

**VITAMIN B12 DEFICIENCY PRESENTING AS PANCYTOPENIA AND
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ABSTRACT

Deficiency of vitamin B12 is a well known cause of megaloblastic anaemia. Pancytopenia is a relatively common haematological entity. It is a striking feature of many disorders ranging from simple drug induced bone marrow hypoplasia, megaloblastic anaemia to fatal bone marrow aplasias and leukemias. Of the many causes of megaloblastic anaemia, the most common are disorders resulting from cobalamin (vitamin B12) or folate deficiency. The clinical symptoms are weakness, fatigue, shortness of breath and neurological abnormalities. The presence of oral signs and symptoms, including oral candidiasis, glossitis, angular cheilitis and pale oral mucosa are often described in vitamin B12 deficiency states. We present a case of vitamin B12 deficiency presenting to us with oropharyngeal candidiasis (thrush) and pancytopenia. The objective of this paper is to report a case of pancytopenia and oropharyngeal candidiasis due to vitamin B12 deficiency, so that clinicians suspect this entity in their clinical practice, which is very easy to treat.

KEYWORDS: Vitamin B12 deficiency, Megaloblastic anaemia, Pancytopenia, candidiasis.**INTRODUCTION**

Megaloblastic anaemia can occur due to impaired DNA synthesis resulting from deficiencies of vitamin B12 and folate. Vitamin B12 is produced by microorganisms and is detected in trace amounts mostly in foods of animal origin. Humans cannot synthesise vitamin B12. Early detection and prompt treatment of vitamin B12 deficiency is essential, since it is reversible cause of bone marrow failure.^[1] Vitamin B12 deficiency commonly presents as megaloblastic anaemia and rarely, as pancytopenia.^[2,3] Clinically, megaloblastic anaemia progresses slowly and symptoms include weakness, fatigue, shortness of breath and neurological abnormalities. Oral signs and symptoms, including glossitis, angular cheilitis, recurrent oral ulcer, oral candidiasis and pale oral mucosa may be present in megaloblastic anaemias due to vitamin B12 or folate deficiency.^[4] After diagnosing vitamin B12 deficiency, tracking down the root cause of the deficiency is important in individualising the treatment approach.

CASE REPORT

A 69 years old male from Himachal Pradesh (North India) presented to us with chief complaints of shortness of breath on mild exertion, easy fatigability, weight loss

and difficulty in eating and swallowing food for the last three months. There was neither any history suggestive of cardiovascular, renal or hepatic disease nor any history of blood loss. There was no significant family history. He had been a strict vegetarian for the last 3 years and had not consumed cheese, meat, fish or eggs during that time. He was not taking any medication. His main diet consists of bread, rice and green vegetables.

During clinical evaluation, he was having gross pallor and hyper pigmentation of dorsum of hands and feet. Oral examination revealed friable white plaques on gingiva, tongue and oral mucosa suggesting candidiasis.

Blood investigations revealed haemoglobin of 8.2g/dL, total leukocyte count of 1800cells/mm³ and platelet count of 59000/mm³ suggesting pancytopenia. He had an elevated mean corpuscular volume (107fL). His peripheral smear examination showed reduced RBC density, presence of macrocytes, macro-ovalocytes, anisopoikilocytosis, tear drop cells, leucopenia and thrombocytopenia. His serum ferritin was normal(93.6ng/mL), vitamin B12 levels were reduced(82pg/mL) and serum folate level was normal(7.0 ng/mL). Bone marrow examination revealed

megaloblastic erythropoiesis. His ELISA for HIV was negative. With the above clinical picture a diagnosis of vitamin B12 deficiency was made. We investigated further to find its cause. Antiparietal cell antibody was not detected and intrinsic factor antibody was in normal range. (Table 1) Patient was treated with oral fluconazole for oropharyngeal candidiasis and parenteral vitamin B12. He was given daily intramuscular injections of vitamin B12 for 7 days and there after weekly for 6 weeks. There was an increase in his haemoglobin, total leucocyte count and platelets with resolution of his candidiasis.

TABLE 1: INVESTIGATION REPORTS WITH REFERENCE RANGE

No.	Investigation	Values observed	Reference range
1.	HB	8.2	12-15 gm%
2.	RBC Count	2.36	4.5-5.5 million/ μ l
3.	Haematocrit	25.2	40-50%
4.	MCV	107	83-101 FL
5.	TLC	1800	4,000-10,000/ μ l
6.	Platelet count	59,000	1,50,000-4,10,000/ μ l
7.	Serum Ferritin	93.6	22-322 ng/ml
8.	Serum Folic acid	7	>5.38 ng/ml
9.	Serum Vit B12	82	211-911 pg/ml
10.	Intrinsic Factor IGG	8.6	<12.0 U/mL

DISCUSSION

We presented a case of vitamin B12 deficiency presented With pancytopenia, megaloblastic changes in peripheral blood, megaloblastic erythropoiesis in bone marrow, presence of low serum vitamin B12 level and normal serum folate. The cause of vitamin B12 deficiency in this patient is likely to be nutritional deficiency based on his history and parameters. This patient was a strict vegetarian for the last three years. Pernicious anemia is excluded by the absence of antiparietal cell antibody and anti intrinsic factor antibody.

Commonest presentation of vitamin B12 deficiency is megaloblastic anemia. Hemolysis and pancytopenia can be a part of vitamin B12 deficiency due to ineffective erythropoiesis. Oral signs and symptoms of Vitamin B12 deficiency include glossitis, angular cheilitis, recurrent oral ulcer, oral candidiasis, diffuse erythematous mucositis and pale oral mucosa.^[5]

Vitamin B12 is found only in bacteria, eggs and food of animal origin. It does not occur in vegetables and fruits. Most cobalamin is stored in liver (about 4-5 mg). Megaloblastic anemia occurs when the body's cobalamin stores fall below 0.1 mg.^[6,7] Megaloblastic anemia due to vitamin B12 deficiency develops slowly and takes 2-5 years to develop, as body stores relatively large amounts of vitamin B12 in comparison with daily requirements. This time frame is consistent with our clinical case, as the patient reported that he had been a strict vegetarian for the last 3 years.

A wide range of oral signs and symptoms may appear in anemic patients as a result of basic changes in the

metabolism of oral epithelial cells. These changes give rise to abnormalities in cell structure and the keratinisation pattern of the oral epithelium leading to beefy red and inflamed tongue.^[5] Oral ulcers, candidiasis and angular cheilitis are reported in literature^[5,8] but our case presented with only candidiasis.

Pancytopenia is a relatively common haematological entity. It is a striking feature of many serious and life threatening illnesses, ranging from simple drug induced bone marrow hypoplasia, megaloblastic anemia to fatal bone marrow aplasias and leukemias. Megaloblastic anemia has been reported as a cause of pancytopenia in various studies.^[9,10] Our patient also presented with pancytopenia and oral candidiasis due to megaloblastic anemia due to vitamin B12 deficiency. Patient showed dramatic improvement with parenteral vitamin B12. There are many recommended schedules for intramuscular injections of vitamin B12. Patients with severe abnormalities should receive injections of 1,000 micro gram at least several times per week for one to two weeks, then weekly until clear improvement is shown, followed by monthly injections.^[1] Through this case Report, we would like to emphasise the fact that for pancytopenia secondary to vitamin B12 deficiency, identifying the underlying etiology along with targeted therapy plays a pivotal role in treatment of this condition.

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