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Celiac disease and anorexia nervosa: a case report

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ABSTRACT

The relationship between anorexia nervosa and celiac disease remains an area of ongoing research. Identification of celiac disease in patients with restricted nutritional intake can be challenging since abdominal complaints are a common comorbidity associated with eating disorders and since diagnosis of celiac disease requires a duodenal biopsy while on a gluten containing diet. In this report, we present a 12-year-old female who developed anorexia nervosa and was thereafter diagnosed with celiac disease. The latter diagnosis occurred after a 2-year period of persistent abdominal complaints and duodenal biopsies on three separate occasions. Our case highlights the diagnostic challenge, which may include initially missing the diagnosis, associated with celiac disease in patients who are restricting their nutritional intake, and also the importance of re-testing in patients where gastrointestinal complaints are persistent for extended time periods after refeeding.

1. Introduction

Celiac disease (CD) is an immune-mediated enteropathy of the small intestine caused by sensitivity to gluten in genetically susceptible individuals. Gastrointestinal (GI) symptoms are common, and include abdominal pain and distention, diarrhea, failure to thrive, vomiting and constipation [1]. Non-GI abnormalities are also often present, including iron deficiency anemia, bone disease and malabsorption [1,2]. Initial screening guidelines recommend serologic testing of celiac-specific antibodies, most commonly IgA tissue transglutaminase (TTG) antibody, and confirmation of CD with an intestinal (duodenal) biopsy [1]. Specificity and sensitivity of anti-TTG for detection of celiac disease is approximately 97% and 93% respectively [3]. Although the gold standard for diagnosis of CD is duodenal biopsy, results may be falsely negative in certain circumstances, including patchy intestinal disease, a self-imposed gluten free diet (GFD), subtle histology missed by the pathologist or insufficient tissue biopsied during the procedure [4]. A recent study showed a sensitivity of 100% in detecting CD when three biopsies were taken and one was from the duodenal bulb, the region of the intestine most affected by gluten [5].

Anorexia nervosa (AN) can affect all organ systems and GI symptoms are common [6,7]. Workup for the diagnosis of AN should include elimination of all organic diseases (GI and other) that could contribute or cause the patient's symptoms.

The relationship between CD and AN as comorbid conditions has been discussed in five published articles [8–12]. The order of the diagnoses of CD and AN in these patients varied; some first developed CD, and subsequently an eating disorder (ED), whereas for others, the ED preceded the diagnosis of CD [8–11]. Two pediatric articles describe youth suffering from eating pathology and concomitant CD [10,11]. In Karwautz et al.'s work, authors screened adolescents with biopsy proven CD for symptoms of EDs via questionnaire and interview, and found that 11 of 283 (3.9%) of patients met criteria for an ED (one patient had AN) and another 21 (7.4%) of patients had subclinical EDs; 86% of patients had been diagnosed with CD before their eating pathology began [10]. A recent cohort based case-control study by Marild et al. examined 18000 women in Sweden (median age 28 yrs) with a diagnosis of CD. Authors found a higher incidence of AN in these patients in comparison with matched controls. Importantly, they found that the incidence of AN was higher in patients they identified as already having a diagnosis of CD, but also that women diagnosed with CD were more likely to develop AN in the future. This large

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study showing statistically significant bidirectional association between these two conditions suggests a relationship exists, however the mechanism remains unclear [12].

Herein, we describe a 12-year-old female diagnosed initially with an atypical ED, which developed into AN over 2 years. A confirmatory diagnosis of CD was made shortly after her AN diagnosis. Her initial screening for CD was negative 2 years prior.

2. Case summary

A 12-year-old female presented to the hospital with a 2 month history of oropharyngeal pain and dysphagia from a throat infection and a possible mononucleosis infection, leading to decreased oral intake and a subsequent 10 kg weight loss. Throughout the two months prior to her presentation, she developed a strong fear of swallowing due to pain and a fear of nausea after eating. To compensate for these fears, she gradually stopped eating and was only drinking oral nutritional supplements. She had no history of fevers, rashes, joint pain, diarrhea or vomiting. Family history was positive for vasculitis (mother), hypothyroidism (mother and other relatives), Raynaud's phenomenon (mother), CD (second degree relative), anxiety (brother and other second degree family members), depression (father), and ADHD (brother). The patient had not noted any breast or pubic hair development, and had not had a menstrual period. On examination, the patient's weight was 30 kg (less than the 3rd percentile for age) and height was 152 cm (25-50th percentile for age). Importantly, her weight had been 40 kg (between the 25th and 50th percentiles for age) prior to the onset of illness two months before presentation, putting her current weight at approximately 75% of her estimated target weight (using 40 kg as an initial target). The patient was admitted for hydration and renourishment via nasogastric feeds, pain management and for further investigations.

Throughout her one month admission, investigations were all normal other than a positive mononucleosis screen. Blood work screening for organic illness including inflammatory markers, tissue transglutaminase antibody (TTG), in addition to a nasopharyngeal laryngoscopy and an esophagogastroduodenoscopy (EGD) with biopsies were normal. After psychiatric assessments, she was diagnosed with Generalized Anxiety Disorder and Food Avoidant Emotional Disorder. By the current DSM-5 this patient would have met criteria for Avoidant Restrictive Food Intake Disorder [13].

At discharge, she tolerated solid foods consistently and had gained 4.6 kg, corresponding to approximately 87% of her estimated goal weight. She remained avoidant of certain foods that she believed caused her abdominal discomfort but was able to selectively increase her intake.

