



Celiac disease associated with beta thalassemia minor, coincidence or not: A case report

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Abstract

Introduction: Celiac disease may be associated with a variety of autoimmune diseases such as glucose intolerance, autoimmune thyroid disorders, Sjogren's syndrome, and atypically with hematological diseases such as beta-thalassemia minor. The simultaneity of celiac disease and beta-thalassemia minor is extremely rare. Only a few cases with both celiac disease and beta-thalassemia minor have been reported in the corresponding medical literature so far. Since the overall prevalence rate of celiac disease is 1% among the public and it has been estimated that 5% of general population has at least one variant allele of thalassemia mutations, the question arises whether the coexistence of celiac disease and beta-thalassemia minor is just a coincidence or etiologic relation. As they both are immune mediated diseases (IMDs), a link between them is possible.

Case Report: In this study, a 46-year-old man was reported who was admitted with both beta-thalassemia minor and celiac disease. He was referred with probable malabsorption syndrome, causing an iron deficiency anemia and weight loss. Clinically, he was diagnosed with celiac disease and beta-thalassemia minor, which was confirmed later by a small bowel biopsy and hemoglobin (Hb) electrophoresis. The patient was treated with a gluten free diet and folic acid.

Conclusion: Celiac disease should be considered as a probable state in patients with beta-thalassemia minor. The prevalence of celiac disease and beta thalassemia minor is significantly high in many countries. Therefore, patients with thalassemia minor should be screened for celiac disease.

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Introduction

Celiac disease may present itself with malabsorption syndrome such as chronic diarrhea, weight loss, and abdominal distention as clinical presentations. However, in atypical cases with non-diarrheal celiac disease, short stature is one of the possible manifestations. By definition, beta thalassemia minor is genetically hematologic disorder. There are many similar symptoms in thalassemia minor and celiac disease and diagnosis and treatment of underlying celiac disease may improve life of thalassemia patients. There are a few case reports of coincidence of celiac disease among patients with beta thalassemia. Association between

celiac disease and beta-thalassemia minor has been reported in few case reports.^{1,2}

Celiac disease may be associated with a higher incidence rate of concomitant variety of autoimmune diseases such as thyroid diseases, Addison disease, glucose intolerance, Sjogren's syndrome, ulcerative colitis (UC), dermatitis portal hypertension, Down syndrome (DS or DNS), immunoglobulin A (IgA) deficiency, epilepsy, pemphigus herpeticiformis (PH), rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), and scleroderma, and atypically with kidney conditions such as nephrotic syndrome. Both celiac disease and beta-thalassemia minor are similar in

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presentation with autoimmune diseases as mentioned above. Nonspecific symptoms in patients with beta thalassemia minor that are not uninterpretable with underlying diseases can be due to underlying celiac disease.³ Growth-retardation or short stature is a well-known component of nonspecific symptoms and this complication may emerge without typical gastrointestinal symptoms or malabsorption syndrome of gluten-sensitive enteropathy (GSE). Celiac disease is similar to beta-thalassemia minor in causing growth retardation. Association between celiac disease and beta-thalassemia minor have been reported in few case reports. Human leukocyte antigen (HLA) system, like HLA DQA1 and DQB1 alleles, represents the major genetic predisposition in susceptibility to beta-thalassemia minor.⁴

Case Report

Appropriate details of the case, including demography, assessment, findings, investigations, etc. indicate intervention in detail or describe the dose, timing, and route of drugs.

In this study, a 46-year-old man was reported who was admitted with probable diagnosis of both beta-thalassemia minor and malabsorption syndrome, in who hallmark findings were an iron deficiency anemia and weight loss. Clinically, he was diagnosed with celiac disease and beta-thalassemia minor, which was confirmed later by a small bowel biopsy, complete blood count (CBC), and hemoglobin (Hb) electrophoresis. A biopsy of small bowel mucosa was taken by means of upper gastrointestinal (GI) tract endoscopy in order to find the cause of malabsorption syndrome and anemia. This biopsy showed total villous atrophy with remarkable inflammatory infiltration, as well as an increase in intraepithelial lymphocytes (IELs), all confirming celiac disease. Anti-endomysial and transglutaminase antibody were extremely high. The patient had not used any drugs causing blood toxicity. The patient was treated with a gluten free diet and folic acid. Laboratory

data of the case can be observed in table 1.

