Vitamin B6 (Pyridoxine) Deficiency

Vitamin B6 is a water soluble vitamin that is activated to form pyridoxal phosphate, a cofactor in many reactions in body. This cofactor is used in multiple reactions of amino acid metabolism, including tansamination and decarboxylation. Pyridoxal phosphate is also necessary for glycogen phosphorylase, cystathionine synthesis, heme synthesis, and the conversion of tryptophan to niacin. Vitamin B6 deficiency can cause low activity of these enzymes and lead to symptoms of hyperirritability, seizures, peripheral neuropathy, and sideroblastic anemia.

PLAY PICMONIC

Deficiency From Isoniazid

Ice-knight-zit

Isoniazid is a medication used in the treatment of TB and can cause depletion of vitamin B6. Therefore, individuals on long term isoniazid should receive vitamin B6 supplementation.

Deficiency From Oral Contraceptives

Oral Contraceptive-shield

Several studies suggest that low dose oral contraceptives may negatively impact vitamin B6 status.

Seizures

Caesar

Severe vitamin B6 deficiency can result in neurologic changes including seizures. Seizures are defined as transient episodes of abnormal excessive neuronal activity.

Hyperirritability

Hiker-irritated

Hyperirritability is a nonspecific symptom commonly associated with vitamin B6 deficiency.

Peripheral Neuropathy

Purple-wavy Neuron-extremities

Vitamin B6 deficiency can cause peripheral neuropathy, characterized by numbness, tingling, or pain in the arms and legs.

Sideroblastic Anemia

Cinder-block Anemone

Pyridoxal phosphate, an active form of vitamin B6, is used as a cofactor for the enzyme ALA synthase in the heme synthesis pathway. Vitamin B6 deficiency can lead to improper heme synthesis and can cause sideroblastic anemia, characterized by ringed sideroblasts (hypochromic RBCs with basophilic granules) seen on bone marrow biopsy, and occasionally found in the peripheral blood on smear as well.