*Hypophosphatemia*

*Defined as aserum ph. Less then 2.5 mg /dl(0.8 mmollL)in adult*

*Phosphate imp.*

*1.major component of skeleton*

*2.comprise DNA .RNA*

*3.ATP COMPONENT*

*4.abuffer in bones,serum and urine*

Hypophosphatemia is an electrolyte disturbance in which there is an abnormally low level of phosphate in the blood.The condition has many causes, but is most commonly seen when malnourished patients (especially chronic alcoholics) are given large amounts of carbohydrates, which creates a high phosphorus demand by cells, removing phosphate from the blood (refeeding syndrome).

Causes

Refeeding syndrome

Respiratory alkalosis

Metabolic acidosis

Liver failure

Treatment of DKA

Hungry bone syndrome

Alcohol abuse

Malabsorption

Hyperparathyroidism

Fanconi syndrome

Clinical features………………??????

)

*Hyperphosphataemia*

**Causes**

Renal insufficiency

Hypoparathyroidism

Autoimmune

After neck surgery or radiation

Activating mutations of the calcium-sensing receptor

Parathyroid-independent hypercalcemia

Vitamin D or vitamin A intoxication

Sarcoidosis, other granulomatous diseases

Immobilization, osteolytic metastases

Milk-alkali syndrome

Pseudohypoparathyroidism

Acromegaly

Tumoral calcinosis

Heparin therapy

Rapid administration of exogenous phosphate (intravenous, oral, rectal)

Extensive cellular injury or necrosis

Crush injuries

Rhabdomyolysis

Hyperthermia

Fulminant hepatitis

Cytotoxic therapy

Severe hemolytic anemia

Transcellular phosphate shifts

Metabolic acidosis

Respiratory acidosis

CLINICAL FEATURES usually asymptomatic or sypmtoms of asso. Hypocalcaemia such tetany..soft tissue calcifications in CKD.

DX by measuring serum phos. More then 4,5 mgl dl (more then 1.46 mmol l L)

TREATMENT

1.phosphate binders

2.restriction of phosphate

3.saline diuresis or heamodialysis

*Hypomagnesemia*

Abnormalities of magnesium levels, such as hypomagnesemia, can result in disturbances in nearly every organ system and can cause potentially fatal complications (eg, ventricular arrhythmia, coronary artery vasospasm, sudden death

The total body magnesium content of an average adult is 25 g, or 1000 mmol. Approximately 60% of the body's magnesium is present in bone, 20% is in muscle, and another 20% is in soft tissue and the liver. Approximately 99% of total body magnesium is intracellular or bone-deposited, with only 1% present in the extracellular space. Seventy percent of plasma magnesium is ionized or complexed to filterable ions (eg, oxalate, phosphate, citrate) and is available for glomerular filtration, while 20% is protein-bound. Normal plasma magnesium concentration is 1.7-2.1 mg/dL (0.7-0.9 mmol, or 1.4-1.8 mEq/L

Etiology

Causes of hypomagnesemia related to decreased magnesium intake include the following

Starvation

Alcohol dependence

Total parenteral nutrition

redistribution of magnesium from extracellular to intracellular

Hungry bone syndrome

Treatment of diabetic ketoacidosis

Alcohol withdrawal syndromes

Refeeding syndrome

Acute pancreatitis

gastrointestinal magnesium loss include the following

 Diarrhea

Vomiting and nasogastric suction

renal magnesium loss include the following

Gitelman syndrome

Classic Bartter syndrome (type III Bartter syndrome)

Familial hypomagnesemia with hypercalciuria and nephrocalcinosis (FHHNC)

Autosomal-dominant hypocalcemia with hypercalciuria (ADHH)

Isolated dominant hypomagnesemia (IDH) with hypocalciuria

Isolated recessive hypomagnesemia (IRH) with normocalcemia

Diuretics - Loop diuretics, osmotic diuretics, and long-term use of thiazides

Antimicrobials - Amphotericin B, aminoglycosides, pentamidine, capreomycin, viomycin, and foscarnet

Chemotherapeutic agents - Cisplatin, cetuximab]

Immunosuppressants - Tacrolimus and cyclosporine

Proton-pump inhibitors]

Chronic metabolic acidosis

Volume expansion

Primary hyperaldosteronism

Recovery phase of acute tubular necrosis

Postobstructive diuresis

Hypermagnesemia

Hypermagnesemia is an electrolyte disturbance in which there is a high level of magnesium in the blood It is defined as a level greater than 1.1 mmol/L Symptoms include weakness, confusion, decreased breathing rate, and cardiac arrest

Hypermagnesemia can occur in kidney failure and those who are given magnesium salts or who take drugs that contain magnesium (e.g. some antacids and laxatives