



PREVALENCE & CLINICAL SPECTRUM OF VITAMIN B12 DEFICIENCY

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ABSTRACT:

Vitamin B₁₂ deficiency was report before 100 years ago, but still, we did not reach the final conclusion about correct diagnosis and right treatment. Various divert symptoms of vitamin B₁₂ may be differ from neurologic to psychiatric symptoms. Many people suffer from vitamin B₁₂ deficiency present with classic megaloblastic anaemia.

Keyword: Prevalence, Clinical spectrum, vitamin b12 deficiency

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INTRODUCTION:

Deficiency of Vitamin B₁₂ occurs mostly by macrocytic anaemia. The role of B₁₂ deficiency in hyperhomocysteinemia (Increased homocysteine in the body) and advancement of atherosclerosis is currently explored. Vitamin B₁₂ deficiency confirm by serum vitamin B₁₂ value; however, about 50 percent of patients with subclinical disease have normal B₁₂ levels. Other techniques of screening for vitamin B₁₂ deficiency is investigation of serum methylmalonic acid and homocysteine levels, which are increased early in vitamin B₁₂ deficiency. Schilling test used for the detection of pernicious anaemia. Various research show that administration of vitamin B₁₂ to oral

route is an effective and safe treatment of vitamin B₁₂ deficiency.

When intrinsic factor is not present to aid in the absorption of vitamin B₁₂ or in other diseases that affect the usual absorption sites in the terminal ileum, oral therapy remains effective.

CLINICAL MANIFESTATIONS:

It indicated that vitamin B₁₂ deficiency is also relate with hematologic, neurological, and psychiatric symptoms. Vitamin B₁₂ deficiency is a common cause of megaloblastic anaemia, in advanced cases, pancytopenia is the cause of vitamin B₁₂ deficiency. Pathological condition resulting from vitamin B₁₂ deficiency such as paresthesias, peripheral neuropathy, and



demyelination of the corticospinal tract and dorsal columns.

Various psychiatric disorders, such as impaired memory, irritation, depression, dementia and, sometimes psychosis also develop vitamin B₁₂ deficiency.

NORMAL ABSORPTION OF VITAMIN B:

Only two enzymatic reactions are known to be dependent on vitamin B₁₂ in human body. When the primary process begins methylmalonic acid is converted to succinyl-Co A using vitamin B₁₂ as a cofactor. Vitamin B₁₂ deficiency, therefore leads to increased levels of serum methylmalonic acid. When secondary processes begin, homocysteine is converted to methionine by using vitamin B₁₂ and folic acid as cofactors. Because of this reaction a deficiency of vitamin B₁₂ or folic acid may lead to increased homocysteine levels. Absorption cycle of vitamin B₁₂ provides help to illuminate the potential causes of vitamin B₁₂ deficiency.

Breakdown of vitamin B₁₂ that is bound to food due to the process of acidic environment of the stomach. Intrinsic factor, which is released by parietal cells in the stomach, binds to vitamin B₁₂ in the duodenum and absorption of vitamin B₁₂ in the ileum

This vitamin B₁₂-intrinsic factor complex subsequently aids in the absorption of vitamin

B₁₂ at distal end of small intestine.

In addition to this method of absorption, various research shows that existence of an alternate system that is independent of intrinsic factor or even an intact terminal ileum. Approximately 1 percent of a large oral dose of vitamin B₁₂ is absorbed by this second mechanism. Once absorbed, vitamin B₁₂ binds to transcobalamin II and is transported throughout the body. Development of any type of interruption of these steps places a person at risk of developing vitamin B₁₂ deficiency.

HOW TO DIAGNOSIS OF DEFICIENCY OF VITAMIN B₁₂:

- Complete blood count
- Vitamin B₁₂ level
- Schilling test.
- Antibodies test.
- Methylmalonic acid test

CAUSES OF VITAMIN B₁₂ DEFICIENCY

STATES:

➤ **Due to Deficient intake:**

Breastfeeding babies of mothers may develop vitamin B₁₂ deficiency by age 4 to 6 months because in these babies, liver stores are limited and because of more growth depends on the high requirements.

- **Due to Inadequate absorption:** This is a common cause of vitamin B₁₂ deficiency.



inadequate absorption due to decreased acid secretion.

- **Due to Use of certain drugs:** Due to certain drug which are responsible for vit. B12 deficiency such as Antacids, Metformin, Nitrous oxide
- **Due to Decreased utilization:** Enzyme deficiencies, Liver disorders, Transport protein abnormality

PREVENTION AND TREATMENT OF B₁₂ DEFICIENCY:TREATMENT

Cyanocobalamin can be administered by Intramuscular route or oral supplement of B₁₂ therapy. Administered injection three times per week for two weeks in patients without neurologic deficits. In case of neurological deficit, injections should be given every other day for up to three weeks. Irreversible cause of vitamin B12 deficiency

In general, patients with an irreversible cause should be treated continuously, whereas those patients with a reversible cause should be treated till the deficiency is corrected.

PREVENTION

- Due to prolonged medication use screening of patient should be done
- The average intake of vitamin B₁₂ in the United States is 3.4 mcg per day, and the recommended dietary allowance is 2.4 mcg

per day for adult, and 2.6 microgram per day for pregnant women

- Fortified cereals prevent the vitamin B12 Deficiency
- It is recommending that patients who have gone bariatric surgery should take 1 mg of oral vitamin B₁₂ per day indefinitely.

CONCLUSION

Deficiency of Vitamin B12 is a very old disease and research and current information also receive about B₁₂ deficiency, the broad array of its effects, and methods for its diagnosis.

Due to vitamin B12 Deficiency production of all types of blood cells are affected but its effects extend to other tissues and organs, especially in the nervous system. Clinical picture suggest that diagnosis depends first on a high index of suspicion and then on the judicious application of appropriate testing.

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