

Vitamin B12 deficiency and depression

Vitamin B12 eksikliđi ve depresyon

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ABSTRACT

Vitamin B12 deficiency may cause psychiatric manifestations preceding the hematological and neurological symptoms. Despite a variety of symptoms, data on the role of vitamin B12 deficiency in depression are sparse.

We report a case with B12 deficiency that is diagnosed with psychotic depression and treated successively with vitamin B12 replacement instead of using conventional therapy.

Future investigations should focus on the role of vitamin B12 status in depression and other neuropsychiatric disorders. *J Clin Exp Invest* 2011; 2 (4): 455-456

Key words: Vitamin B12, depression, mood disorders

INTRODUCTION

Vitamin B12 is a water-soluble essential vitamin, which is a member of vitamin B complex, and it is called as cobalamin because of containing the metal cobalt. Vitamin B12 is synthesized by bacteria and found mainly in meat, egg and dairy products but lacks of plant source.

It is essential for the formation of red blood cells and development of nervous system. Megaloblastic anemia is the most common and serious illness associated with the severe deficiency of vitamin B12.¹ However, it is believed that mild decline of the level of vitamin B12 is also associated with some neurologic and psychiatric manifestations including ataxia, neuropathy, depression, mania, psychosis and dementia.²

Interestingly, we report a woman who suffered from psychotic depression and did not respond to conventional treatment but recovered significantly following replacement of vitamin B12.

CASE

A 33-year-old woman came to the outpatient clinic with the complaint of sad mood, fatigue, lack of in-

ÖZET

B12 vitamin eksikliđi, hematolojik ve nörolojik semptomlardan önce psikiyatrik tablolara neden olabilmektedir. Pek çok semptoma rađmen B12 vitamin eksikliđinin depresyondaki rolü ile ilgili veriler nadirdir. Biz, psikotik depresyon tanısı konulan, konvansiyonel tedavi yerine B12 replasmanı ile başarılı bir şekilde tedavi edilen B12 vitamin eksikliđi olan bir vakayı sunuyoruz.

Gelecekteki arařtırmalar, B12 vitamininin depresyon ve diđer nöropsikiyatrik bozukluklar üzerindeki etkilerine odaklanmalıdır.

Anahtar kelimeler: Vitamin B12, depresyon, duyu du-rum bozuklukları

terest, sleep disturbances and weight loss following the death of her dad. She had no past or family history of mental illness or substance abuse. She was vegetarian.

During four months, she spent most of her time in bed and sometimes cried. She neglected herself and childcare, hygiene, taking nourishment and making daily works.

In the course of time, mental condition has been worsened that included psychomotor agitation, sleeplessness and she has felt fear that something wrong was going to be happening to herself or her family. Two months before our admission, she had been diagnosed with major depressive disorder with psychotic features and started sertraline 100 mg/day and risperidone 2 mg/day by a psychiatrist. Two months follow-up, she had had no improvement with this treatment and soon thereafter patient had discontinued the treatment oneself.

At the time she was seen in the clinic a month after discontinuation of this treatment, she had depressed mood with tearful, seemed neglected and older than her real age. Her facial expression was reduced and her speech and spontaneous move-

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ments were too slow. She had no hallucinations or suicidal ideas but was hopeless about the future.

Neurological examination revealed no abnormality except mild hypoactive tendon reflexes of inferior extremities. The patient had the score of 26 out of the 30 on the Mini-Mental State Examination and did not exhibit any evidence for intellectual decline. The cerebral scan and EEG were normal.

All laboratory results including complete blood count, thyroid stimulating hormone and folate level were between normal limits except the level of vitamin B12. She had a serum level of 82 pg/mL (normal range: 200-900 pg/mL). She received a series of vitamin B12 injections (hydroxycobalamin 1000 ng/day) for 10 days until within normal serum level (350 pg/mL). After the replacement therapy, she firstly showed dramatically improvement with her mood then all symptoms about self-care, hygiene, sleep and functionality disappeared totally within a month.

Neuropsychiatric symptoms related to vitamin deficiency are rare but when there is an impetuous replacement, the treatment response is dramatic and at the same time satisfactory.

DISCUSSION

Psychiatric manifestations can occur in the presence of low serum B12 level but they can be the initial symptoms or the only ones before the other well-recognized neurological or hematological abnormalities have been developed.

Vitamin B12 is very important substance, which is methyl donor in many methylation reactions in the brain. According to the hypomethylation hypothesis, it is essential for the transmethylation of neuroactive substances as myelin and monoamine neurotransmitters.³ The lack of synthesis may cause the reduction in methylation and may result in depression.

The common cause of vitamin B12 deficiency is poor intake or absorption problem.⁴ In this case, being vegetarian may cause the possibility of the deficiency and play a role in the development of mood disorder. Supplementation may be adequate to prevent and fulfill all the suffering in many individuals.

Earlier studies have demonstrated a clear relationship between depressive disorders and vitamin B12 deficiency, and the symptoms are similar to a functional disorder.

A comparative cross-sectional study showed that the patients who had a vitamin B12 deficiency had higher Beck Depression Inventory scores than

those who did not and vitamin B12 deficiency can be correlated with depressive complaints.⁵

The study by Mishcoulon et al.⁶ showed that treatment with fluoxetine was less effective if there was an evidence of low plasma vitamin B12 levels. Additionally, Hintikka et al.⁷ displayed that depressive patients with high B12 levels respond better treatment for depressive symptoms than patients with lower B12 levels.

As a conclusion, B12 level should be evaluated with the history of the organic mental disorders, atypical psychiatric symptoms, treatment-resistant depressive disorders and risk factors for nutritional deficiency such as alcoholism, elderly age, malabsorption, gastrointestinal surgery or vegetarian diet. Additionally, it is very important to know that only the replacement of vitamin B12 is beneficial for the successive treatment instead of using conventional therapy.

In future, large-scale controlled studies, which focused on vitamin status and outcomes, are needed for understanding the definite role of vitamin B12 in many disease pathogenesis.

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