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Adult celiac disease presented with celiac crisis: Report of two cases

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ABSTRACT

Two patients (case 1: 29 years old and case 2: 66 years old. female) with no known medical history of chronic diseases, including celiac disease, presented to the hospital with prolonged diarrhea, weight loss, and severe hypocalcemia at different times. They were admitted to the hospital for hemodynamic instability in the setting of severe dehydration and electrolyte disturbances. Physical examination revealed a positive trousseau sign in Case 1. The typical laboratory features of both cases were low magnesium, low potassium, low vitamin D, low ferritin, and prolonged coagulation tests. In addition to those labs, case 2 also has metabolic acidosis. In both cases, the titers of the tissue transglutaminase IgA and IgG and the anti-endomysium antibody were high, and the histopathology of the duodenal biopsy was consistent with villous atrophy, crypt hyperplasia, and an increase in intraepithelial lymphocytes, suggesting celiac disease. Both cases responded quickly to treatment with a gluten-free diet, fluid, electrolyte, vitamin D, and K replacements, and were discharged. Celiac crisis is a rare presentation of celiac disease characterized by acute, severe metabolic imbalances resulting in high mortality and morbidity, with severe diarrhea, hypoproteinemia, and metabolic and electrolyte disturbances. It is typically seen in children under 2 years of age but can also be encountered in adulthood. Most cases respond to gluten cessation, nutritional support, and rarely steroid treatment.

Keywords: Celiac crisis, Dehydration, Diarrhea, Electrolyte imbalance, Metabolic disturbance

Celiac disease (CD) is a systemic, immunologically mediated disease that occurs in genetically susceptible individuals due to consuming gluten-containing foods. The frequency is reported to be 1% in most populations. The common symptoms include chronic diarrhea, abdominal pain, bloating, and weight loss. The clinical range of cases can vary from asymptomatic to life-threatening, requiring hospitalization.[1] Standard diagnostic criteria for celiac are modified Marsh classification 3a or higher and positive tissue transglutaminase antibodies, endomysium antibody or deamidated gliadin peptide antibody serology, or positive HLA DQ2 or DQ8 and clinical response to treatment with a gluten-free diet.[2,3] The Celiac crisis was first described in a case series in 1953, characterized by a mortality rate of 9%, which can occur mostly in children under the age of 2 but can also be seen in adults. It has high morbidity and high mortality, characterized by acute, dramatic metabolic imbalances resulting from celiac disease, including severe diarrhea, hypoproteinemia, and metabolic and electrolyte imbalances.[4-6] Treatment for celiac crisis consists of a gluten-free diet, parenteral fluid replacement, nutritional support, and corticosteroids are used in some cases.[7]

Celiac crisis is a rare presentation of acute, dra-

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matic, metabolic imbalance of celiac disease, characterized by severe diarrhea, hypoproteinemia, and metabolic and electrolyte disturbances requiring hospitalization, with high mortality and morbidity.

Although celiac crisis is mainly seen in children under 2 years of age, it can also be diagnosed in adults. Precipitating factors such as surgery, pregnancy, immunosuppressive therapy, and infections may not always be identified.

Celiac crisis should be considered in the differential diagnosis of patients presenting with unexplained diarrhea and weight loss accompanied by hemodynamic disturbance and severe electrolyte deficiency, with or without a known diagnosis of Celiac disease. Early diagnosis of celiac crisis, gluten-free diet, parenteral fluid replacement, and nutritional support will reduce mortality and morbidity in these patients.

These cases reported female cases of different ages, with no medical history of celiac disease, who presented to the hospital with a similar clinic and were diagnosed with celiac crisis based on clinical, serological, and histopathological findings. Informed consent was obtained from all patients at the beginning of the study procedure.

CASE PRESENTATION

CASE 1

A 29-year-old female patient who is 2 months postpartum, without any chronic disease, presented to the emergency department with complaints of diarrhea and muscle cramps in her hands that have been ongoing for 1 month. The patient had yellow, watery, non-bloody, mucus-free, and odorless diarrhea that occurred 8 to 10 times a day for the past 1 month. The review of the systems showed positive results for fatigue, dizziness, and weight loss of approximately 15 kilograms in the last month.

