Case Report

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A Case Report of Vitamin B12 Deficiency with Symptoms of Depression, Hallucination and Delusion

P. Hadinezhad (MD)[1], S.H. Hosseini (MD)*[2], R. Shekarriz (MD)[3], A. Zarvani (MD)[4]

1.Mazandaran University of Medical Sciences, I.R.Iran.
2.Research Center of Psychiatry and Behavioral Sciences, Faculty of Medicine, Mazandaran University of Medical Sciences, I.R.Iran.
3.Department of Hematology and Oncology, University of Medical Sciences, I.R.Iran.
4.Department of Neurology, University of Medical Sciences,I.R.Iran.

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ABSTRACT

BACKGROUND AND OBJECTIVE: One of the most essential vitamins for body is vitamin 12B; its deficiency can cause various sign and symptom in the human body. Psychiatric manifestation of vitamin 12B deficiency including: aggression and agitation, is often accompanied by symptoms such as irritability and confusion, impaired orientation, amnesia, impaired concentration and attention, insomnia, anorexia and Negativism. Vitamin 12B deficiency may cause irreversible effects on the brain structure and it's very important to early diagnose and treatment.

CASE REPORT: A Middle-aged man with psychiatric manifestations include: restlessness, nightmares, hallucinations, including seeing the scene of the fire in his home and the forest area around the house, auditory hallucinations and delusional beliefs with depressed mood, suicidal ideas, insomnia and anorexia who confer to neurologist office then refer to psychiatrist after mental status examination and laboratory study result show that vitamin 12B deficiency, other evaluations such as endoscopy and colonoscopy were normal then the patient gone under treatment by administration intramuscular vitamin 12B supplemental and psychiatric manifestations improved dramatically after treatment.

CONCLUSION: This case report showed that psychiatric manifestations of vitamin 12B deficiency can occur even in the absence of anemia.

KEY WORDS: *Depression, Hallucination, Delusion, Vitamin B12 Deficiency.*

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***Corresponding author: S.H. Hosseini (MD)**
Address: Research Center for Psychiatry and Behavioral Sciences, Sari University of Medical Sciences, Sari, I.R.Iran
Tel: +98 11 32350670
E-mail: hosseinish20@gmail.com

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Introduction

Vitamin B12 is one of the most essential vitamins the body needs and its deficiency may cause numerous signs and symptoms in human body (1). Vitamin B12 deficiency is one the common causes of neurological and psychiatric manifestations in adult patients. In patients with vitamin B12 deficiency, symptoms of disease include hematologic disorders (megaloblastic and macrocytic anemia), neurological symptoms (paraesthesia and ataxia), gastrointestinal symptoms (anorexia and glossitis) and psychiatric symptoms (2). In addition, some references have referred to symptoms of mania, depression, psychosis and dementia as psychiatric manifestations of vitamin B12 deficiency (3).

Psychiatric symptoms in patients with vitamin B12 deficiency often include aggression and irritation along with irritability and confusion, disorientation, amnesia, attention and concentration disturbance, insomnia, anorexia and negativism (1). Moreover, we may observe some psychiatric diseases such as depression, bipolar disorder, panic disorder, psychotic disorders, phobias and dementia disorders in patient with vitamin B12 deficiency. In adults, the clinical manifestation may particularly include psychotic and mood disorders (4). Delay in treatment of vitamin B12 deficiency may have irreversible side effects on brain structure. It may also cause bone diseases, cardiovascular diseases, olfactory disturbance and in some cases, recurrent aphthous ulcers (5-9).

The aim of this case report is to consider psychiatric manifestations of patients as symptoms of a serious physical disease and the need for emergency treatment. Case of a patient with vitamin B12 deficiency and symptoms of depression, hallucination and delusion is reported in this study.

Case Report

The patient is a 48-year-old married man with an education of up to fourth grade. He was a farmer with two children, living in one of the villages of Mazandaran province without prior history of a psychiatric disease and with no particular stressor. One week before admission, the patient experienced irritation, nightmares, hallucinations such as seeing scenes of fire in his house and forest around the house, auditory hallucinations such as hearing people screaming on fire and delusional beliefs that the whole world is on fire and human race will soon perish. He was referred to a neurologist with symptoms of depressed mood, suicidal thoughts with no action, sleep disturbance and anorexia. After observing and evaluating the patient's condition, the neurologist obtained an EEG report and stated that the patient is neurologically healthy and referred the patient to a psychiatrist.

After medical examination, the patient was hospitalized in psychosomatic health care center of Sari Imam Khomeini Hospital on January 18, 2016. On arrival at the hospital, the patient underwent tests of blood profile and blood glucose, thyroid and kidney function test as well as tests of urine and drug use. According to the patient's history and clinical and psychiatric examinations on the first day, the patient seemed irritable, anxious and restless and answered the questions with semi-cooperation and in a low tone of voice. During the interview, he occasionally whispered to himself saying that the hospital is on fire and that he can see the flames; he looked depressed and the delusion of world destruction with suicidal thoughts was obvious in him. Regarding perception, there were disorders in his sense of vision and hearing in the form of seeing flames and hearing screams; however, no disorder was observed in other sensory areas. Attention and concentration disorders along with impaired abstract thinking, insight and judgement were some other cases of disorder in psychiatric examination. Other psychiatric examinations such as memory and orientation were normal.

