

Vitamin B₁₂ deficiency despite an abundance of food: Causes and relevance for metabolic syndrome

Prof. Dr. rer. med. Rima Obeid

Department of Clinical Chemistry and Laboratory Medicine
University Hospital Homburg
Germany

Metabolic syndrome is not a direct cause of vitamin B₁₂ deficiency. However, many clinical conditions, specifically in elderly people, people with obesity, diabetes or prediabetes may cause vitamin B₁₂ deficiency. Examples are atrophic gastritis and using drugs such as metformin or omeprazole. Also, non-insulin glucose-lowering drugs (GLP-1 receptor agonist) that are being used for weight reduction may cause deficiency of micronutrients including vitamin B₁₂. On the other hand, vitamin B₁₂ deficiency may worsen metabolic syndrome by causing fatty liver due to impaired methylation of homocysteine to methionine.

Causes of vitamin B₁₂ deficiency in Western population are mostly related to malabsorption disorders. People may have difficulties releasing the vitamin from its binding proteins, or inappropriate pH in the stomach or intestine, which does not help transporting the vitamin into the blood. Early diagnosis and treatment of vitamin B₁₂ deficiency in metabolic syndrome is essential to prevent fatty liver and neurological complications such as neuro-psychiatric or hematological manifestations.

According to the latest recommendations/guidelines, serum B₁₂ should be measured as a first line marker if people have at least one risk factor and one manifestation that is judged to be related to vitamin B₁₂ deficiency. Diagnosing B₁₂ deficiency should rely mainly on clinical symptoms and use laboratory markers (such as serum B₁₂ and methylmalonic acid) to confirm the diagnosis.

The vitamin B₁₂ treatment is safe and cost effective. It is recommended to start with parenteral vitamin B₁₂ in severe and acute cases and to use oral vitamin B₁₂ for long-term therapy or for prevention purposes. Vitamin B₁₂ may be absorbed from a high dose supplement (1 mg once or twice per day) even in people with malabsorption disorders. Treatment should not stop upon normalizing of the blood markers (within few weeks). Correction of the clinical symptoms may take months, if not years.