Vitals were temperature of 36,7°C, blood pressure of 90/50 mmHg, pulse of 100 beats per minute, respiratory rate of 16 breaths per minute, and oxygen saturation of 98% (in room air).

On physical examinations, the patient was not ill, appearing, alert, and oriented to person, place, and time. Mucous membranes were dry, and bowel sounds were hyperactive during the abdominal examination. The Trousseau sign was positive.

Laboratory results showed hypokalemia (2.7 mEq/L, standard: 3.5-5.1), hypocalcemia (corrected: 7,3 mg/dL, expected: 8.4-10.2), hypomagnesemia (0.9 mg/dL, expected: 1.6-2.6), vitamin D deficiency (3 µg/L, expected: 30-100), and prolonged coagulation test results (active partial thromboplastin time: 36.2 seconds, expected: 25.6-35.2, and INR: 2.04, normal range: 0.8-1.25). The EKG showed a normal sinus rhythm. Chest x-ray and urinalysis were normal. No blood cells were seen in the stool microscopy. No growth was seen in stool and blood cultures. Colonoscopies were normal. Gastroscopy showed blunting of the papilla in the second portion of the duodenum, nodular appearance, and scalloping in the mucosa. Biopsies were taken from the bulb and the second

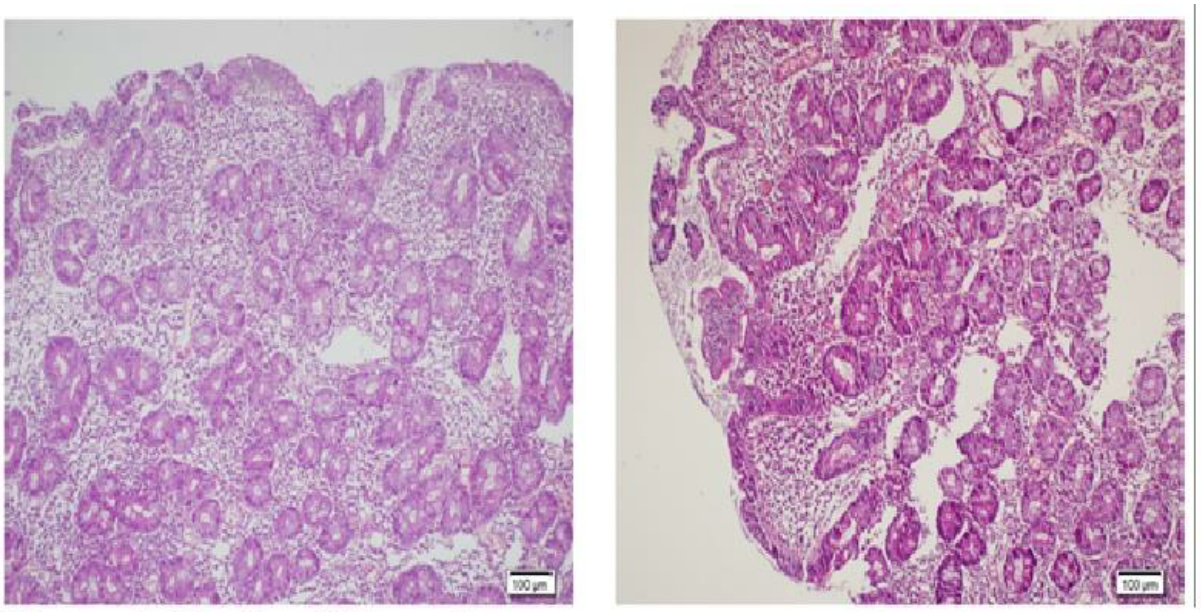

Figure 1. Duodenal biopsy image

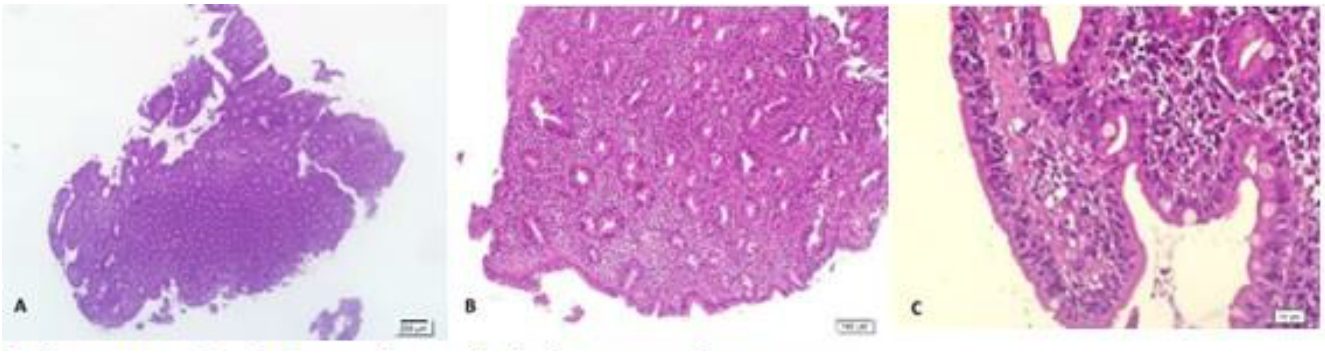

Figure 2. Duodenal biopsy image

portion. Histopathological analysis showed marked villous atrophy, blunting, and increased intraepithelial lymphocytes in the duodenum (see Figure 1). It was evaluated as Marsh type 3b. Serological tests showed high levels of tissue transglutaminase immunoglobulin A (>200, normal range: <20) and immunoglobulin G (1.63, normal range: <1), antigliadin immunoglobulin A (>200, normal range: <25), and immunoglobulin G (124.16, normal range: <25). Anti-endomysium antibody 4+ (titer: 1/320) was detected.

Clinical course: The patient's vitals were monitored. Electrolytes are replaced as needed with intravenous calcium, magnesium, and potassium. Vitamin D was also administered orally. Intravenous vitamin K was administered for abnormalities on coagulation tests, considering these imbalances and deficits caused by malabsorption. Based on all findings, the patient was diagnosed with a Celiac crisis and started a gluten-free diet. After replacement, the electrolyte values returned to normal, the coagulation tests improved, and the patient was discharged with stable vital signs. At 1-week follow-up, the patient's diarrhea had resolved.

