CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187
http://doi.org/10.5281/zenodo.4430144

Avalable online at: http://www.iajps.com *A Case Report*

CELIAC DISEASE AS HEART FAILURE: AN UNUSUAL PRESENTATION

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Article Received: November 2020 **Accepted:** December 2020 **Published:** January 2021

Abstract:

Celiac sprue, one of the major causes of chronic diarrhea, is an autoimmune inflammatory disease affecting the small bowel and is caused by increased sensitivity to the gluten-containing diet and related proteins resulting in the villi's damage and effacement, causing malabsorption, steatorrhea, bloating, weight loss, and chronic diarrhea. It is a relatively common disease affecting approximately 1% population in many different countries around the globe. It can also have extraintestinal manifestations such as dermatitis herpetiform, delayed growth, neurologic disease, liver disease, and iron deficiency anemia. We present a case of a female patient who developed heart failure secondary to iron deficiency due to celiac disease. A 13-year-old female patient presented to the emergency department with a complaint of shortness of breath for 2 days. The patient had a past medical history significant for abdominal discomfort, bloating, and non-bloody diarrhea associated with food intake for 2 years. On general examination, she had evident pallor visible on the palms and lower conjunctiva. Spooning of the nails (koilonychia) was also visible. Bilateral crackles in both lungs bases, abdominal ascites, raised JVD, and pedal edema was also noted. Clinically she was diagnosed with anemia and heart failure. Diet counseling restricting salt and water for heart failure was done while aiming for treating the cause, which was iron deficiency anemia and celiac disease. Intravenous Iron was given as she was already having gastrointestinal symptoms, and the patient improved significantly. A multidisciplinary approach involving cardiology, gastroenterology, and dietary consults was adopted, and the patient recovered over several days.

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Please cite this article in press Muhammad Areeb Iqbal et al, ***Celiac Disease As Heart Failure: An Unusual Presentation.,*** *Indo Am. J. P. Sci, 2021; 08(1).*

INTRODUCTION:

Celiac sprue, one of the major causes of chronic diarrhea, is an autoimmune inflammatory disease affecting the small bowel and is caused by increased sensitivity to the gluten-containing diet and related proteins[1] resulting in the villi's damage and effacement, causing malabsorption, steatorrhea, bloating, weight loss, and chronic diarrhea[2]. It is a hypersensitivity to gluten-containing diets like wheat, barley, rye, etc., causing mucosal damage to the proximal small gut[3]. It is also associated with other autoimmune diseases like Type 1 diabetes and Hashimoto's thyroiditis[4]. It is usually associated with positive serology and auto antibodies[12] but confirmed on small bowel biopsy[4,5]. It can also have extraintestinal manifestations such as dermatitis herpetiform, delayed growth, neurologic disease, liver disease, and iron deficiency anemia[7,8]. The most appropriate treatment is the prevention strategy and avoiding a gluten-containing diet for life[6]. The diagnosis is confirmed when the symptoms resolve on a gluten-free diet. Such patients such be monitored and reevaluated periodically[14] to reduce the risk of lymphoma, stunting of growth, and other extraintestinal manifestations[11].

The risk is significantly increased in genetically predisposed individuals[13]. It is closely related to HLA DR3-DQ2[1]. The intestinal villi are usually effaced and atrophied with crypt hyperplasia. The effacement of villi has a profound effect on the absorption process throughout the small gut.

CASE REPORT:

A 13-year-old female patient presented to the emergency department with a complaint of shortness of breath for 2 days. The patient had a past medical history significant for abdominal discomfort, bloating, and non-bloody diarrhea associated with food intake for 2 years, which was not relieved by over-the-counter medications. No personal history of allergy was noted. Family history was insignificant. Physical examination revealed a young female well-oriented in time, place, and person sitting in bed with tachycardia of 110/min, Blood pressure of 110/70mmHg, Normal temperature, and Respiratory rate of 26/min. On general examination, she had evident pallor visible on the palms and lower conjunctiva. Spooning of the nails (koilonychia) was also visible. Bilateral crackles in both lungs bases, abdominal ascites, raised JVD, and pedal edema was also noted. Clinically she was diagnosed with anemia and heart failure.

