

Vitamin B12 Deficiency Induced Psychosis- A Rare Case Report

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ABSTRACT

Vitamin B12 is one of the most essential vitamins affecting various systems in the body. One of the important functions of Vitamin B12 and Folate is in the formation one carbon metabolites such as choline, epinephrine and also the myelin sheaths of nerves. Psychiatric disorders due to its deficiency have been rarely reported. Here we report a case of vitamin B12 (Vit B12) deficiency in an 17 year old male who presented with psychotic features. Chief complaints were irritability, regressive behavior, apathy, crying and problems in attention and concentration which lasted for three months. Patient was apparently normal before the development of the above symptoms with no history of any drug abuse. The patient was not a vegetarian. Past medical history and family history was not significant. All relevant laboratory evaluations were normal except Vitamin B12 (Vit B12) and Folate levels in the blood which were reduced. Endoscopy revealed atrophy of the gastric mucosa. He was diagnosed with Vit B12 deficiency and was given intramuscular vitamin B12 - 500 mcg/day and Folic acid - 1mg/day. A visit on the second week after initiation of therapy revealed reduced psychotic features while Vit B12 and Folate levels were elevated. He was followed monthly for another 2 months and psychiatric symptoms did not recur at the time of last evaluation. Despite limitations, this case may underline the observation that mood disorders with psychotic features lacking a clear etiology may be a rare manifestation of vitamin B12 and/or Folate deficiency and be potentially amenable to treatment.

KEY WORDS : Vitamin B12, Psychosis, Adolescent.

Introduction

Vitamin B12 is one of the essential vitamins affecting various systems of the body. In case of deficiency; hematologic

(megaloblastic, macrocytic anemia), neurologic (demyelination, paresthesia), gastrointestinal (anorexia, glossitis) as well as psychiatric symptoms arise. The psychiatric symptoms may not be concurrent with symptoms arising from other systems and even may precede them. The symptoms may include agitation irritability, negativism, confusion, disorientation, amnesia, impaired concentration and attention and insomnia; while psychiatric disorders that may be diagnosed in patients having vitamin B12 deficiency include depression, bipolar disorder, panic disorder, psychosis, phobias and dementia[1]. In adult patients, the clinical picture may especially involve affective or

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psychotic symptoms. These observations may be explained by the importance of vitamin B 12, folate and homocysteine in one carbon metabolism required for the production of serotonin, other monoamine neurotransmitters and catecholamines. This study aims to report a case of vitamin B 12 deficiency in an adolescent who presented with mixed mood disorder symptoms with psychotic features.

Case Report

A seventeen year old male adolescent was brought to department of psychiatry with complaints of irritability, regressive behaviour, apathy & crying for 3 months. On questioning his parents it was learned that speech was reduced and he had become progressively isolated from his peers. There was no previous history of drug abuse. In mental status examination, impaired attention, concentration as well as insomnia and short-term memory were noted. Elementary auditory (ringing), olfactory (tobacco) and visual hallucinations (a white, man-like shape, especially present in the evenings) as well as passive suicidal ideation were noted. Judgment, abstract thought and reality testing were impaired. Speech was hypo-phonic, thought process was sluggish. Thought content was found to be impoverished and dominated by somatic complaints, delusions of reference, guilt and thought broadcasting. Mood was blunted and the affect was restricted in range. Psychomotor activity and appetite were reduced. The patient was not a vegetarian. Past medical history and family history was not significant for both psychopathology and chronic medical disorders.

Physical and neurological examination revealed glossitis, ataxia, rigidity in both shoulders, cog-wheel rigidity in the left elbow, bilateral problems of coordination in cerebellar examination, reduced swinging of the arms

and masked face. Romberg's sign was present although no signs or symptoms of peripheral neuropathy could be observed.

Investigations

Electroencephalography, cerebrospinal fluid analysis, cranial MRI, thyroid and liver function tests, electrolytes, parathormone, and whole blood count were within normal limits. HIV (ELISA) was negative. An ophthalmologic examination ruled out the presence of a Kayser Fleischer ring. A peripheral blood smear with Wright's stain was found to be normal. Endoscopy revealed atrophy of the gastric mucosa. Psychotic symptoms were evaluated with Positive and Negative Syndrome Scale[2] and the patient scored 20, 23 and 56 for the Positive, Negative and General Psychopathology subscales (Total 99). Vitamin B 12 levels were found to be 153 pg/mL (Normal 180-914 pg/ml) in two subsequent tests after 6-8 hours of fasting with chemiluminiscence immunoassay method while folate was 5.42ng/ml(Normal >6.59ng/ml). Hemoglobin was found to be 12 g/dL and MCV was 98 fL.