CASE 2

A sixty-six-year-old female with no medical history of chronic disease and not on any medications presented to the emergency department with a complaint of diarrhea for the last 15-20 days. She has been experiencing diarrhea 3-4 times a day, without blood or mucus. The patient has taken probiotics a few times and lost 5-6 kilograms since the onset of diarrhea. Also, she has had shorter and intermittent diarrhea attacks in the past. Vitals were temperature of 36,5 °C, blood pressure of 100/55 mmHg, pulse of 112/min, breathing rate of 15 breaths per minute, and oxygen saturation in room air of 99%.

On physical examination, the patient was not ill-appearing, alert and oriented. She had dry mucous membranes and hyperactive bowel sounds on abdominal auscultation. Laboratory tests were significant for iron-deficiency anemia (hemoglobin: 10.3 g/dl normal: 12.5-16, MCV: 67.5 f normal: 80-100, iron: 18 µg/dL normal: 33-193, ferritin: 9 µg/L normal: 13-150), mild renal dysfunction (creatinine: 1.27 mg/dL normal: 0.5-0.9), hypokalemia (2.9 mmol/L normal: 3.5-5.1), hypocalcemia (corrected calcium: 7.74 mg/dL normal: 8.4-10.2), hypomagnesemia (1.53 mg/dL normal: 1.6-2.6), metabolic acidosis (pH: 7.15, HCO3: 10.4 mmol/L, PCO2: 27.5 mmHg), elevated C-reactive protein (3.05 mg/L normal range: 0-5), prolonged coagulation tests (aPTT: 29.1 sec (normal range: 25.6-33.6), INR: 2.93 (0.8-1.25), and low vitamin D: 10.2 µg/L (30-100). Urinalysis and chest radiograph were normal. The EKG showed a normal sinus rhythm. Stool tests showed liquid and mucus diarrhea, with no leukocytes or erythrocytes seen under the microscope. The stool and blood cultures showed no growth. The colonoscopy was normal. Gastroscopy showed erosion in the antrum, effacement, and nodularity in the duodenal folds. Biopsy of the second part of the duodenum showed histopathology of villous atrophy, crypt hyperplasia, increased intraepithelial lymphocytes, and widespread active inflammation (see Figure 2). It was evaluated as Marsh type 3c. Serological tests showed tissue transglutaminase IgA (>200 RU/ml normal range: <20), tissue transglutaminase IgG (0.91 normal range: <1), anti-gliadin IgA (126.9 RU/ml normal range: <25), and anti-endomysium antibody 4+ (titer: 1/3200).

