



## RESEARCH ARTICLE

### ACUTE MYOCARDIAL INFARCTION AS FIRST PRESENTATION OF CELIAC DISEASE: CASE REPORT

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#### Manuscript Info

#### Abstract

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#### Introduction:-

Celiac Disease (CD) is a long-term condition affecting the small intestine, triggered by consumption of gluten in individuals with a genetic susceptibility, leading to an immune system response (1). Celiac disease (CD) stands out among chronic conditions for several reasons: first, it's linked to particular coexisting health issues; second, it disrupts the absorption of vital nutrients; and third, the primary long-term remedy is adhering to a gluten-free diet (GFD) (2). Research indicates that specific cardiovascular conditions, such as cardiomyopathy, myocarditis, arrhythmias, and early atherosclerosis, are more common in individuals with celiac disease compared to those without the condition(2).

And show that there is 19% increased risk of ischemic heart disease in CD patients compared to those without the disease(3).

Here we present a patient who had no past medical history except for recent EGD done due to recurrent severe epigastric pain. Then he presented to the ER complaining of burning chest pain that started after having a heavy meal. And was finally diagnosed with celiac disease.

#### Case Presentation

A 34-year-old male patient who's known to be heavy smoker, presented to emergency department with an episode of epigastric pain and burning chest pain started after eating heavy meal at 4 PM. He denied any past medical history except for recent upperGI endoscopy due to recurrent severe epigastric pain with results being on hold . He is using proton-pump inhibitor which is pantoprazole.

Initial physical examinations including abdomen, CNS, cardiovascular were all normal. Vital signs showed high BMI , otherwise the rest were within normal range . However, an electrocardiogram at admission found ST elevation in lead I and aVL and ST elevation in posterior leads. A bed-side echocardiogram showed posterior-lateral wall severe hypokinesia confirming the diagnosis of Acute transmural myocardial infarction.

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Laboratory tests revealed elevated concentration of troponin I HS (0.1ng/ml), Creatinine(0.76 mg/dL), Urea (21.6 mg/dl), Sodium (140mmol/L), Potassium (3.90mmol/L), Prothrombin time (10.2sec), International normalised ratio (0.94), Partial thromboplastine time (23.6sec). Furthermore, complete blood count showed normal results expect for WBC ( $12 \times 10^3/\mu\text{L}$ ) and neutrophils ( $8.45 \times 10^3/\mu\text{L}$ ) both were slightlyelevated.

The patient is diagnosed with acute transmural myocardial infraction and percutaneous coronary intervention was done and discharged with medications: Aspirin 100 mg orally once daily, BRILINTA® (Ticagrelor) 90 mg orally twice a day, Atozet® (Atorvastatin)10/40 mg orally once daily, Nexium® (Esomeprazole) 40 mg orally once daily .

Two weeks later, esophagogastroduodenoscopy (EGD) results revealed:

1. Gastric Biopsy showed mild chronic quisent gastritis and few H. pylori like microorganisms are seen ( H and E).
2. The Gastric polyp (Fundic type) was negative for intestinal metaplasia, dysplasia or malignancy.
3. The Duodenal biopsy showed Irregular villi showing lymphocytosis ( > 30 per HPF ), Superficial ulceration, Brunner's gland hyperplasia, No evidence for infective agent, dysplasia or malignancy.

Accordingly, histopathological features are suggestive for celiac disease, nevertheless correlation with clinical, endoscopic and serological findigs is mandatory. Therefore, Transglutaminase Abs (IgA) was ordered and the results was positive (1.72) and the diagnosis of celiac disease was confirmed. For this reason, an investigations were conducted to check vitamins, minerals and BMD scan with the need to referral him to dietitian to program him for gulten free diet and follow up in 2 months with Anti TTG IgA.

Laboratory investigations showed Albumin serum (46g/l), Zinc (82 µg/dl), Calcium serum (2.39mmol/L), Magnesium serum (0.800mmol/L), Ferritin serum(96.97ng/ml), Vitamin B12 (264.0 pmol/L), Vitamin D (21.60nmol/L). Furthermore, complete blood count was done and all elements were within normal ranges expect eosinophil count ( $0.530 \times 10^3/\mu\text{L}$ ), eosinophil% (5.510%), MPV (10.90 fl) and BMD study was Normal. However, the patient have Vitamin D deficiency, so he was prescribed a Veggie® (Vitamin D) 50,000 IU Capsules.