The patient initially did well with weight gain and anxiety treatment as an outpatient. She continued to avoid certain grain products but denied body image disturbance or fear of weight gain. She was reassured that the refeeding process could cause abdominal discomfort and that with time, her digestion would return to normal. Once she reached 36.3 kg (91% of her goal), she was discharged back to the care of her primary care physician.

One year after her initial EGD, she had another EGD plus a colonoscopy to reassess for CD and to evaluate for possible inflammatory bowel disease given her ongoing GI symptoms. The biopsy results from these procedures were within normal limits.

Almost two years after her initial discharge from the hospital, she was diagnosed with AN. The patient had started high school and found the transition extremely difficult from both the peer and academic perspectives. She endorsed a strong fear of weight gain and body image disturbance believing that she was overweight despite being of very low weight. A nutritional review revealed that her eating habits had never normalized after hospitalization and that she had a self-imposed gluten and lactose free diet. In the months after starting high school, she reduced her volume of nutritional intake. Her weight that had reached 42 kg (close to the 25th percentile for age) prior to starting high school had dropped to 39.2 kg, below the 10th %ile. Her new weight goal range was set as 47–49 kg based on her pre-weight loss growth plots that were tracking between the 25-50th percentiles for age. She began the refeeding process with the help of a dietitian and continued therapy with psychology for anxiety and AN. Her family was encouraged to promote nutritional variety, and to support a gluten-containing diet. Her parents reported some success with increasing the variety in her diet, including gluten rich foods, although they noted ongoing struggles with supporting their daughter in eating adequate volumes. Throughout parents' attempts at refeeding, weight gain fluctuated and the patient complained of multiple GI symptoms including bloating, diarrhea and constipation, accompanying her intense psychological distress associated with weight gain. Ten months later, screening blood work was completed to investigate fatigue and it revealed a microcytic hypochromic anemia (Hemoglobin 100 g/L). She was referred back to the GI specialist regarding her ongoing GI complaints despite months of refeeding, in addition to the new finding of anemia. At her consultation, her TTG was repeated and was elevated at 308 CU. Her third EGD and duodenal biopsies were confirmatory for CD.

3. Discussion

The symptoms of AN and CD may overlap and it is unclear how often these conditions co-exist. Both diseases can present with weight loss/growth issues, intentional nutritional restriction, and/or other GI or neurologic symptoms [4]. Moreover, children with CD may even present initially with isolated anorexia and mood symptoms, which can be confused with a primary psychiatric disorder, such as major depression [14]. In practice, it may be challenging to determine which patients with AN require screening (or repeat screening) for CD. One report exploring the frequency of CD in pediatric patients with AN found a prevalence of 0.6%, similar to that in the general population [11]. Authors concluded that screening for CD is only useful in patients with AN whose symptoms do not respond to psychiatric treatment [11]. Another report looking at the frequency of eating pathology in pediatric patients with CD found a prevalence of 5.3% for all types of EDs, 0.5% for AN [10].

Our case study highlights the importance of considering investigations for CD in patients with AN. In our report, the patient's initial TTG and upper GI endoscopy were completed while she was already on a self-imposed gluten-free diet despite having been advised to consume gluten prior to the serology testing and duodenal biopsies. Patients must be on a gluten-containing diet prior to and at the time of serologic testing and duodenal biopsies for CD to prevent a false negative result [1]. Importantly, we do recognize that in this instance, our case may represent an initial missed diagnosis of CD, complicated by the patient's restricted intake.

This highlights the diagnostic challenge posed by the requirement of a gluten containing diet for accurate diagnosis of CD, particularly in individuals with concomitant eating disorders who may not adhere to a gluten containing diet prior to biopsy. This case also underscores the importance of re-testing for gluten sensitivity in patients with AN even if previous testing is normal, particularly when GI complaints persist over several months. Patients with EDs commonly report GI symptoms, and it is often difficult to differentiate between those related to AN and those related to CD. In a recent pediatric report, 32% of patients with AN (mean age of 14.5

years) reported abdominal complaints [11]. As such, GI complaints alone in those with AN would not be thought of as unusual. Many GI symptoms should eventually resolve with re-nourishment, psychiatric treatment and management of other ED symptoms, such as bingeing and purging [6].

Lastly, our case illustrates a common clinical scenario whereby an ED is diagnosed, yet the diagnosis for a co-existing organic illness is missed. The diagnosis of an ED necessitates the elimination of other disease processes that may cause the presenting symptoms. In our case, our patient developed behaviours consistent with a DSM-5 diagnosis of AN after initial testing for CD was performed. This underscores the importance of patient education surrounding a gluten containing diet prior to biopsy and the need for a high index of suspicion for CD in patients with limited nutritional intake and persistent abdominal complaints.

4. Conclusion

Youth ED practitioners must be aware of the wide variety of presentations of CD, and that AN and CD may co-exist. Our case highlights that youth with AN whose GI complaints do not improve in time with re-nourishment and psychiatric support or those who present with a more atypical ED picture should be re-screened for CD, especially those with a positive family history for autoimmune diseases. Additionally, patients with any findings unexplained solely by AN (such as the iron deficiency anemia in our case) merit re-testing. Finally, re-testing for CD is indicated if there is a possibility that initial screening was done without any or enough re-integration of gluten in the diet, which is likely more common in youth with restrictive AN than in other pediatric patients.

Conflict of interest

The authors have no conflict of interest to report.

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Authorship/ethical considerations

All authors made substantial contributions to the conception and design of the study, chart review, drafting the article and all authors approved the final version submitted. Written informed consent was received from the patient described in the report.

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