

A Case of Anxiety Alleviated by Diet: The Overlooked Connection in Celiac Disease**Khalid I. AlHussaini^{a*}**

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Abstract

Background: Celiac disease is a prevalent autoimmune disorder characterized by an immune response to gluten, resulting in malabsorption and a wide range of gastrointestinal (GI) and extra-intestinal symptoms. While classic GI symptoms such as diarrhea, bloating, and steatorrhea are common, variations in symptomatology exist, with some patients presenting with atypical symptoms such as dyspepsia or constipation. In adults, celiac disease often manifests with behavioral disturbances like anxiety and aggression, complicating diagnosis.

Case Report: A 27-year-old female with a history of generalized anxiety disorder presented with diarrhea, bloating, weight loss, and increasing abdominal distension. Her symptoms, including behavioral changes such as escalating aggression and overeating, were initially attributed to psychiatric issues. Laboratory findings revealed anemia, multiple vitamin deficiencies, and elevated tissue transglutaminase IgA antibodies, leading to a diagnosis of celiac disease confirmed through esophagogastroduodenoscopy (EGD) and histological examination. The patient condition showed substantial improvement after a gluten-free diet initiation.

Conclusion: Celiac disease can present predominantly psychiatric symptoms, leading to diagnostic challenges and delayed treatment. Early recognition and gluten-free diet initiation can result in significant symptom improvement. Clinicians should consider celiac disease in patients with psychiatric symptoms, especially when GI complaints are present, to facilitate timely diagnosis and intervention.

Keywords: Celiac disease; Gluten; Anxiety

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Introduction

Celiac disease is a prevalent autoimmune condition, with global estimates suggesting an occurrence of approximately 1 in 300 individuals (Gujral et al.,2012). It results from an immune-mediated response to gluten ingestion, leading to the degradation of the duodenal brush border and subsequent malabsorption (Kagnoff ,2005). In adults, the disease commonly manifests with both gastrointestinal (GI) and extra-intestinal symptoms. Classic GI presentations include diarrhea, steatorrhea, bloating, and flatulence (Adams et al.,2024). However, symptom variation exists, with around 4% of patients experiencing dyspepsia or constipation instead of diarrhea (Austin et al.,2024). Extra-intestinal manifestations frequently include anemia, vitamin D deficiency, bone demineralization, and dermatitis herpetiformis, while neuropsychiatric symptoms such as headaches and anxiety occur less commonly (Kemppainen et al.,2024).

Adult celiac disease frequently manifests very differently from children. In many cases, behavioral disturbances such as increased aggression and anxiety are predominant, with little to no GI symptoms (Smith et al.,2017). Improved awareness and accessible serologic testing will lead to the identification of more patients with atypical presentation or associated diseases like autoimmune endocrinopathies (Chaturvedi et al.,2019). As a result, celiac crisis—a rare but severe manifestation characterized by profuse diarrhea and metabolic derangements—has become an uncommon presentation, mostly confined to pediatric cases (Jamma et al.,2010).

The primary diagnostic methods rely on celiac serology and small intestinal biopsies. Key pathological findings include villous atrophy, intraepithelial lymphocytosis, and crypt hyperplasia, which are classified using the Marsh criteria

(Marsh and Crowe,1995; Husby et al.,2012). This case report highlights an unusual presentation of celiac disease in an adult, where behavioral symptoms were the predominant clinical feature, particularly in the context of underlying psychiatric conditions and intellectual disability.

Case Report

A 27-year-old female with a history of generalized anxiety disorder presented with bloating and diarrhea persisting for 3 months, accompanied by significant weight loss of 10 kg over the past 6 months. However, five months before the presentation, she had reported mild abdominal discomfort and worsening of her anxious symptoms, which deviated from her usual baseline. Her husband observed progressive abdominal distension and he described escalating aggression and conflicts within the household, which became more pronounced before the onset of diarrhea.

The patient exhibited an unusual increase in appetite, consuming excessive amounts of food, necessitating locked cabinets and refrigerator restrictions at home. As her condition progressed, she developed severe, frequent diarrhea leading to incontinence. She was diagnosed with generalized anxiety disorder after being evaluated several times over the previous two months by an internist, psychiatrist, and her primary care physician (PCP), as well as an emergency physician at another facility. She was put on a treatment plan by her psychiatrist without any improvement.