1 months later, the patient presented with perianal pain and swelling with pus discharge. Physical examination showed an infected perianal fistula with external opening at 7 clock position with infected external opening and abscess (the abscess formation had an external opining (2\*2 cm) with secreations of pus. He was diagnosed with anorectal fistula and excision and drainage was planned. However, the cardiology department was consulted and the surgery got postpone since it's not an emergency and the patientneeds to complete 6 months post MI and PCI.

9 months later, the patient had a follow-up appointment with the cardiology department and some laboratory investigations were done and the results were 1) liver function test revealed ALT/GPT (53IU/L), AST/GOT (34IU/L). 2) Lipid profile test revealed cholesterol(196mg/dL), HDL (43mg/dL), LDL (151mg/dL), Triglycerides (125mg/dL). 3) HbA1c: (6.02%). In addition, BRILINTA® (Ticagrelor) was stopped and now he is only on Aspirin 100 mg orally once daily for 90 Days and Atozet® (Atorvastatin)10/40 mg orally once daily for 90 Days.

## Discussion:-

Celiac disease is a chronic malabsorptive autoimmune disorder. Both extraintestinal and intestinal symptoms could be present. When gluten is consumed by those with agenetic susceptibility, it causes inflammation and villous atrophy in the small intestine. The general population has a 1% prevalence of CD, although first-degree relatives can have a 20% prevalence (5).

Symptoms of malabsorption include weight loss, bloating, diarrhea, steatorrhea, anorexia, and abdominal pain. Immunoglobulin A (IgA) anti-tissue transglutaminase (tTG) antibody (IgAtTG) with a high titer and histopathology are the two main diagnostic criteria. A gluten-free diet is the course of therapy (6).

For CD, risk factors for thrombosis must be investigated, corrected, or even prescribed as thromboembolic prophylaxis. Early diagnosis and treatment with a gluten-free diet are essential to reducing mortality and comorbidities(7).

The greatest number of research examined the connection between cardiomyopathy and CD. The majority of them came to the conclusion that individuals with CD were more likely than those without it to acquire cardiovascular

disease. Untreated CD can result in excessive homocysteine levels (hyperhomocysteinemia), thrombophilia with a significant risk of thrombosis due to deficiencies in vitamin B2, protein S, and folate (4).

Two hypotheses have been proposed to explain the involvement of inflammation and immune response in the initiation of atherosclerosis. The first is referred to as response to injury, which leads to chronic inflammation in the blood vessel wall, where the macrophage is the primary driver (8). The second and more recent hypothesis is the autoimmune response, in which the recognition and presentation of atherosclerosis-related autoantigens leads to the activation of T cells (8).

We introduced a 34-year-old male patient who is a heavy smoker with no past medical history except for recent EGD due to recurrent severe epigastric pain. He presented to the emergency department with an episode of epigastric pain and burning chest pain that started after eating a heavy meal.

Initial physical examinations were all normal. ECG at admission showed ST elevation in lead I and aVL and ST elevation in posterior leads. A bed-side echocardiogram showed posterior-lateral wall severe hypokinesia confirming the diagnosis of Acute transmural myocardial infarction.

Two weeks later after percutaneous coronary intervention and the medications, EGD results showed in the duodenal biopsy Irregular villi and lymphocytosis (> 30 per HPF), Superficial ulceration, Brunner's gland hyperplasia, No evidence for infective agent, dysplasia or malignancy.

Unlike the typical presentation that we discussed, the patient's initial manifestation of celiac disease is myocardial infarction.

Our study indicates a strong potential association between CD and myocardial infarction. Apart from addressing the traditional risk factors for myocardial infarction, it may also be important to identify patients with autoimmune disorders, which are associated with accelerated atherosclerosis and treat them appropriately. This may consequently help in reducing cardiovascular morbidity and mortality.

### Conclusion:-

The present case highlights the possibility of celiac disease manifesting as an acute myocardial infarction. Although rarely encountered in clinical practice, physicians should be aware of the atypical manifestations of CD that may happen in a small proportion of patients in order to be familiar with it for early diagnosis and management.

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