Labs showed abnormal hemoglobin levels around 6 g/dL with MCV of 68 fl giving the picture of microcytic anemia. Peripheral blood smear showed more than usual central pallor, microcytosis, and hypochromia with anisocytosis. The iron panel was ordered while continuing to treat the patient.

The patient was managed with supplemental oxygen through nasal cannula and bed rest. A blood group cross matches were done urgently. Restricted red cell transfusion was done slowly and cautiously to avoid further volume overload while observing the vital sign and oxygen saturation. Furthermore, intravenous loop diuretics were administered immediately afterward. After stabilizing the patient, she was shifted to the ward.

The iron panel showed Low ferritin, Low serum iron, and increased TIBC confirming the diagnosis of Iron deficiency anemia. Furthermore, an X-ray chest was also done, which showed evidence of heart failure. Echo was done afterward, which showed an EF of 62% and evidence of High output cardiac failure. The patient was diagnosed to be having High output cardiac failure secondary to iron deficiency anemia.
Diet counseling restricting salt and water for heart failure was done while aiming for treating the cause, which was iron deficiency anemia and celiac disease. Intravenous Iron was given as she was already having gastrointestinal symptoms, and the patient improved significantly.

Considering that the patient presented with iron deficiency and gastrointestinal features, an antibody check for celiac disease was ordered, which came out to be positive. Proper counseling was done regarding celiac disease treatment and complications, and a proper diet plan was given, avoiding any gluten-containing diet. A multidisciplinary approach involving cardiology, gastroenterology, and dietary consults was adopted, and the patient recovered over several days. The patient was discharged over dietary restrictions with instructions to follow up after 2 weeks.

DISCUSSION:

In our case, the association of Celiac Disease with Iron Deficiency Anemia was established and was the leading factor towards the diagnosis of the disease[10]. Iron deficiency anemia is correlated with the severity and degree of villous atrophy and mucosal involvement[9]. A prospective study has confirmed this correlation.

In children presenting with delayed growth, learning disorders, lethargy, and inactive behavior, iron

deficiency anemia should be suspected[7], which may be associated with celiac disease as in our case[8].
In patients with iron deficiency anemia and gastrointestinal findings like bloating, abdominal pain, anorexia, diarrhea, etc., Celiac disease should be strongly suspected because of the correlation between the two[10].

Other features of iron deficiency anemia like pallor, koilonychia, glossitis, angular stomatitis, and tachycardia may also be found on examination. Severe Iron deficiency anemia may complicate into high output cardiac failure, and related signs on examination like bilateral pedal edema, raised JVD, hepatomegaly, bibasilar crepitations, etc., may be found.

During the course of diagnosis of iron deficiency anemia in children, suspicion of celiac should be kept into account, especially when gastrointestinal features are found[8]. Celiac disease usually presents with positive serology and auto-antibodies like Anti-Gliadin antibodies, Endomysial antibodies, and Anti-tissue glutaminase antibodies[12]. A small bowel biopsy is done to confirm the diagnosis[5].

Patients should be counseled for a gluten-free diet for life, and the majority of the patients respond to the treatment[6], improving the activity of villi and gut. Counseling and proper treatment regarding possible complications should be provided to the patient, such as in our case.

Such patients should be monitored periodically[14] and evaluated for compliance with treatment and risk of other extraintestinal manifestations[11].

For complications like iron deficiency anemia and heart failure, the patient should be managed subjectively, and the cause should be treated with Intravenous or oral iron with proper salt and water restriction. Restrictive red cell transfusion, along with intravenous diuretics, can be given if the patient is symptomatic or Hb falls below 7g/dl. The transfusion should be done slowly and cautiously to avoid further blood volume increase while monitoring the vital signs and oxygen saturation[16].

CONCLUSION:

As our case has demonstrated that diseases do not read the books and may present unusually, the physicians should be vigilant and thoughtful not to miss a case that may very well be diagnosed and treated, changing the course of someone's life. For complications like iron deficiency anemia and heart failure, the patient should be managed subjectively, and the cause should be treated with Intravenous or oral iron with proper salt and water restriction.

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