

Isolated vitamin B12 deficiency in a patient with Celiac Sprue

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ABSTRACT

Vitamin B12 deficiency due to pernicious anemia has rarely been reported in celiac sprue. We report a rare case with celiac disease and severe vitamin B12 deficiency due to pernicious anemia without any iron or folic acid deficiency who showed a dramatic response to treatment with vitamin B12 injection.

KEY WORDS: Celiac sprue, Pernicious anemia, Vitamin B12 deficiency.

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INTRODUCTION

It is not far beyond expectation for iron deficiency anemia or megaloblastic anemia due to folic acid deficiency in celiac disease, but vitamin B12 deficiency has rarely been reported. On the other hand, no report has been given on the association of celiac disease with pernicious anemia (as two autoimmune diseases) in any case reports.¹ We report a rare case with celiac disease and severe vitamin B12 deficiency due to pernicious anemia without any iron or folic acid deficiency who showed a dramatic response to treatment with vitamin B12 injection.

CASE REPORT

The patient was a 38-year-old man who presented with weakness, malaise and abdominal pain. He has been suffering from abdominal pains for two years, but the symptoms were aggravated in the last three months. The abdominal pain was in the epigastrium region and of a pressure and constant type but with no twinge in other parts. The patient mentioned that the pain would start at the early hours in the morning and would slightly improve with an empty stomach. Moreover, the patient suffered from constipation, flatulence, weight loss (by 18kg in one year), depression and graying of his hair.

The patient was a non-smoker and mentioned no special disease in his family. On examination, the patient's appearance and sclera were pale, and initial examinations did not reveal any other special problem. Preliminary tests were requested for the patient (Table-I). As macrocytic anemia was observed, peripheral blood smear and titration of cobalamin and folic acid were requested for the patient (Table-I). Peripheral blood smear showed hypochromia (+1), anisocytosis (+1), macrocytosis (+1) and hypersegmented neutrophils. The results showed that megaloblastic anemia in this patient was caused solely by vitamin B12 deficiency.

To investigate the abdominal pain and probable causes of vitamin B12 deficiency, in addition to taking a precise history, upper endoscopy and titration

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Table-I: Laboratory tests before initiation of treatment.

Test	Result	Unit	Normal range
White blood cells	3400	/μl	4000-11000
Red blood cells	2490000	/μl	3500000-5500000
Hemoglobin	10.2	g/dl	14-18
Hematocrit	28.8	%	42-51
· MCV	115.7	fl	77-97
• MCH	30	pg	26-32
^ MCHC	35.4	g/dl	31-36
Platelets	125000	/μl	150000-400000
Blood urea nitrogen	11	mg/dl	7-18
Creatinine	0.9	mg/dl	0.4-1.2
°ESR 1 st hr	47	mm	0-10
C-reactive protein	Neg	-	-
Anti H.pylori(IgG)	Neg	-	-
Anti H.pylori(IgA)	Neg	-	-
Fe (Iron)	105	μg/dl	41-145
•TIBC	339	μg/dl	210-415
Vitamin B12	98.27	Pmol/L	145-637
Folic acid	17	ng/ml	6-20

· Mean Corpuscular Volume

• Mean Corpuscular Hemoglobin

^ Mean Corpuscular Hemoglobin Concentration

°Erythrocyte Sedimentation Rate

•Total Iron Binding Capacity.

of specific antibodies were also requested (Table-II). In the endoscopic examination, the duodenum showed scalloping appearance (Fig-1), but the

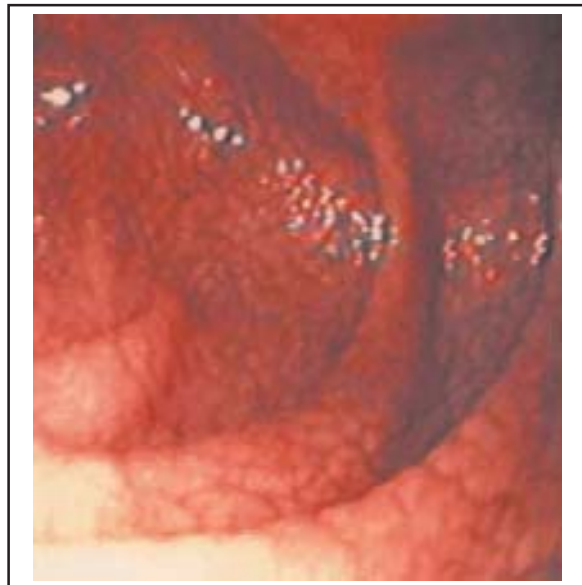


Fig-1: Upper endoscopy showing scalloping of duodenum before initiation of treatment.

