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Vitamin B12 Deficiency in a Patient Presenting with Dyspnea: A Case Report

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Abstract

Introduction: Pancytopenia can be caused by underlying disorders such as certain autoimmune conditions, leukemia or even a few nutritional deficiencies such as vitamin B12 deficiency. Vitamin B12 deficiency most commonly presents as megaloblastic anemia but can also be associated with pancytopenia. It can present with a range of symptoms associated with anemia and gastrointestinal or neurological systems. Understanding the etiology of the deficiency is crucial for initiating proper treatments.

Case Report: A 19-year-old patient presented with complaints of dyspnea and fever, myalgia and generalized tiredness. Examinations found him to suffer pancytopenia and esophageal candidiasis caused by vitamin B12 deficiency. This deficiency can be associated to inadequate intake and the diet of the patient as a vegetarian. Parenteral B12 treatment led the patient to symptomatically improve.

Conclusion: Vitamin B12 deficiency is a reversible cause of bone marrow failure and can be easily treated if diagnosed early enough. Eggs and animal-derived foods constitute the usual source of this vitamin. Vitamin B12 deficiency should therefore be of high index suspicion to a clinician if the patient presents in similar conditions with a vegetarian diet. In the event of the deficiency being caused by inadequate intake or intrinsic factor deficiency, the treatment can be started quickly leading to the dramatic improvement of the patient's condition.

Key words: Anemia, Megaloblastic; Dyspnea; Vitamin B 12 Deficiency

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INTRODUCTION

In an era when people should follow the principle of "watch what you eat", the importance of certain essential and balanced diets is often neglected. Malnutrition and the deficiency of certain important vitamins including B12 have therefore become more common. Vitamin B12 cannot be naturally synthesized and is absorbed from food and supplements. Vitamin B12 deficiency commonly causes megaloblastic anemia and rarely pancytopenia. It can present as symptoms of anemia including gastrointestinal and neurological manifestations, which can persist if not treated immediately. Vitamin B12 deficiency is either caused by inadequate intake or the inability to absorb this vitamin (1). The present case report involves a patient with vitamin B12 deficiency presenting with esophageal candidiasis and pancytopenia caused by the inadequate intake obtained from the consumed diet.

CASE PRESENTATION

A 19-year-old male patient presented with no known comorbidities and a 7-day-long low-grade fever, myalgia and generalized tiredness. He also suffered from a one-week dyspnea on exertion. He had presented to another hospital where he was diagnosed with pancytopenia and then referred to Baby Memorial Hospital for further management.

The patient was pallid and oriented upon admission with a PR of 80 per minute, BP of 110/70, RR of 20 per min and SpO2 of 99%. Systemic examination results were found to be within normal limits. His laboratory investigations revealed anemia (Hb-6.6), leukocytopenia (2100) and thrombocytopenia (55,000) with normal coagulation parameters. Dengue serology was negative and peripheral smear showed pancytopenia with macrocytes and atypical lymphocytes and no malarial parasites. Moreover, the level of vitamin B12 was found to be as low as 88. Antiparietal cell antibody was also not detected. The patient was found to be mainly following a vegetarian diet.

One unit of PRBS transfusion was administered along with IV antibiotics, vitamin supplements (Inj Methylcobalamine once daily for 7 days) and other supportive measures. Gastroenterology consultation was performed and OGD scopy

showed esophageal candidiasis with linear erosion in the stomach. The patient was treated with oral fluconazole. The gastric biopsy showed normal gastric mucosa. Abdominal USG was found to be normal, and anti-parietal cell antibody was negative. Bone marrow study found features suggesting megaloblastic anemia. Dermatology consultation was also provided for the reddish brown color of hair and depigmented patches on the right side of the chest and face. Repeated CBC test showed significant improvements in Hb (Hb-8.4) and the patient's blood count was therefore modified accordingly.

Discussions

The history of the case reported and the examinations suggested vitamin B12 deficiency mainly due to malnutrition. The sources of vitamin B12 in diet include eggs and animal-derived foods rather than vegetables and fruits (2). Strict vegetarians are at high risk for developing vitamin B12 deficiency if they avoid taking vitamin supplements or consuming grains that are fortified with the vitamin. Megaloblastic anemia caused by vitamin B12 deficiency gradually develops and manifests only after a few years when the body's stores of vitamin B12 exhaust.

While the most common presentation is megaloblastic anemia, due to defective DNA synthesis, dyspoiesis will occur causing leukopenia and thrombocytopenia in later stages (1). This explained the pancytopenia picture in this patient. Although oral signs and symptoms are common including glossitis and recurrent oral ulcers, the patient presented with esophageal candidiasis (3).

Upon establishing the etiology of vitamin B12 deficiency, the patient was treated with parenteral B12 and his condition was therefore improved.

Being suspicious of vitamin B12 deficiency, as a reversible cause of bone marrow failure, is therefore crucial in patients presenting with a similar set of complaints and also in patients with a history of being strict vegetarian, and the condition can be easily treated if diagnosed early enough.

Conclusions

Vitamin B12 deficiency is a reversible cause of bone marrow failure and can be easily treated if diagnosed early enough. Eggs and animal-derived foods constitute the usual source of this vitamin. Vitamin B12 deficiency should therefore be of high index suspicion to a clinician if the patient presents in similar conditions with a vegetarian diet. In the event of the deficiency being caused by inadequate intake or intrinsic factor deficiency, the treatment can be started quickly leading to the dramatic improvement of the patient's condition.

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Authors' contribution

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Conflicts of interest

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