Clinical course: The patient's vitals were monitored. Calcium, potassium, magnesium, and vitamin D were replaced. Bicarbonate was given for severe metabolic acidosis. Intravenous vitamin K was administered for abnormalities on coagulation tests.

Based on clinical, serological, and histopathological findings, the patient was diagnosed with a Celiac crisis and started a gluten-free diet. After electrolyte replacement, values returned to the normal range, coagulation tests and metabolic acidosis improved, and the patient was discharged with stable vitals. At 1 week of follow-up, the patient's diarrhea had been resolved.

DISCUSSION

The Celiac crisis is a rare and life-threatening acute malabsorptive condition that accounts for less than 1% of all cases of celiac disease. However, its prevalence has increased over the past ten years, probably due to improved diagnostic criteria.[8] Although most celiac patients experience mild symptoms, the cause of celiac crisis in some individuals remains unclear. It may be related to severe mucosal inflammation, immune activation, and disrupted standard motility patterns.[9]

Although there are no universally accepted, standardized diagnostic criteria for celiac crisis, it is considered a potentially life-threatening acute malabsorptive condition. It is characterized by hospitalization and/or the need for parenteral nutrition, as well as severe symptoms related to celiac disease. These symptoms include acute-onset or rapidly progressive gastrointestinal symptoms, along with at least two of the following criteria: severe dehydration symptoms, including hemodynamic instability and/or orthostatic changes, renal dysfunction (creatinine >;2.0 g/dL), metabolic acidosis (pH<;7.35), hypoproteinemia (albumin <;3 g/dL), electrolyte imbalances (hyponatremia/hypernatremia, hypocalcemia, hypokalemia, or hypomagnesemia), and weight loss (> 5 kg) are used to diagnose celiac crisis.[9]

In our cases, weight loss, electrolyte disturbances, and hemodynamic imbalance/ orthostatic hypotension were the standard diagnostic criteria in addition to the main criteria. In contrast, in Case 2, metabolic acidosis accompanied the picture. The common features of our cases included: both cases were female, there was no known history of celiac disease, severe diarrhea, and weight loss were the predominant symptoms, and the initial presentation was serious dehydration causing hemodynamic instability and severe electrolyte disturbances. In addition, both patients responded quickly to treatment. The differences between the cases included the age and the presence of mild renal dysfunction and iron deficiency anemia in case 2.

Although the pathophysiological mechanism responsible for the celiac crisis is not fully understood, surgery, pregnancy, immunosuppressive therapy, infections, and other causes are described as trigger factors.[6,7,10,11] In our cases, it was thought that giving birth 2 months ago might be a triggering factor in case 1, but no triggering factor was found in case 2.

It has been shown that clinical improvement is achieved in approximately 50% of the cases with a gluten-free diet, parenteral fluid replacement, and nutritional support.[9] In cases where rapid recovery cannot be achieved with standard treatment, short-term prednisone or budesonide treatment has been reported to be beneficial.[12] In our cases, rapid improvement was observed with a gluten-free diet, parenteral fluid replacement, and nutritional support without the corticosteroid treatment.

CONCLUSION

In patients with unexplained diarrhea and weight loss accompanied by hemodynamic instability and severe/multiple electrolyte disturbances, regardless of age, sex, or medical history of celiac disease, the possibility of a celiac crisis should be considered.

Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Authors' Contribution

Study Conception: MU, EE, EP, Eİ, ZNT; Study Design: MU, EE, EP, Eİ, ZNT; Supervision; MU, EE, EP, Eİ, ZNT; Materials: EP, MU, Eİ; Data Collection and/or Processing: EP, Eİ, ZNT; Analysis and/or Data Interpretation: EE, MU, EP; Literature Review: MU, EE; Critical Review: EE, MU; Manuscript preparing: MU, EE.

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