Vitamin B12 (Cobalamin) Deficiency Causes

Vitamin B12, also called cobalamin, is a water-soluble vitamin with an essential role in the normal functioning of the nervous system and proper formation of blood cells. Vitamin B12 is found in foods that come from animals and is stored largely in the liver. Because this vitamin is only found in animal by-products, a B12 deficiency can be caused by a strict vegan diet. The absorption of vitamin B12 is complex and can also be caused by a variety of other defects. One of the most well-known causes of a vitamin B12 deficiency is pernicious anemia, which is an autoimmune disorder where parietal cells are destroyed. Parietal cells are necessary for secreting intrinsic factor, which are crucial to properly absorb vitamin B12 in the distal ileum. Gastric bypass surgery can also hinder the binding of vitamin B12 with intrinsic factor, impairing absorption. Because vitamin B12 is absorbed in the distal half of the ileum, any inflammation or damage to the distal ileum can cause malabsorption of vitamin B12, leading to a vitamin B12 deficiency. These include intestinal sprue, enteritis, and Crohn's disease. Vitamin B12 deficiency is also associated with the intestinal parasite Diphyllobothrium latum, which can absorb more than 80% of the host's B12 intake.



PLAY PICMONIC

Causes

Vegans
Veggie-man
Because this vitamin is only found in animal byproducts, a B12 deficiency can be caused by a strict vegan diet. It is important for vegan patients to get regular labs and supplement this vitamin.

Pernicious Anemia
Prune Anemone
One of the most well known causes of a vitamin B12 deficiency is pernicious anemia, which is an autoimmune disorder where parietal cells are destroyed. Parietal cells are necessary for secreting intrinsic factor, which is crucial to properly absorb vitamin B12 in the distal ileum.

Gastric Bypass Surgery
Stomach-stapler
In healthy adults, vitamin B12 is broken down in the stomach and binds to intrinsic factor, which is released by the parietal cells in the stomach. The vitamin B12 and intrinsic factor complex is then absorbed in the ileum. In patients who have had gastric bypass surgery, most of the stomach and duodenum are bypassed, limiting the breakdown of vitamin B12 and subsequent binding to intrinsic factor. Without intrinsic factor, vitamin B12 absorption is significantly impaired.

Malabsorption
Intestine-mallet
Because vitamin B12 is absorbed in the distal half of the ileum, any inflammation or damage to the distal ileum can lead to malabsorption of vitamin B12.

Sprue
Sprouts
Sprue, also called celiac disease, is an autoimmune disorder of the small intestine caused by the immune system attacking gliadin, a byproduct of gluten. In this disease, the inflammatory reaction of the small bowel leads to intestinal villous atrophy, and subsequent malabsorption of essential nutrients, including vitamin B12.

Enteritis
Enter-small-intestine
Vitamin B12 is absorbed in the distal half of the ileum and any inflammation or damage to this part of the small intestine can cause malabsorption of B12.

Crohn's Disease
Crown-of-intestines
Crohn's disease commonly affects the distal ileum and can cause poor absorption of vitamin B12.

Diphyllobothrium latum
Dolphin-bottom L
Diphyllobothrium latum is an intestinal tapeworm, which is contracted from consuming raw or undercooked fish. This tapeworm can cause a vitamin B12 deficiency because it can specifically absorb more than 80% of the host's B12.

Sign up for FREE at picmonic.com