The patient's history did not show any case of drug use or any other stimulus and there was no record of smoking or alcohol consumption. The patient was monitored during the first days of hospitalization and he was still complaining about his depressed mood and irritation. A case of irritability in the patient led to an aggressive behavior in the ward and an order of intensive care and having a constant companion was issued. The initial test results were as follows:

WBC=7600, RBC=3.37, HB=14.1, HCT=40, MCV=121.4, MCH=41.8, PLT=223000

At the end of the first week, the patient experienced ataxia while walking such that he sat on the ground after a few steps until the day he was called to psychiatric interview room for another interview. During the interview, the patient started crying, got up from his chair and sat on the ground. Since he did not cooperate, he was taken out of the room. The day after the interview, the patient started to experience height

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detection problem in a way that he could not notice height difference between his bed and the ground which led to falls from the bed.

There were cases when the patient tried to fall intentionally which was prevented by patient's companion. Neurological consultation was requested according to patient's condition. Examination of neurologist showed increased deep tendon reflex in addition to ataxia. EEG and MRI was requested for the patient and when the results were ready, another consultation was requested. According to the history provided by patient's companion, the patient experienced a case of lower gastrointestinal bleeding (LGIB) last year and underwent surgery with a diagnosis of anal fissure.

Due to the history of gastrointestinal bleeding, gastrointestinal consultation was requested. The patient was candidate for colonoscopy and endoscopy and the results were normal. EEG results were normal, too. According to the results of preliminary tests, which showed high MCV and low hemoglobin, supplementary tests including vitamin B12 and folate levels were requested. Consultation was also performed with an oncologist. The oncologist examined the patient and requested a peripheral blood smear with LDH level and the results were as follows:

Folat=20, Vitamin B12=60, LDH=558

The results of thyroid function, urine, electrolyte and blood glucose tests were normal. Suspicion for pernicious anemia made us request internal factors test and it was reported to be normal. As soon as diagnosis of vitamin B12 deficiency was confirmed, treatment with vitamin B-12 injection started and within three days, all psychiatric symptoms of the patient resolved dramatically. Neurological consultation which was done after MRI, showed hyper-signal points in spinal cord of the patient.

After complete resolution of symptoms, the patient was discharged from the hospital with good general condition on February 4, 2016. Follow-up was done in the form of regular outpatient visits, one week, two weeks, one month and two months after discharge. No symptoms were observed during this period and the patient continued his career and social life normally

Discussion

In this case report, the patient was referred to the hospital without a history of medical or psychiatric disease. He had obvious psychiatric manifestations as primary symptoms of disease with no medical symptoms such as neurological, gastrointestinal symptoms or anemia.

Due to aforementioned importance of urgency in diagnosis and treatment of vitamin B12 deficiency as the first manifestations of disease, psychiatrists and our colleagues in other fields of medicine have to pay more attention to this disease.

A case report, published by Urbano et al. in Portugal, reported vitamin B12 deficiency in a 49-year-old man with a history of diabetes mellitus type 2 and metformin consumption with symptoms of pancytopenia, posterolateral demyelination in spinal cord in MRI and acute psychosis. However, after diagnosis and treatment with vitamin B12, psychiatric and blood symptoms of disease were resolved. This patient had a history of smoking and high blood pressure and he was initially hospitalized in psychiatric ward with a diagnosis of major depression with psychotic manifestations.

Psychiatric symptoms of this patient included depression, anhedonia, crying for no reason, excessive anxiety, insomnia and anorexia. Psychiatric examinations revealed evidence of disorientation, impaired memory and arithmetic disorder (10). Other studies have also noted the relationship between treatment with metformin in patients with diabetes and vitamin B12 deficiency (11-13). Presse et al. have noted the relationship between consumption of gastric acid inhibitors and vitamin B12 deficiency (14); in this case report however, the patient had no history of diabetes or consumption of metformin or gastric acid inhibitors.

In another case report by Tufan et al. in 2012, vitamin B12 deficiency in a 16-year-old boy emerged as various mood symptoms with psychotic manifestations. Psychiatric symptoms included irritability, regressive behaviors, apathy and crying for no reason with no history of medical or psychiatric disease and no history of drug or alcohol consumption. The patient underwent therapy with a diagnosis of mood disorder with psychotic manifestations due to vitamin B12 deficiency (1).

Disorientation and impaired memory was not observed in this report unlike the previous case. However, mood and psychotic symptoms with no prior background was observed here. Kitamura et al. published another case report regarding an 86-year-old woman with dementia. Her initial symptoms included

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anorexia, hallucination, consciousness disorders and spheroid movements and her test results suggested vitamin B12 deficiency (15). The patient in our study did not suffer from dementia or chorea and he was a middle-aged man. Another case report published by Massey et al. was about a 36-year-old man with symptoms of ataxia and progressive tingling in limbs with no medical history. The patient's history revealed that he inhaled nitric oxide (16). The patient had no history of drug use.

In this case, no underlying medical condition was observed unlike previous studies and psychiatric manifestations of vitamin B12 deficiency in this patient occurred in the absence of anemia, which necessitates accurate psychiatric examination and history in regard with such patients. Therefore, when middle-aged patients with clinical manifestations and obvious psychiatric symptoms such as hallucination, delusion, insomnia, anorexia, depressed mood and irritation refer to our colleagues in other fields as first-line therapy, it is necessary that they are referred to a psychiatrist, since these symptoms may be a sign of primary psychiatric disorders. However, these symptoms can be a sign of vitamin B12 deficiency and obtaining more accurate history along with full physical and psychiatric examination can enhance the process of diagnosis and treatment.

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