On examination, she exhibited signs of severe malnutrition, including abdominal distension, bilateral lower extremity pitting edema and clinical signs of vitamin deficiencies. Laboratory studies revealed anemia, metabolic abnormalities and multiple vitamin deficiencies. Stool analysis, including stool culture, ova and parasite examination, and *Clostridioides difficile*

polymerase chain reaction (PCR) testing, was negative for infection.

Serologic testing for celiac disease revealed markedly elevated tissue transglutaminase (TTG) IgA antibodies > 100 IU/mL). Esophagogastroduodenoscopy (EGD) was performed and it showed evidence of atrophic appearing mucosa with visible fissures and scalloping (**Fig.1**). A histological examination confirmed the subtotal villous atrophy with increased intra-

epithelial lymphocytes consistent with celiac disease, Marsh type 3a (**Fig.2**). Additional nutritional analysis revealed deficits in critical fatty acids, minerals, and fat-soluble vitamins, and a corrective plan was carried out. The patient started on a gluten-free diet.

One month later, the patient was evaluated at the clinic. She was very compliant and adherent to her gluten-free diet and showed substantial improvement in her symptoms.



Fig.1. Esophagogastroduodenoscopy showing atrophic mucosa with visible fissures and scalloping.

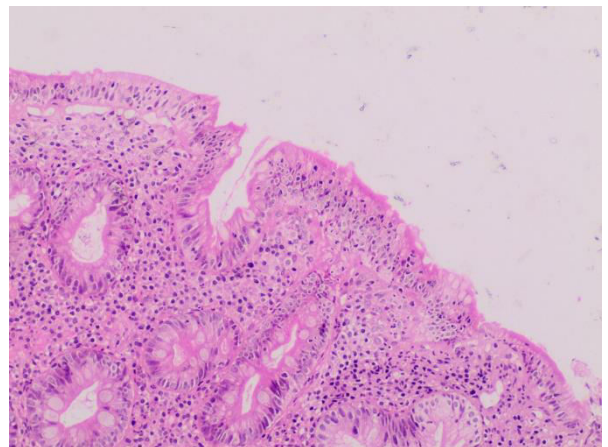


Fig.2. Duodenal mucosa showing subtotal villous atrophy with increased intra-epithelial lymphocytes.

Discussion

Severe metabolic and electrolyte disturbances secondary to celiac disease in adults have been documented in previous case reports, but usually due to a triggering event, like an infection or surgery (**Gonzalez et al.,2019; Bul et al.,2016; Balaban et al.,2019**). The patient presented with a protracted course over months, with progressive weight loss, diarrhea, peripheral edema, and worsening weakness. Her underlying anxiety symptoms led to diagnostic delays, as her behavioral symptoms preceded the classic GI manifestations.

In pediatric populations, Taddeucci et al. have described cases in which celiac disease presented predominantly with neuropsychiatric symptoms (**Taddeucci et al.,2005**). They recommend screening for celiac disease in patients presenting with behavioral disturbances and psychiatric symptoms.

The connection between Celiac Disease and mental disorders has been a focus of increasing investigation within the last fifteen years. A 2014 review by Slim et al. examined this association encompassing conditions such as schizophrenia, depression and ADHD (**Slim et al.,2018**). Their

findings suggested a significant correlation between celiac disease and psychiatric comorbidities, emphasizing the need for healthcare providers to recognize this potential interplay. Furthermore, they proposed that the relationship between psychiatric symptoms and gastrointestinal disease could be bidirectional.

This case was reported to emphasize that the presence of underlying psychiatric illness contributed to a delayed diagnosis, with the patient ultimately presenting in a state of malnutrition. Her prolonged gluten exposure likely led to significant duodenal injury, characterized by gluten-mediated activation of HLA-DQ2 and HLA-DQ8 molecules, triggering a T-cell-driven inflammatory response (AlHussaini et al., 2024). This chronic inflammation resulted in substantial brush border dysfunction, metabolic disturbances, and nutritional deficiencies.

Conclusion

Celiac disease is a well-recognized cause of malabsorption, which can lead to profound malnutrition in severe situations. While there is ongoing discussion over the relationship between celiac disease and psychiatric disorders, existing literature suggests a potential link. Physicians should be mindful of this relationship, particularly when psychiatric symptoms worsen in conjunction with GI complaints such as diarrhea and weight loss. In such cases, screening for celiac disease may be warranted to facilitate early diagnosis and intervention.

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