Table-II: Specific antibodies before initiation of treatment.

Antibody	Result	Normal range
Anti endomysial	70	up to 20
Tissue transglutaminase	30	up to 15
Anti parietal cell	positive	-

stomach had an atrophic appearance at the fundus area. Numerous biopsies were taken from the stomach and duodenum, and then sent to a pathology laboratory.

The pathological investigation not only confirmed the diagnosis of atrophic gastritis, but also revealed lymphocyte-dominant inflammatory cells infiltration in the lamina propria as well as shortening of intestinal villi in the duodenum, which were proof of mal-absorption changes by celiac disease (Fig.2). As the results of the specific antibodies tests showed the antiparietal cells antibodies level to be high, it was proven that the final diagnosis of pernicious anemia with an intrinsic factor deficiency origin arising from autolysis of parietal cells, existed simultaneously with celiac disease (Table-II).

Following the final diagnosis, the patient was prescribed vitamin B12 and a limited consumption of gluten-containing materials (e.g. cereals). One month later, the patient was asked to undergo examinations and tests again. In addition to a considerable improvement of the patient's clinical symptoms such as paleness, depression, abdominal pain

Table-III: Laboratory tests after one month treatment.

Test	Result	Unit	Normal range
White blood cells	4100	/μl	4000-11000
Red blood cells	3630000	/μl	3500000-5500000
Hemoglobin	13.3	g/dl	14-18
Hematocrit	37.6	%	42-51
· MCV	103.6	fl	77-97
• MCH	36.6	pg	26-32
^ MCHC	35.4	g/dl	31-36
Platelets	248000	/μl	150000-400000
Vitamin B12	320	pg/ml	200-600

· Mean Corpuscular Volume

• Mean Corpuscular Hemoglobin

^ Mean Corpuscular Hemoglobin Concentration

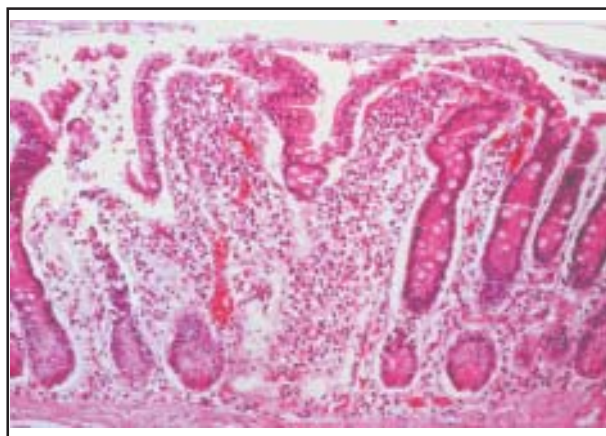


Fig-2: Pathologic survey showing villous atrophy before initiation of treatment.

and flatulence, the laboratory changes were also highly interesting and a dramatic response to treatment was observed (Table-III).

DISCUSSION

Celiac sprue or celiac disease is an autoimmune enteropathy which is often found in patients sensitive to gluten.² The association between many diseases and celiac sprue has been proven.³ Such diseases which are mostly considered as autoimmune type include herpetiform dermatitis⁴, diabetes mellitus^{5,6} and immune thyroiditis.⁷

Macrocytic anemia, which is caused by folic acid deficiency, has also been seen in celiac disease. However, cases of macrocytic anemia due to vitamin B12 deficiency have been quite rare and seldom reported, while vitamin B12 deficiency has been reported to be caused by the ileal involvement.⁸ What made our case an interesting one was the existence of macrocytic anemia due to vitamin B12 deficiency without any iron and/or folic acid deficiencies.

As the examination of our patient's clinical symptoms revealed, such symptoms were of untypical type, e.g. abdominal pain, weakness, mal-

aise, and depression which are justifiable with celiac sprue. No existence of diarrhea in the patient was indicative of the more proximal involvement of the small intestine.

After the patient was diagnosed with celiac disease and pernicious anemia, he was given instructions to limit the use of gluten-containing foodstuff and was placed under treatment with intramuscular vitamin B12, which, a month later, led to the dramatic improvement of the clinical symptoms including paleness, weakness, malaise, depression, abdominal pain, flatulence, constipation and lab results, and the entire hematological factors in the blood count were restored.

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