Table 1. Laboratory findings of the case

Character	Case	Percent	Normal range
WBC	6100	× 1000/mm ³	4.0-11
Hb	7.2	g/dl	M: 14 -18; F: 12-16
RBC	4.91	× 10 ⁶ /mm ³	M: 4.5-5.8; F: 4.0-5.2
MCH	49.8	66	76-96
MCHC	56.3	57	55-65
Urea	55	mg/dl	M: 19-44; F: 15-40
Creatinine	1.36	mg/dl	0.7-1.4
Na	140	mEq/l	136-145
K	4.1	mEq/l	3.6-5
Ca	7.7	mEq/l	8.5-10.5
P	4.2	mEq/l	3.5-5.2
TTG-IGA	289	IU	15

WBC: White blood cell; Hb: Hemoglobin; MCH: Mean cell hemoglobin; MCHC: Mean corpuscular hemoglobin concentration; Na: Sodium; K: Potassium; Ca: Calcium; P: Phosphorous; TTG IGA: Tissue transglutaminase IgA.

Discussion

The diagnosis of anemia in a young adult, and evaluating and finding of its cause is an important public health issue. Iron deficiency anemia is a common disorder which involves overall one tenth of world population. It is especially prevalent in childbearing age and in regions of the world with low to moderate income. Evaluating and finding the cause of this complication among young adults is of special importance. One of the common causes of anemia is celiac disease. Celiac disease has many synonyms, including non-tropical sprue, and GSE is an inflammatory disorder of the small intestine with autoimmune base that is introduced by the ingestion of gluten in individuals with genetic predisposition. This disease has a higher incidence rate, occurring in almost 1% of the general population worldwide. The epidemiology of celiac disease is similar to an iceberg appearance of which only the tip of the iceberg can be seen, meanwhile most of the iceberg is under water.¹ There is a significant increase of transglutaminase antibody titer in some patients with beta-thalassemia minor when compared to general population. It is estimated that 10% of patients have increased transglutaminase antibody titer, which is significantly higher than the general population with a

prevalence of 1%. Moreover, there is a significant difference in terms of rate of growth failure between the general population and patients with celiac disease and the beta-thalassemia minor. Silent, atypical, and non-classic forms of celiac disease can be presented with non-gastrointestinal problems.⁵

These clues include iron deficiency anemia or state of unknown cause, nonspecific abdominal discomfort diagnosed falsely as irritable bowel syndrome, aphthous stomatitis, short stature, abnormal liver function tests, easy fatigue, and osteoporosis.² Furthermore, several patients with beta thalassemia minor have several symptoms including vague abdominal pain, constipation, growth failure, and other manifestations that are uninterpretable on their main diagnosis. There are some case reports in which celiac disease was finally diagnosed as the underlying predisposition for short stature and thyroid dysfunction in patients with beta thalassemia minor.^{3,6} Thalassemia and celiac disease have many clinical similarities. Growth failure is one of the most common outcome. Therefore, there are multiple similar symptoms in thalassemia minor and celiac disease, and recognition and treatment of celiac disease may lead to the improvement of patients with beta thalassemia minor. There are only few case reports about celiac disease among patients with beta thalassemia.⁷ In the present case, celiac disease was confirmed with high transglutaminase antibody level and abnormal jejunal biopsy. The biopsy showed total villous atrophy with remarkable inflammatory infiltration, as well as an increase in IELs, all confirming celiac disease. It is advised that evaluation for celiac disease be carried out even without the typical manifestations among patients with beta-thalassemia minor with short stature. It is necessary to search for celiac disease in all patients with thalassemia who present weight gain and short stature. There is genetic predisposition and susceptibility in HLA system, such as HLA DQB1 alleles for pathogenesis of celiac disease and beta-thalassemia minor. A few studies in Iran

showed the prevalence varying from 0.5% to 0.9% in southern to northern Iran, respectively.^{2,5} Growth failure, hypothyroidism, and anorexia are clues for celiac disease and beta-thalassemia minor. The mechanism of these clues is nutritional deficiencies, and growth hormone deficiency has been proposed as another mechanism as well.

Conclusion

Patients with beta thalassemia minor who have nonspecific symptoms including vague abdominal pain, constipation, growth failure, and other manifestations that are uninterpretable on their main diagnosis must be investigated for celiac disease. In conclusion, more investigations are recommended to be conducted on patients with beta thalassemia minor with symptoms of typical or atypical celiac disease.

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Authors' Contribution

Preparing of data and monitoring and treating of the patient all were conducted by the author.

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Conflict of Interest

Authors have no conflict of interest.

Ethical Approval

Consent was taken from the patient to participate in the study and receive a certain treatment, in addition to publishing identifiable details of his case.

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