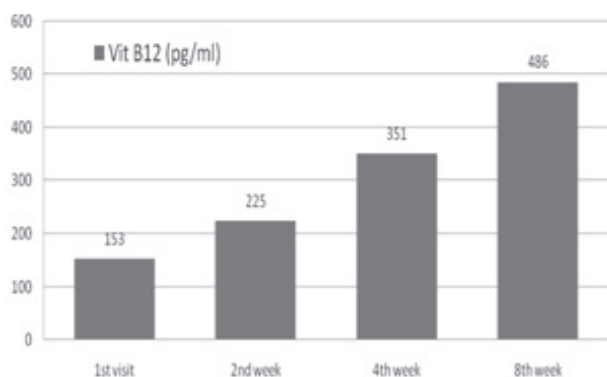
Discussion

As a result of the history and evaluations and noting that the psychotic symptoms were superimposed on affective-anxious symptoms, the patient was diagnosed as having Mood disorder with Mixed, Psychotic Features with Vitamin B12 Deficiency according to DSM-IV criteria[3]. Risperidone 2 mg/day and intramuscular vitamin B12 500 mcg/day & folic acid 1mg/day were started for treatment. Risperidone was chosen because of it being one of the most commonly used atypical antipsychotics for management of psychosis, pervasive developmental disorders, mental retardation, mood disorders and disruptive behaviour disorders in children and adolescents and having no known interaction with vitamin

B12[4]. At the same time the patient was referred for treatment of Helicobacter pylori and was prescribed clarithromycin 1000 mg/day, lansoprazole 60 mg/day and amoxicillin 2000 mg/day for 10 days. A follow-up visit on the second week revealed that no psychotic features were present, Romberg's sign was negative. PANSS scores for positive, negative and general psychopathology subscales were 13, 15 and 36 respectively (Total 64). Vitamin B12 levels were measured at this visit was 295 pg/mL & Folate levels were 8.01 ng/ml. At the second week, risperidone was stopped and parenteral Vitamin B12 treatment was continued with monthly injections for 2 months.

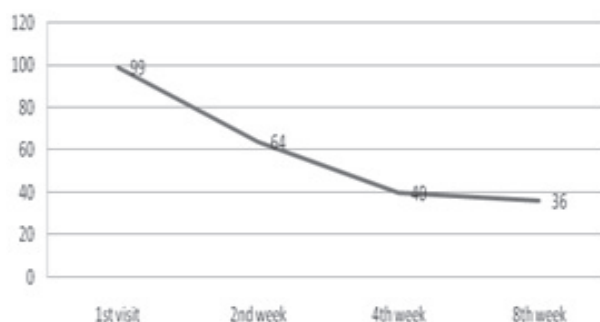
This study reports a case of vitamin B12 deficiency in an adolescent who presented with mixed mood disorder symptoms with psychotic features as well as extrapyramidal symptoms and its response to Vitamin B12 treatment. Although concurrent administration of risperidone may be considered as a limitation, the very fact there was an improvement in psychotic symptoms as early as the first week supports the beneficial effect of treatment with Vitamin B12[5]. The course of improvement in psychometric measures with changes in Vitamin B12 levels may also support this

Vit B12 Levels in patient



hypothesis.

PANSS Score



Conclusion

This study reports a case of vitamin B12 deficiency in an adolescent male presenting with mood disorder with mixed features. The concurrent administration of an atypical antipsychotic along with vitamin B12 may be one of the important limitations of the case presentation. Regardless of its limitations, our case may underline the observation that mood disorders with psychotic features especially with accompanying extrapyramidal symptoms lacking a clear etiology may be rare manifestation of vitamin B12 and/or folate deficiency in adolescents and be potentially amenable to treatment. Evaluation of Vitamin B12 and folate levels may be prudent in adolescents with affective complaints of abrupt onset and with accompanying psychotic/motor features.

References

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