

Dilated Cardiomyopathy Associated with Celiac Disease: Case Report and Literature Review

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SUMMARY

Introduction Celiac disease is an inflammatory condition of the small intestinal mucosa induced by gluten consumption in genetically susceptible individuals, leading to a spectrum of gastrointestinal presentation. A number of autoimmune and other disorders are highly associated with celiac disease. Cardiomyopathy associated with celiac disease has been rarely reported in the literature.

Case Outline We present a case of a 27-year-old male with one month history of diarrhea, weight loss, fatigue, dyspeptic symptoms, peripheral edema, and cardiac palpitations. After positive serological screening with immunoglobulin A anti-tissue transglutaminase antibody test, the diagnosis of celiac disease was confirmed with histopathology examination of duodenal biopsy specimen. Echocardiographic findings were consistent with acute myocarditis. After common causes of myocarditis had been excluded, probable celiac disease-associated autoimmune myocarditis was diagnosed. The patient was recommended to undergo a strict life-long gluten-free diet. IgA anti-transglutaminase antibodies, and anti-gliadin antibodies, were both significantly elevated during the 6-, 12- and 18-month follow-up. Low compliance to gluten-free diet in our patient led to progressive worsening of the left ventricular ejective fraction and other serious cardiac complications which warranted invasive cardiac interventions.

Conclusion Dilated cardiomyopathy associated with celiac disease is a serious condition which requires multidisciplinary approach involving gastroenterologist and cardiologist. Compliance with gluten-free diet is mandatory if patients are to avoid progression of cardiomyopathy. Screening of patients with idiopathic dilated cardiomyopathy for celiac disease is advisable.

Keywords: celiac disease; dilated cardiomyopathy; gluten-free diet

INTRODUCTION

Celiac disease is an inflammatory condition of the small intestinal mucosa induced by gluten consumption in genetically susceptible individuals, leading to a spectrum of gastrointestinal presentation. It is one of the most common genetically transmitted disorders reaching the prevalence of 1% in overall population. A number of autoimmune and other disorders are highly associated with celiac disease. These include autoimmune thyroid disease, Down's syndrome, type 1 diabetes mellitus, dermatitis herpetiformis, IgA selective deficit, primary biliary cirrhosis, sclerosing cholangitis and epilepsy with cerebral calcifications. Cardiomyopathy associated with celiac disease has been rarely reported in the literature.

We present a case of 27-year-old male in whom dilated cardiomyopathy occurred simultaneously with typical celiac disease.

CASE REPORT

The patient was a 27-year-old unemployed male admitted to our department with a one-month history of diarrhea, weight loss, fatigue, dyspeptic symptoms, peripheral edema, and cardiac palpitations. His previous medical

history was unremarkable. There was a family history of maternal systemic lupus erythematosus.

General examination at admission revealed marked pallor and lower limbs edema.

Routine laboratory tests revealed severe iron deficiency anemia and hypoalbuminemia (Hgb=84 g/L, transferrin saturation=7.32%, albumin=26 g/L). He had reduced body mass index (BMI=19.2 kg/m²). Thyroid function tests were within reference range. Screening serology for celiac disease – IgA anti-transglutaminase antibodies were highly elevated (339 RU/ml). Upper gastrointestinal endoscopy revealed macroscopic signs of duodenal mucosal atrophy. Histopathology examination of duodenal biopsy specimen revealed type III_b lesions according to the Marsh-Oberhuber classification (Figure 1). The electrocardiogram showed a left bundle branch block (Figure 2). Echocardiographic findings, which were consistent with acute myocarditis, showed normal left ventricular ejective fraction (LVEF=50%). Serum creatine kinase – MB isoenzyme level was normal. Cardiac troponin I level was increased (0.03 μmol/L). Serologic tests for cardiotropic viruses were negative. He did not meet the American Rheumatism Association criteria for systemic lupus erythematosus. Myocardial biopsy was refused by the patient.

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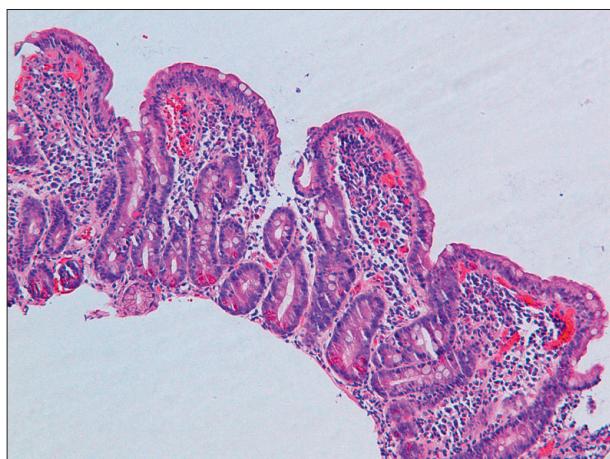


Figure 1. Microscopic image of the duodenal mucosal biopsy (HE, $\times 125$): Reduced surface of enterocytes with irregular brush-border, moderate villous atrophy, hyperplasia of glandular crypts, and pathological increase of intraepithelial and lamina propria lymphocytes.

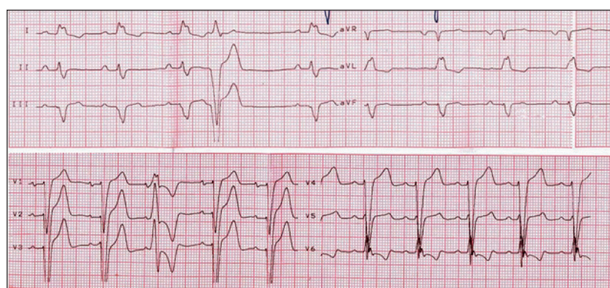


Figure 2. A 12-lead ECG showed left bundle branch block

Celiac disease with probable celiac disease-associated autoimmune myocarditis was diagnosed. He was recommended to undergo a strict life-long gluten-free diet (GFD). His digestive symptoms and peripheral edema disappeared soon after introduction of GFD. After 6 months, his complete blood count and routine biochemistry were within normal limits. Exercise stress test showed no abnormalities. During 18-month follow-up he gained 16.1 kg (BMI 23.8 kg/m²). Cardiologist prescribed angiotensin-converting enzyme inhibitors, beta blockers and acetylsalicylic acid.

