Clinical Case Reports: Open Access

Yumed Text
OPEN ACCESS JOURNALS

Commentary | Vol 3 Iss 2
ISSN: 2582-5038
https://dx.doi.org/10.46527/2582-5038.148

Vitamin B12 Deficiency: Not the Usual Culprit

Soares E*, Abrantes C, Valério P and Assunção J

Nephrology Department, Centro Hospitalar Setúbal, Portugal

***Corresponding author:** Soares E, Nephrology Department, Centro Hospitalar Setúbal, Rua Camilo Castelo Branco 175 2910-549 Setúbal, Portugal, Tel: 00351 265549000; E-mail: elsa.qsoares@gmail.com

Received: May 20, 2020; **Accepted:** May 24, 2020; **Published:** May 31, 2020

Abstract

Vitamin B 12 deficiency affects 10% to 15% of people over 60 years of age and is associated with haematological, neurological and psychiatric manifestations. Prolonged use of metformin is associated with Vitamin B12 malabsorption - an effect under recognized by most clinicians who prescribe this oral anti-diabetic. It is estimated that 30% of patients on metformin have vitamin B12 malabsorption. Annual vitamin B12 dosing is recommended for all patients receiving metformin. Injectable vitamin B12 supplementation (1 mg) once a year in long-term metformin patients may be a practical and cost-effective measure.

Keywords: ***Vitamin B12 deficiency; Metformin; Anemia***

Vitamin B12 deficiency affects 10% to 15% of people over sixty years of age [1]. It is associated with haematological, neurological and psychiatric manifestations. It is a common cause of macrocytic anemia (megaloblastic) and, in more severe cases, pancytopenia. Neurological alterations include paraesthesias, peripheral neuropathy and demyelination of the corticospinal tract and spine. Vitamin B12 deficiency has also been associated with psychiatric disorders, including memory problems, irritability, depression, dementia and, rarely, psychosis [2]. A Vitamin B12 deficiency can have several causes, such as: pernicious anemia, inadequate diet, conditions that interfere with the absorption of Vitamin B12 namely gastrectomy, bariatric surgery, gastritis, pharmaceutical drugs, pancreatic insufficiency, short bowel syndrome. It can rarely be caused by genetic diseases. Its diagnosis is easy to make, by measuring serum levels of vitamin B12 or with a higher accuracy by measuring serum levels of methylmalonic acid and homocysteine, which will be high.

We present an unexpected case of Vitamin B12 deficit. 85-year-old female patient, autonomous in her day to day activities, with the following personal background: severe aortic stenosis (proposed for surgery, which she refused), well-controlled

long-term arterial hypertension, diabetes mellitus with excellent metabolic control, hypothyroidism, dyslipidemia, chronic gastritis, depressive syndrome, degenerative osteoarticular pathology and gastric polyp excised about 20 years ago. Usually medicated with perindopril 10 mg + amlodipine 10 mg/day, sertraline 100 mg/day, risperidone 2 mg/day, pantoprazole 20 mg/day, metformin 850 mg/day and sporadic consumption of nonsteroidal anti-inflammatory drugs. In her usual health condition until early 2019, when she complaints of fatigue from progressively minor efforts. Initially, these symptoms were attributed to a worsening of her aortic stenosis, an analytical assessment was requested, as well as a new echocardiogram. From the analytical assessment, the following stand out: Hgb 10.6 g/dL (previous numbers of 13 g/dL about a year and a half ago), MCV 121.3 fL, MCH 41.4 pg, ferritin 37.6 ng/mL, Vitamin B12 <83 pg/mL, Folic acid 15 ng/mL, protein electrophoresis without monoclonal peak, normal thyroid function and normal kidney function (PCr 0.71 mg/dL Urea 41.9 mg/dL). The echocardiogram showed the already known changes without any aggravation.

Anemia macrocytic was assumed due to an important Vitamin B12 deficit (nondoseable levels). Given the patient reported a varied and balanced diet, she did not have any gastrointestinal tract surgical history, the association with pharmaceutical drugs was considered to be more likely.

Vitamin B12 deficit is described with the prolonged use of metformin. The patient had been medicated with this pharmaceutical drug for about nine years. In view of this suspicion, the pharmaceutical drug was suspended, Vitamin B12 was replaced intramuscular - Neurobion® (thiamine hydrochloride, pyridoxine hydrochloride, cyanocobalamin) every other day for two weeks, and then per os (Cyanocobalamin 1 mg) until three months of treatment are completed. After the first two weeks of supplementation, the patient had Hgb 12.0 g/dL and MCV 112.6 fL. The patient is currently asymptomatic, without anemia, and with Vitamin B12 levels within normal. It was decided not to reintroduce metformin but maintains the remaining drug therapy. Presents a good glycaemic control with diet alone.

Metformin is the most widely used oral antidiabetic in the world [3]. The most feared side effect is lactic acidosis, a very rare effect when used appropriately [3]. The most common side effect is gastrointestinal intolerance. Another documented side effect is Vitamin B12 malabsorption - a little recognized effect by most clinicians prescribing Metformin.

Thirty percent of individuals medicated with Metformin for long periods are estimated to have a prevalence of malabsorption, 20% of which will develop low levels of Vitamin B12. In another study, low levels of Vitamin B12 were found in 17.5% of patients on metformin 2 g taken for at least 2 years [4]. Vitamin B12 malabsorption occurs because the absorption of the Vitamin B12- intrinsic factor complex is calcium-dependent, and Metformin interferes with calcium absorption in the terminal ileum. The risk of side effects arising from ineffective absorption of Vitamin B12 increases with the pharmaceutical drug's exposure time. It should be noted that a Vitamin B12 deficiency can cause neuropathy, which precedes megaloblastic anemia and is often under diagnosed because complaints are attributed to diabetic neuropathy. However, while Vitamin B12 deficiency anemia is reversible, as in the case presented, the neuropathy's progress is only delayed with the start of Vitamin B12 supplementation.

In conclusion, Vitamin B12 malabsorption is a long-term side effect of metformin intake.

Annual dosing of Vitamin B12 is recommended for all medicated patients with this pharmaceutical drug. The supplementation of injectable Vitamin B12 (1 mg) once a year in long term medicated patients with metformin can be a practical and cost effective measure. This strategy makes it possible to secure Vitamin B12 reserves for one year.

REFERENCES

1. Baik HW, Russell RM. Vitamin B12 deficiency in the elderly. Annu Rev Nutr.1999;19:357-77.
2. Robert C, Brown DL. Vitamin B12 Deficiency. Am Fam Physician. 2003;67:979-86.
3. Mahajan R, Gupta K. Revisiting metformin: Annual Vitamin B12 Supplementation may become mandatory with long-term metformin use. J of Young Pharm J Young Pharm. 2010;2(4):428-9.
4. Stowers JM, Smith OA. Vitamin B 12 and metformin. Br Med J. 1971;3:246-7.