



Phosphate

Sept 2014

Hypophosphataemia

Causes

Isolated phosphate deficiency very rare

Intracellular shift (resp alkalosis, carbohydrate/insulin, catecholamines and beta agonists, leukaemia, hungry bone syndrome (massive bone uptake calcium and phosphate after parathyroidectomy for hyperpara))

Increased urinary excretion (alcoholism, hyperpara, acute volume expansion, diuretics, malignancy)

Decreased intestinal absorption (alcoholism, malnutrition, malabsorption, phosphate-binding antacids)

Hypothyroidism, low Mg, low K

Severe sepsis, SKA, alcoholic ketoacidosis, TPN

Presentation

Most asymptomatic

Muscular weakness, rhabdo, ileus

Respiratory and cardiac failure, risk ventricular arrhythmias

Altered mental state, seizures, peripheral neuropathy

Haemolytic anaemia, impaired platelet and white cell function

Management

Mild-moderate

Treat cause

Severe

KPO₄ (17.5 mmol for 70-kg adult) over 6 hours (can cause hypoCa, hyperK and metastatic calcification)

Hyperphosphataemia

Causes

Chronic renal failure

Exogenous phosphate (enemas)

Tumour lysis syndrome

Vitamin D intoxication

Rhabdomyolysis

Spurious (haemolysis, myeloma)

Assessment

Dehydration, altered mental state, neuromuscular irritability, seizures

Metastatic calcification, calculus formation

Investigations

Hypocalcaemia, increased PO₄⁻ inhibits renal vitamin D₃ production, hypernatraemia, hyperosmolarity

Anion gap metabolic acidosis, prolonged QT interval

Management

Rehydration

Haemodialysis

Calcium and magnesium replacement

Treatment of complications