In order to evaluate compliance with the GFD, we regularly investigated IgA anti-transglutaminase antibodies, as well as anti-gliadin antibodies, which were both significantly elevated during the 6-, 12- and 18-month follow-up. Echocardiography showed global hypokinesia and dilatation of the left ventricle with LVEF of 20% to 25% during 12-months follow-up. Coronary angiography showed no abnormalities. Clinically he had heart failure NYHA stage III, thus diuretics were added to therapy. Because of bradycardia and advanced heart failure, a permanent multisite atrial-ventricular pacemaker (DDDR mode) was implanted. Control echocardiography showed further worsening of LVEF (15-20%) during 18-months follow-up. Radiofrequency ablation of the atrioventricular node

was performed because an episode of uncontrolled atrial flutter occurred.

DISCUSSION

In this case, we present a patient with celiac disease and simultaneous occurrence of myocarditis, which later progressed to chronic dilated cardiomyopathy. To the best of our knowledge, this is the first case of dilated cardiomyopathy associated with celiac disease in this part of Europe. It seems likely that in this case, cardiomyopathy occurrence and its fast progression were causally related to celiac disease and low compliance with the GFD. According to available sources, about 17 similar cases have been reported so far [1-7]. Patients with both serological evidence and histopathology findings were only included in this review.

A study has shown increased prevalence of celiac disease in patients with cardiomyopathy [8]. However, another study has shown a lack of this association [9]. Several mechanisms have been proposed for the development of cardiomyopathy in celiac disease. Firstly, malabsorption occurring in celiac disease may lead to cardiomyopathy caused by severe nutritional deficiencies [10]. Autoimmune response directed against antigens present in both the myocardium and small bowel may be responsible for myocardial injury [3, 4, 10].

In our review, 9 patients had biopsy proved myocarditis [4], and 9 patients were diagnosed as having dilated cardiomyopathy [1, 2, 3, 5, 6, 7], including our patient who refused myocardial biopsy. Of the patients reviewed, 13 (72.2%) were treated with a strict gluten-free diet alone [1-7]. Two patients were noncompliant and presented with worsening of LVEF [3]. One patient died due to intractable heart failure [1]. The remaining 10 patients had improvement of LVEF and suppression of ventricular arrhythmias [2-7]. Five patients (27.8%) were treated with immunosuppressive therapy in addition with gluten-free diet [4]. All of these patients had improvement of LVEF. However, our patient unfortunately refused immunosuppressive therapy.

It seems that a low compliance with the GFD in our patient led to progressive worsening of LVEF and other serious cardiac complications which warranted further invasive cardiac interventions.

In conclusion, dilated cardiomyopathy associated with celiac disease is a serious condition which requires multidisciplinary approach involving gastroenterologist and cardiologist. Compliance with the GFD is mandatory if patients are to avoid progression of cardiomyopathy. According to the available data, if diagnosed early cardiomyopathy may be reversible with introduction of GFD alone. Further studies of patients with celiac disease and cardiomyopathy are needed to determine exact pathogenic mechanism of cardiac injury. Screening of patients with idiopathic dilated cardiomyopathy for celiac disease should be considered.

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Дилатативна кардиомиопатија удружена с целијачном болешћу: приказ болесника и преглед литературе

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КРАТАК САДРЖАЈ

Увод Целијачна болест је запаљењско обољење мукозе танког црева изазвано ингестијом глутена код генетски предодређених особа које води ка низу гастроинтестиналних манифестација. Многе аутоимунске болести, као и друга обољења, високо значајно су удружена с целијачном болешћу. О кардиомиопатији удруженој с целијачном болешћу се ретко писало у литератури.

Приказ болесника Приказујемо случај 27-годишњег мушкарца с једномесечном историјом дијареје, губитка телесне масе, малаксалости, диспептичних тегоба, периферних едема и палпитација. Након позитивног серолошког скрининга с имуноглобулин А антитрансглутаминским антителима, дијагноза целијачне болести је потврђена хистопатолошким прегледом препарата биопсије дуоденума. Ехокардиографски налаз је указао на акутни миокардитис. Након што су искључени уобичајени узроци миокардитиса, дијагностикован је могући аутоимунски миокардитис удружен с целијачном болешћу. Болеснику је препоручена стриктна

доживотна дијета без глутена. Имуноглобулин А антитрансглутаминска антитела, као и антиглијадинска антитела била су значајно повишена током шестомесечних, дванаестомесечних и осамнаестомесечних контролних прегледа. Слабо придржавање дијете без глутена код приказаног болесника довело је до прогресивног погоршања ејекционе фракције леве коморе срца и других кардијалних компликација које су захтевале инвазивне кардиолошке интервенције.

Закључак Дилатативна кардиомиопатија удружена с целијачном болешћу је тешко стање које захтева мултидисциплинарни приступ болеснику, укључујући гастроентеролога и кардиолога. Комплијанса дијете без глутена је неопходна уколико болесници желе да избегну развој кардиомиопатије. Препоручује се испитивање болесника с идиопатском кардиомиопатијом на целијачну болест.

Кључне речи: целијачна болест; дилатативна кардиомиопатија; дијета без глутена

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