALCEMIA

Acute hypocalcemia (< 8.5 mg/dL) can lead to syncope, congestive heart failure, arrhythmias, numbness and tingling, muscle spasms and tetany, bronchospasm, irritability, depression, fatigue, and seizures.

Chronic hypocalcemia can lead to coarse hair, brittle nails, psoriasis, dry skin, pruritus, poor dentition, and cataracts.

PARATHYROID DISORDERS

The parathyroid glands are tiny four glands located in the neck, secrete PTH and control the levels of calcium, phosphorus and magnesium circulating in the blood.

Hyperparathyroidism: When the parathyroid gland produces too much PTH

Types-

Primary hyperparathyroidism- When one or more parathyroid gland secretes more PTH causing hypercalcemia.

Causes- Single adenoma 85%, parathyroid hyperplasia 10-15%, parathyroid cancer <1%, familial-MEN 1, MEN 2A (rare).

Clinical features- Patients maybe asymptomatic or may have kidney stones, osteoporosis, neuromuscular symptoms and symptoms of hypercalcemia

Secondary hyperparathyroidism- occurs due to decreased activated vitamin D, hyperphosphatemia, hypocalcemia in chronic kidney disease and in states of vitamin D deficiency.

Tertiary Hyperparathyroidism- In advanced renal failure, there is autonomous overproduction of PTH, causing hypercalcemia.

HYPOPARATHYROIDISM- When the parathyroid is under-active, producing too little PTH and causing hypocalcemia.

Causes - Post surgical, Post radiation, Autoimmune, Low/high magnesium, Genetic disorders

Clinical features - Symptoms of hypocalcemia, Posterior subscapular cataracts, basal ganglia calcification